

The Economic Consequences of Post-traumatic Stress
Disorder in Clients of Veterans Affairs Canada

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ABSTRACT

REBECCA A. MATTEO: The Economic Consequences of Post-traumatic
Stress Disorder in Clients of Veterans Affairs Canada

(Under the Direction of Victor W. Marshall.)

Historically, post-traumatic stress disorder (PTSD) was questioned in regard to the “reality” of the clinical disorder. Largely during the post-Vietnam era, medical legitimacy pushed an agenda to study the condition, and contemporary interests shifted to cost-effective and efficacious treatment identification. Although a priority for mental health, clinical approaches to care are not the only need for individuals who face diagnosis. I explore financial consequences of post-traumatic stress disorder in clients of Veterans Affairs Canada (VAC) to more specifically identify the economic vulnerabilities of veterans in an attempt to inform policy development. As a chronic condition, PTSD requires management over broad periods of time, often outside of the medical complex. Furthermore, a growing number of veterans are young and in search of gainful civilian employment, yet at risk of disrupted work lives as a result of their mental health status. This certainly carries implications for economic well-being.

To better understand the relationship between PTSD and economic standing, I build upon current literature to develop two statistical analyses. The first project focuses on describing the relationship between PTSD and income and perceptions of financial security.

This sample is marked with health disadvantage at the outset, through connection with VAC services. However, findings illustrate that PTSD holds significant association with economic well-being when other risk factors (including comorbidities) are controlled. This analysis informs caregivers (both medical and non-medical) about the importance of PTSD as a unique health problem with socioeconomic risk among veterans.

The second analytic design assesses the specific symptom clusters of post-traumatic stress disorder as they relate to financial outcomes. Specifically, veterans experience symptoms of PTSD without meeting the clinical requirements for diagnosis, thus being left untreated. However, the findings illustrate that symptom clusters of PTSD maintain significant (and distinctive) relationships with various economic outcomes. This supports contemporary psychometric assessments that suggest the diagnostic criteria for PTSD require conceptual revisions. A reconfiguration of diagnostic criteria is supported in confirmatory factor analysis of my sample. I link these findings to targeted policy suggestions for VAC in regard to outreach for veterans with subclinical, yet meaningful, symptoms of post-traumatic stress.

DEDICATION

To Amy Geissinger,

who taught me to live every day as if it were my last.

“Soldiers cannot concern themselves with the forces that bring them to a fight, or its aftermath. They trust their leaders not to risk their lives for too little. Once the battle is joined, they fight to survive as much as to win, to kill before they are killed. The story of combat is timeless The extreme and terrible nature of war touches something essential about being human, and soldiers do not always like what they learn. For those who survive, the victors and the defeated, the battle lives in their memories and nightmares and in the dull ache of old wounds. It survives as hundreds of searing private memories, memories of loss and triumph, shame and pride, struggles each veteran must fight each day of his life.”

~Bowden, Mark (1999: 345)

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LIST OF ABBREVIATIONS

ADL – Activities of Daily Living

APA – American Psychiatric Association

AVF – All-voluntary Force

CAPS – Clinician-Administered PTSD Scale

CDS – Chief of Defence Staff

CES-D – Center for Epidemiological Studies Depression Scale

CF – Canadian Forces

CFA – Confirmatory Factor Analysis

CFS – Canadian Forces Survey

CWHS – Continuous Work History Sample

CWT – Compensated Work Therapy

DND – Department of National Defence (Canada)

DOD – Department of Defense (United States)

DSM – Diagnostic and Statistical Manual

ECA – Epidemiological Catchment Area

IADL – Instrumental Activities of Daily Living

LASS - Life After Service Studies

NATO – North Atlantic Treaty Organization

NCS – National Comorbidity Study

NIMH – National Institute of Mental Health

NVC – New Veterans Charter

OEF – Operation Enduring Freedom

OIF – Operation Iraqi Freedom

OND – Operation New Dawn

OSI – Operational Stress Injury

OSISS – Operational Stress Injury Social Support

PCL-M – PTSD Checklist – Military Version

PTC – PTSD Clinical Teams

PTSD – Post-traumatic Stress Disorder

RRSP – Registered Retirement Savings Plan

UN – United Nations

VA – Department of Veterans Affairs (United States)

VAC – Veterans Affairs Canada

WHO – World Health Organization

Chapter 1
RESEARCH PROBLEM AND FRAMEWORK:
SOCIOECONOMIC WELL-BEING OF VETERANS DIAGNOSED
WITH POST-TRAUMATIC STRESS DISORDER (PTSD)

“With the end of a war, the debilitating effects of combat stress may abate in many cases, either spontaneously or with the help of professional intervention, whereas in others, acute stress reaction crystallizes into profound and prolonged psychopathological sequelae in the form of posttraumatic stress disorder (PTSD) and other comorbidities. Yet individuals who have had an acute reaction are at increased risk for chronic and recurrent / reactivated disorder In a small proportion of patients, the condition may show a chronic course over many years” (Solomon and Mikulincer 2007:659).

INTRODUCTION AND RESEARCH QUESTIONS

Post-traumatic stress disorder (PTSD) is a diagnosis of interest for many reasons. Similar to other mental illnesses, PTSD can manifest in a number of different patterns, along a course that is unique for each of those who suffer with it. Furthermore, different cultures understand the condition in various ways – as an “illness,” an “injury,” or perhaps even a farce. Conceptualizations of post-traumatic stress conditions also changed over time (e.g. “soldier’s heart,” “battle fatigue,” or “shell shock”), or based upon the origin of the stimulus (e.g. “railway spine”). That said, the factors that generate such diversity in understanding may ultimately lead to a more complete protocol of how best to manage PTSD. The history of medicalized health conditions is such that attention and funding generally follow controversy (Conrad 2007).

A recent review of the socioeconomic consequences of military service argues that “[m]ilitary service, as an occupation, . . . has not been studied as a major contributing factor to the ability of a person to accumulate wealth” (Fitzgerald 2006:76). Although the literature is fragmented in regard to cohort (i.e. military service era), sample characteristics, and SES measures, characterizing the military career as “missing” in regard to employment (or socioeconomic) history is an overstatement to large degree. However, there is a gap in the research understanding post-traumatic stress disorder as a mediating factor between military service and post-military socioeconomic well-being. Therefore, my dissertation will assess this niche, utilizing a sociological perspective that both extends and enhances a biomedical consideration of PTSD.

I propose two research questions that not only address gaps in the contemporary literature, but also have important policy recommendations for Veterans Affairs Canada which serves the clients in the data sample. First, does post-traumatic stress disorder relate to socioeconomic disadvantage among Veterans Affairs Canada clients? Furthermore, how is this relationship affected by controls for demographic characteristics of known influence to economic well-being (educational attainment, age, etc.), comorbid health conditions, and indicators of military service? This is the focus of Chapter 3; and, in light of the sample – clients of known health disadvantage – it is certainly worthwhile to understand if targeting PTSD (as opposed to “poor health” more generally) is a valuable strategy for VAC to consider in better addressing client needs.

The second research focus stems from the psychometric assessment literature that argues for a reconfiguration of the diagnostic standard for PTSD. Epidemiological instruments used to estimate prevalence of post-traumatic stress disorder in the population

prove reliable to clinical evaluation. However, research suggests that as clinicians learn more about the etiology and prognosis of post-traumatic stress disorder in patients, evidence-based treatments rely upon clear conceptualization of symptom profiles. One argument is that multiple types or “complexities” of PTSD should be established based upon type of trauma or developmental stage in which onset occurs), whereas others contend that a more precise diagnostic framework would increase efficacy of treatments, if not allow clinicians to better understand treatment options between diverse patients.

Clinical decisions are beyond the scope of a sociological investigation; however, the logic that dictates a push for reclassification for PTSD is an excellent springboard for understanding the needs of veterans who experience post-traumatic stress, of diagnosable or sub-clinical levels. Thus, my second research project investigates whether or not the unique symptom clusters of post-traumatic stress disorder hold distinct associations with economic outcomes. Because clients of Veterans Affairs Canada are more often released from service in the Canadian Forces (be it voluntary or compulsory) with a path toward civilian employment (as opposed to formal retirement), understanding barriers to successful transitioning into labor markets is of utmost importance. Furthermore, although treatments are becoming more readily available for veterans diagnosed with PTSD, I believe that the complex symptom structure of the condition leaves some clients of VAC undiagnosed, yet still “unhealthy” in ways that significantly impact economic well-being.

The relevance of post-traumatic stress disorder for medical science and health care delivery is clear, but more understated are social consequences of the disorder that are

increasingly important to consider. PTSD prevalence is increasing globally¹; and, its consequences are experienced among individuals, their families, communities, and social institutions more broadly. In order to integrate individual life histories of those who are diagnosed with PTSD with a broader “ecological” focus, it is best to account for multiple levels and time frames of interaction through both the political economy of health and life course perspectives. The former links individuals who are diagnosed to health care services and labor market opportunities, whereas the latter focuses on the unique experiences of cohorts. The understanding of post-traumatic stress disorder, the context of military experiences, and labor market opportunities all fluctuate over time, so attention to age-group differences is imperative. Connecting military service to the management of PTSD in an assessment of economic status must be mindful such time-sensitive dynamics.

LINKING THEORY AND ANALYSIS

Marshall (1996) states that “[t]heoretical disputes are not just about the fit between theoretical statements and statements about data, and they are rarely resolved by recourse to data” (13). A core challenge to sociology then, is to clarify theory in a logical manner beyond data, because “proof” is often an unattainable goal. This forces constant dialogue among researchers. Matters of social inquiry are particularly complex due to the constant intersection of biography and history (Mills 1959). Thus , the starting point for my undertaking is a brief consideration of the major theoretical and empirical constructs of applied sociology as related to the construction of medical diagnoses, or in particular, post-traumatic stress disorder. Ultimately, I provide practical suggestions for political and

¹ Although there is likely a “selection effect” in that rates of PTSD have increased over time due to a diagnostic focus on the occurrence of clinically relevant mental distress following traumatic events, it is also suggested in the literature that disastrous events, in and of themselves, may be on the rise.

structural change that benefits those represented in my sample – clients of Veterans Affairs Canada who suffer with post-traumatic stress disorder.

As mentioned, to address the macro-level context of both diagnosis construction and the “real world” experiences of those shaped by diagnostic labels, two critical *perspectives* are relevant: life course and political economy. “In essence, a perspective says, ‘look at this,’ whereas theories provide a meaningful interpretation and a background of assumptions about the way the social world works, grounding the individual concepts and their postulated linkages” (Marshall and Clarke 2007:621). Because theories are not testable in relation to the topic (or data available) in this research, the use of both life course and political economy perspectives will elucidate how it is in fact the case that the “personal troubles” of veteran PTSD or socioeconomic disadvantage can be reflective of larger “social issues” such as economic trends or the state of medical knowledge (Mills 1959).

It is not adequate to claim that the processes of disease diagnosis and illness experience are consistent. The distinction between medical conditions (disease) and illness (subjective experience) illustrates the importance of separating these concepts (Fox 1968; Kleinman, Eisenberg, and Good 1978). The social construction of medical knowledge “deals mainly with the origins of professional beliefs, and with diagnosis” (Brown 1995:37). Specifically, medical knowledge incorporates aspects of the professionalization of physicians, the code of ethics to which physicians adhere, and the institutionalized method of applying a “biomedical model” of disease. Thus, the social construction of medical knowledge is a *structural* approach to physical and mental health that concerns mainly the tasks of the physician, such as diagnosis and treatment distinctions.

Social construction of illness theory, on the other hand, deals primarily with the individual patient's experience with physical or mental health anomaly. More specifically, the social construction of illness relates to the manner in which "lay persons" experience illness through processes such as symptom recognition, use of health care services, adherence to physician recommendation, and the creation of meanings about the disease. With the epidemiological shift toward an increasing prevalence of chronic disease, the social construction of illness becomes more critical in regard to individual attempts to "manage" disease (as opposed to a "curative" experience for acute illnesses). As the frequency of long-term, often incurable diseases increases, patients are forced to reconstruct their lives and "experience illness" in an attempt to adapt, if not permanently alter their lives (Kleinman 1988).

In essence, focus on the social construction of "disease" versus/and "illness" highlights the interplay between the biomedical model of disease, social structure, and personal experience (as well as interactions), in shaping both the creation/application of diagnoses and personal experience once categorized in medical terms. Disease is "biomedical" and illness is "subjective," and the process of diagnosis is central to subsequent illness experience by provision of legitimacy and shaping expectations, better known as the sick role (Parsons 1951).² Furthermore, illness experiences, through a more indirect path, may in turn shape the manner in which diagnoses are stipulated and applied. For instance, Link and Phelan (2001) outline contradictory evidence in the research literature that finds

² Briefly, Parsons' (1951) sick role theory argues that applying a diagnosis to a condition provides a person with the opportunity to experience the rights and privileges of the illness experience, while simultaneously maintaining the power of the physician as unquestioned. The patient gains a sense of personal control by establishing boundaries of responsibility and expectations related to their altered health, and the physician uses diagnosis to gain control over the treatment regimen while at the same time applying a "standardized" approach to the diagnostic process (Freidson, [1970] 1988). The application of the sick role is considered different for those with mental health conditions (Scheff, 1966), or chronic health conditions more generally (Charmaz, 1991), both of which are relevant arguments in the case of post-traumatic stress disorder.

both positive (seeking treatment) and negative (loss of networks, self-esteem, work, etc.) effects of stigma application. Scheff (1966) discussed the meaning of mental illness labels, arguing that “screening, by its brevity, tends to omit contextual information, and the theory, based on the medical model, tends to ignore the contextual information that is available” (175). What this work highlights, is that the attachment of a diagnosis, although often a source of legitimacy for patients, is also a potentially harmful label that culminates, and cumulates, within the illness experience, even if diagnosis (labeling) is appropriate.

Many social factors that do not play directly into disease identification (diagnosis) greatly affect subsequent illness experience, such as cultural meanings. A more powerful example is that of social class, or income: one’s material resources affect not only the ability to seek adequate care (such as the decision to miss work or find child care), but also the individual’s capacity to adhere to a treatment regimen (Link and Phelan 1995). Link (2008) refines a previous framework of “fundamental causes” of disease into a “social shaping approach.” In a contemporary context, “biomedical knowledge and technology create the capacity for humans to avoid disease and circumvent early death, [thus] sociological factors become more, not less important for population health (367). Taken to an extreme, risky environments (such as combat) known to increase health problems, are problematic, yet necessary. So, the critical importance of social factors becomes determining who is *most* at risk (demographically), and how appropriate resources can be allocated specifically to such groups.

The general understanding of PTSD (as both a diagnostic category and an illness experience) must be developed in regard to period and cohort effects. Of primary concern to my work are the economic and political structures that shape both military decisions and

economic opportunities. The former topic is integrated into a discussion of peacekeeping versus combat service to follow. The latter is grounded in the recognition that “[t]he occupational status of veterans with PTSD ... is influenced not only by their disability but by social and economic actors that prevail at the time of their service and when they subsequently re-enter civilian life, whether disabled or not”(Marshall 2005:8). Although often considered North American “partners,” there are some important differences to consider in the economic contexts of Canada and the United States.

At the time of the Canadian Forces Survey (CFS), in 1999, Canada was in an economic upswing as “[e]mployment continued a four-year climb, while the unemployment rate remained at a low not seen since the 1970s” (Statistics Canada 2001:5). However, this growth slowed toward the end of 2000, with an eventual downturn in the global recession of 2008. Importantly, although “The Great Recession,” as labeled in some countries did impact Canada, the effects were not as drastic elsewhere (i.e. United States, Europe, and Japan). Cross (2010) reports that the primary impact of the recent recession targeted employment (as opposed to GDP), marked by rising unemployment, albeit moderate. “One reason for the relatively mild slump is that Canada was better positioned to weather the global recession than other large western economies, primarily due to savings as reflected in our national balance sheet” (Cross 2010). Thus, although the global recession certainly impacted Canada (i.e. international trade), the most recent downturn is comparable to the economic situations of 1981-1982 and 1990-1992, which likely impacted clients of VAC in my sample.

In general, the periods of recession in Canada reflect periods of global downturn. However, the duration and intensity of slump cycles are moderate in comparison to those of the United States, at least since the 1970s. This is not to suggest that the labor market

prospects of veterans in the U.S. and Canada are widely different, though a caution on direct comparison is certainly warranted. Some more general patterns within labor market participation rates are also important. “The permanent layoff rate and the total permanent separation rate also differ noticeably by gender, age and firm size --- in most industries, the rates are higher among male workers than among females, higher among younger workers, and higher among smaller employers” (Lin and Pyper 1997:3). One broad question to consider, that perhaps belies cohort effects in the labor market, is whether or not health challenges override any positive momentum gained from military service in regard to future civilian employment among veterans. Whereas military service may place veterans in an advantaged position in the eyes of employers (to be discussed in Chapter 2), release with medical hardships may disadvantage veterans, regardless of broader economic trends. Thus, the interplay between veteran “biography” and social location is captured best through attention to a life course perspective.

FRAMING THE DIAGNOSIS OF PTSD

Beginning in the 1960s, social and behavioral sciences matured their relevance within diagnostic studies of medical knowledge; and the stress-process was a particular beneficiary of such collaborations. Non-medical “influences energized an appreciation of the dynamic complexities of the environment-individual interaction and crystallized the concept of stress, as we understand it today” (Lasiuk and Hegadoren 2006a:18). Subsequently (or simultaneously), social scientists investigating any number of social problems became contributors to the development of uncovering stress processes as an outcome in itself or as a

risk factor for many social outcomes.³ Although a history of the sociology of health and illness (or stress research), is beyond the scope of my work, a few key tenets of the subfield are important to the overall understanding of PTSD as a correlate of socioeconomic well-being.

Briefly, the stress process identified by Selye (1956) developed into a proliferation of social research on the role of stress itself (life events, chronic stressors, and daily strains) as well as coping (resources, strategies, social support, and agency). The relationship is well-established between stressful events and both psychological distress and physical health vulnerability.⁴ Furthermore, both exposure to events (or strains) and ability to cope or manage stress are differentiated by demographic factors, such as age, race/ethnicity, gender, and specifically socioeconomic status (Thoits 1995). Both coping (mastery, self-esteem, social support) and life events bear a cumulative influence as well – just as stressful events and their impacts can accumulate over time, management of stress can benefit from continued resource development.

Therefore, social stress research is an example of how illness can be analyzed in terms of social position; and, it is a major contributor to the extension of life course perspectives in health research. More specifically, individuals experience life events which affect well-being, and the outcomes of such occurrences are dependent upon one's place in a social system. Therefore, stress research improves upon the generality, heterogeneity, and contingency limitations faced by other perspectives, such as role theory. The life course

³Thoits (2010) reviews the sociological literature in relation to stress research, noting the importance of social risks attached to both exposure to stress and ability to cope. Although not a complete overview, some of the critical literature in this regard includes Dohrenwend and Dohrenwend (1974); Ensel and Lin (1991); Mirowsky and Ross (2003); Pearlin (1989; 1999); Selye (1956); Turner, Wheaton, and Lloyd (1995); and Wheaton (1999).

⁴ Although the negative effects of negative life events are consistently supported in the literature, the disruptive risk presented by positive changes or general adjustment is less well supported (Thoits 1995).

perspective may lead to descriptions of experience rather than the prediction of future outcomes; but it does, however, improve upon issues of multidimensionality and the temporal ordering of transitions within trajectories. This better captures the cumulative effects of change events and their outcomes.

George (1999) points to some concerns (or cautions) in using life course perspective of health, such as a required methodological comparability over time, limited heterogeneity of patterns (trajectories), and a potential inability to distinguish the links between micro and macro level influences on life histories. The methodological issue is straightforward: in order to create a trajectory, it is essential to include similar measures of characteristics and predictors in order to assure validity. If personal attributes and social factors are measured differently across time, it is impossible to create a linked pattern of experience (or a reliable trajectory). Instrument comparability is relatively scarce in social research, as are longitudinal data sets of sufficient temporal magnitude. The second major concern points to individuals as unique within “average” or representative trajectories that develop from research. The final critique of challenges to micro-macro linkages is true of any ecological or time-sensitive perspective because simultaneously examining the effects of sociocultural environments and individual markers is complex. But, overall, a life course perspective is unquestionably the best framework for assessing chronic conditions, such as stress or PTSD specifically.

In its recent history, the formal application of post-traumatic stress disorder diagnosis, as set forth by the most current *Diagnostic and Statistical Manual-IV-TR* of the American Psychiatric Association (2000), states that two requirements of Criterion A – experience of a traumatic event (A1) and a response of “fear, helplessness, or horror” (A2) – are met. In

addition, symptoms must be present for a minimum of one month (Criterion E) leading to “significant distress or impairment in relationships at work or at home” (Criterion F). The inclusion of post-traumatic stress disorder came in the third version of the *DSM* in 1980 (APA).⁵ This certainly reflected significant cultural implications. “Distinguishing traumatic stressors from other serious but more common life stressors (e.g., bereavement, chronic illness, job loss, marital conflict, and motor vehicle crash) implied that the valence of the stressor would overwhelm the adaptive capacities of most people” (Lasiuk and Hegadoren 2006b:73). In essence “normal” feelings, thoughts, and experiences were differentiated from clinically significant reactions to life experiences. Post-traumatic stress, as a disorder, became recognized as “outside ‘usual’ experience” that includes “intense fear, terror, and helplessness” (APA 1980).

The other criteria for the diagnosis of PTSD are three clusters of distress experiences. Criterion B is reflective of “re-experiencing” the traumatic event (through dreams, memories, or feelings). Criterion C involves “avoidance” and “numbing” symptoms, such as evading situations that evoke memories of the traumatic event, general loss of interest, or feeling distant from others. Finally, Criterion D is a group of “hyperarousal” symptoms, such as irritability or trouble with sleep or concentration. Although a person seeking diagnosis for PTSD must qualify based upon all criteria (A-F), there is potential for variability overall. For instance, among a number of “re-experiencing” symptoms, a person need report only one of

⁵ There are a number of theories to explain the development of PTSD: psychoanalytic (trauma overwhelms ego); cognitive (inability to process trauma); behavioral (fear response and learned reactivity); and biological (neurotransmitter development). All explanations have influenced the way in which the diagnosis is constructed over time, as the dominant paradigm shifted in line with research findings and treatment evaluations. See Evans (2003) and Freidman and Rosenheck (1996) for a review.

five possible involvements.⁶ Thus, although all persons diagnosed with PTSD meet standards set for Criteria A-F, the actual symptom profiles may vary between any two individuals.

One growing issue is that of “delayed onset” of PTSD. In some cases, it is estimated that a person may experience a traumatic event, yet not reactionary symptoms until at least six months afterward. In this case, it is unclear whether the stagger between event and reaction is due to the context of experience, a personal resiliency, or a definitional issue in which either the individual or mental health professional mislabel symptoms to some degree. A recent review of delayed onset PTSD research by Andrews et al. (2007) concluded that episodes of trauma without diagnosable symptoms for six months were rare; and, it is more often the case that the late onset was actually a “reactivation” of symptoms either misclassified or not reported earlier. Furthermore, such a pattern of delay was more common among military cases of PTSD than civilian (38.2% versus 15.3%) in the literature (Andrews et al. 2007:1319).⁷ Settersten (2006) discusses the need to untangle the emergence of PTSD if not immediate onset, because it is possible that onset is “generally delayed” due to “strains and challenges of aging [reactivating] earlier trauma, resulting in a greater incidence of new elderly patients who need care for war-related stress” (24). Or, it may be that new developments in clinical research increase ability to diagnose and treat, coupled with greater social acceptance of acknowledgement of need for help.

Both reactivation of traumatic stress responses and a greater ability to recognize and diagnose (on the part of lay persons and clinicians) contribute to potential epidemiological

⁶ In addition, a person need only report 3 of 7 symptoms of avoidance and numbing (Criterion C) and 2 of 5 symptoms of hyperarousal (Criterion D). Thus, the list of symptoms reported by persons with PTSD varies, indicative of potential (important) differences in illness experience.

⁷ Figley (1978) was the first to address delayed onset of PTSD among military service members, studying Vietnam veterans who enrolled in college post-release.

shifts in prevalence of PTSD. Furthermore, the process of aging is itself a likely contributor to delayed onset or reactivation, as the case may be. “Midlife generally entails some reduction in activity ... and rethinking of one’s life. In the course of this transition, the altered perspective may force the forgotten or suppressed traumatic memories up to the foreground again” (Solomon and Mikulincer 2006:664). Aging includes loss and adjustment, even in the absence of post-traumatic stress disorder. The strong basis for a “cumulative disadvantage” hypothesis in regard to physical and mental health suggests that further research is needed to differentiate between formal PTSD and general distress experiences; but, in either case, the effects of aging may independently contribute reactivation of PTSD symptoms.

One important aspect of the “delayed onset” debate is that of the particular context of trauma. Individuals may not be able to react or respond to traumatic events in an immediate fashion, or immediate support mechanisms (individual or social) may prove protective in the short-term. Even further, events may not be “traumatic” relative to the context, such as witnessing death in a war zone. But, as mentioned earlier, the military is largely reflective of a total institution in its ability to shape service members into battle-ready mindsets. When the context of battle is removed, or the strength to maintain focus dissipates, service members (or veterans) may be left vulnerable in new ways that interact with general transitions or turning points. Therefore, normative aging may be altered or complicated by military service which can change drastically in relatively short periods of time.

PTSD IN A MILITARY CONTEXT

Susan Sontag (2001) explains that our tendency to socially construct understandings of illness often takes the form of metaphors. Sontag's presentation of metaphorical descriptions of disease includes a *military* metaphor, "where disease is regularly described as invading the society, and efforts to reduce mortality from a given disease are called a fight, a struggle, a war" (Sontag 2001:97-98). Ironically, this conceptualization does not apply well to the history of operational stress conditions, in particular post-traumatic stress disorder. In "modern warfare" economic priorities and all-too-often unclear objectives seemingly trump patriotism. So "war" against illness is perhaps more reflective of targeted, clearly defined, collective efforts characteristic of previous war efforts. "In all-out war, expenditure is all-out, [thus] war [is] defined as an emergency in which no sacrifice is excessive" (Sontag 2001:99). But, because war has itself fundamentally changed, illnesses and injuries specific to our current wartime era belie such "all-out" attention, at least until medical, political, and public influence is swayed accordingly.

Regardless of historical changes in warfare, within the military context, the traumatic stressor aspect of PTSD (Criterion A), is perhaps a bit more straightforward than other onset typologies. Many (if not most) of the experiences of combat are "unusual" in comparison to "everyday" life events; and, the original conceptualization of the traumatic event criterion in *DSM-III* conceptualized trauma as generally outside the realm of human experience (APA 1980). Subsequent revisions in *DSM-III-R* and *DSM-IV* reconfigured Criterion A such that the event is characterized as an "actual *or threatened*" experience of death or serious injury to self or others. Therefore, the scope of precipitating events for PTSD expanded over time.⁸

⁸ Breslau and Kessler (2001) used a community sample to assess the impact of changes to Criterion A of *DSM* versions *III* and *III-R* and *DSM-IV*. The authors report a 22% increase in the number of viable stressor events.

Complexities such as this reflect some of the general controversies surrounding the PTSD diagnosis, but also show that epidemiology is difficult to assess over time. But, no matter the stage of diagnostic category, the experience of combat or war more generally clearly places military service members at risk for precipitating events.

Exactly who is at greatest risk of traumatic experiences is dependent upon a number of considerations, even among service members. First, military service encompasses selection on both the part of the institution (especially in the case of draft-era service) and individuals. “People may choose to serve in the armed forces or to apply for combat roles on the basis of both measured and unmeasured characteristics. Once people decide to serve, the armed forces determine which of the potential enlistees to accept” (MacLean and Elder 2007:177-178). But of perhaps greater interest for my research is the way in which individuals (or the military institution) manage *release* from service. Although the history of the role of military service for lifelong career and socioeconomic achievement are discussed in the next chapter, my particular interest in military service is in regard to how it may precipitate ultimate economic disadvantage for service members. This is not to suggest *responsibility* on the part of the military, but that membership entails risk - namely, exposure to events that may lead to post-traumatic stress disorder.

MacLean and Elder (2007) reference Goffman’s (1961) description of “total institutions” as a way to understand the importance of military service in the life course of service members. Namely, “[t]o an extent greater than that of other total institutions, the impact of the army barracks on the life course and on social inequality has depended on

Furthermore, because the original configuration of Criterion A was divided into two components in *DSM-IV* – the event and the response – diagnosticians were better able to differentiate persons who experience stressors but do *not* develop PTSD; a clinically significant distinction. The authors, Breslau and Kessler (2001), recommended recategorizing Criterion A into two separate criteria as a result, which might place military onset of PTSD into a separate category than other precipitating events.

historical context” (MacLean and Elder 2007:189). Essentially, the way in which the military separates service members from mainstream society leads to status attainment outcomes based more specifically on the context (or timing) of service, rather than the characteristics of the institution itself. Furthermore, whether or not a service member considers the military to be a *career* or one occupation among others will influence the meaning of that commitment in the broader scheme of his or her life. PTSD is certainly a factor in this aspect of “institutional experience” as well – because the onset of symptoms can either lead a soldier to “hide” distress to maintain service status or become an impetus for release (veteran status).

As a unique institutional setting, the military “is well suited to facilitate economic independence from parents and to promote responsible membership in intimate relationships and communities. The military emphasizes personal responsibility, health, constant training and self-improvement, and community and civic engagement ... and it holds all members to the same codes of conduct” (Kelty, Kleykamp, and Segal 2010:183). Yet, the general characterization of military service is also dependent upon time and place. Whether or not a country is actively at war largely dictates the flow of military experience. “In a reversal of the popular phrase, this peacetime service may have led the poor to get richer and the rich to get poorer.... In addition, wartime military service in all eras appears to have had predominantly negative effects on those who experienced combat, which may have increased overall social inequality” (MacLean and Elder 2007:189). Seemingly, much of the literature points to combat exposure as a primary determinant of the overall value of military service in the lives of service members (Prigerson, Maciejewski, and Rosenheck 2002; Savoca and Rosenheck 2000). Furthermore, combat exposure is the principle predictor of PTSD (Keane et al. 1989).

During World War II, the general attitude toward combat stress rested in the belief that psychological screening would circumvent the toll of mental health problems from military service. “Despite the use of selection during World War II, the United States suffered an average of one diagnosed psychological trauma for every four wounded” (Marlowe 2001:47). The consequence was a bifurcation of opinion: either soldiers became battle fatigued due to the *cumulative stress* over extended periods of combat exposure; or the context of a particular combat setting was inappropriately predicted as detrimental for particular personality types (Marlowe 2001: 47-48).⁹ But, the importance of a diagnosis for combat-related stress is not isolated to the United States. In fact, the economic and political consequences of soldier psychological morbidity impacted other countries perhaps more significantly prior to the Vietnam War. For instance, in a review of the British context (medical and political) of PTSD diagnosis history, Gersons and Carlier (1992) describe the reaction to psychological casualties during World War I to be problems of individuals. “Stone (1985) observed that shell-shock was labelled as an ‘illness’ in order to justify the tremendous fall-out of conscripts in the battle zones, rather than admit that in human terms war, in itself, is horrific, and for some people literally unbearable” (Gersons and Carlier 1992:743). Essentially, it was easier to confront the “fallout” of military personnel as “hysterical” individuals rather than condemn the country’s involvement in war – the former is much better at protecting morale and maintaining recruitment efforts.¹⁰

Although a detailed history of PTSD as a diagnosis, or combat stress conditions more generally is not included here, there are a few key points to consider because they point to the

⁹ Marlowe (2001) cites this as a primary impetus for the U.S. Army official slogan of the time: “Every man has his breaking point” (62).

¹⁰ For additional reviews of the British history of military combat stress conditions, please see Jones et al. (2002); Jones and Wessely (2005); and Leese (2002).

importance of cohort effects. Also, discussion puts potential international differences into the forefront, as military engagements vary by country as well as in regard to historical time. A poignant example of cohort effects in relation to PTSD is offered by Coleman (2006) who traces the American history of combat stress conditions from the Civil War through contemporary PTSD diagnoses. Notably, World War II veterans are often used as a comparison group to Vietnam veterans in an effort to illustrate the latter as “worse off” in regard to mental “fallout” from combat experiences. Although it is true that warfare did significantly change between these conflicts, Coleman (2006) highlights the role of post-military context as a heartbreaking barrier to veterans seeking care, if not speaking out, about mental anguish.

The state of psychiatry and neurology at the time of WWII were such that lobotomies became the preferred procedure for psychoses. Essentially, severing the frontal lobe from the rest of the brain (through a surgery often called the “ice pick procedure”) decreased aggressive behaviors of patients. From an economic standpoint, “[a] lobotomy could be performed for \$250, while it could cost upwards of \$35,000 a year to maintain a patient in a hospital” (Coleman 2006:55). This procedure left recipients “listless, dull-eyed shadows of their former selves,” without curative proof beyond the subdued emotional state of patients. (Coleman 206:55). In essence, until the psychopharmalogical revolution of the late 1940s, lobotomies were favored for both “hysterical” women and returning veterans. Jonathan Shay, military psychiatrist and author, reacted to Coleman’s portrayal stating, “I hear a WWII combat veteran after the war saying to himself, ‘If anybody knew what goes on in my nightmares or what I think about, they’d toss me in ____ [fill in the name of your local VA hospital here] and lose the key’” (Coleman 2006:x). The context, both economic and medical,

of war certainly influences the way in which combat stress is conceptualized and the likelihood that veterans will report their distress.

Consistent with the use of a life course perspective, “time” is important in relation to military service on an individual level as well. Age at participation in military duty, period of service, and duration of enlistment all influence the risk of exposure to trauma, likelihood of diagnosis, and perhaps ability to manage PTSD symptoms. Within limits, military service is shaped by human agency. People choose between joining the armed forces, entering the labor force, and continuing their education” (MacLean and Elder 2007:176). Furthermore, the choices made by individuals, or the context of those decisions vary by age patterns in meaningful ways. Long-term effects (or military service trajectories) are also important as “early military experiences may lead to positive or negative outcomes, and these effects may cumulate over time On the other hand, aging-related processes may diminish individual differences in late life if aging serves to ‘level’ prior inequalities” (Settersten 2006:27). So, one missing factor in research is the interplay between age, military service, combat (or traumatic) experience, and subsequent PTSD.

In the absence of longitudinal data, my research can indirectly assess the importance of age effects (through controls); but, the consequences of PTSD are also impacted by time elements. “Serving in the military has the potential to cause some individuals to stray ... as well as to prolong life-course goals. The events that normally occur early in the life course, such as investments, purchasing a home, or the pursuit of higher wages, may be delayed, causing a person to make a temporary sacrifice in earnings and/or savings” (Fitzgerald 2006:65). Again, causal patterns cannot be established with certainty in my research, but the relationship between age and both probable PTSD diagnosis and economic status are

considered. The way in which age impacts military service trajectories more specifically is certainly an area of interest for future research.

Military Service in Canada and the United States

Service in the Canadian Forces (CF) is different than the United States military in a number of meaningful ways. However, this does not preclude valuable comparison of implications for policy change to the U.S. Veterans Health Administration as an extension of those recommended for Veterans Affairs Canada. I briefly outline the service characteristics of each force (or multiple forces in the U.S.), and turn to veterans' services afterward.

The Canadian Forces was unified over the period of this study, containing three elements: land (Land Force Command), sea (Maritime Command), and air (Air Command).¹¹ This contemporary structure developed in 1968 under a “unification act”¹² when the decision was made to conjoin the Canadian Army, Royal Canadian Navy, and Royal Canadian Air Force. The CF is currently in a period of “renewal” as characterized by the Department of National Defence, focusing on the “new realities” of a post-9/11 global context. Former Chief of the Defense Staff (CDS), General Rick Hillier refocused the efforts of the unified CF into more concentrated and selective efforts, such as those in Afghanistan, that include significant combat roles to better centralize “vision, structure, capabilities, and people” in efforts to enhance operational efficiency (National Defence 2010). The overall objectives of

¹¹ Current Minister of National Defence Peter McKay announced (August, 2011) that the historic names of the Royal Canadian Navy (RCN) and the Royal Canadian Air Force are to be reinstated. The Land Force Command will also be renamed the Canadian Army. This change is reflective solely of nomenclature and heritage, not service duties or Canadian Forces unification (National Defence 2011a).

¹² Formally, this is the *Canadian Forces Reorganization Act* (Bill C-243), which was championed by then current Minister of National Defence, Paul T. Hellyer. (See the following National Defence website for a full history: <http://www.journal.dnd.ca/vo9/no2/03-gosselin-eng.asp>)

the Canadian Forces are three-fold: (1) protecting Canada and defending national sovereignty; (2) defending North America in conjunction with the United States; and, (3) efforts aimed at international peace and security, most often in partnership with the United Nations (UN), the North Atlantic Treaty Organization (NATO), or general allies from other countries (National Defence 2011b).

The history of the Canadian Forces proudly entails a leading role in the development of peacekeeping strategy through a movement that began in the 1950s. “Peacekeeping is based on the idea that having a force of impartial troops present in a regional conflict can help reduce tensions and improve the chance of peaceful settlement to a violent conflict” (Veterans Affairs Canada 2010a). In the contemporary global setting, this characterization belies the risk faced by CF members, as international deployments increasingly involve warzones and combat risk.¹³ Furthermore, a number of the peacekeeping efforts in the history of the CF led to mass casualties. Specifically, the Balkans (early 1990s) and Rwanda (1993-1996) proved to be dangerous, threatening, and ultimately tragic theatres. Veterans Affairs Canada characterizes the effects of such peacekeeping efforts succinctly and poignantly: “The wounds of peacekeeping are not always the obvious physical ones of a war zone. Witnessing human brutality of the most horrific kind has a deep and lasting impact on those who see it” (Veterans Affairs Canada 2010). The crimes against humanity witnessed by Canadian Forces may well mask the risk of PTSD often found to be most common among

¹³ For instance, the Canadian Forces currently maintains a significant presence in Afghanistan. Much of the service is focused on training Afghan forces in collaboration with NATO.

soldiers with direct combat exposure. Thus, I use “deployment” as a proxy for risk in my analyses.¹⁴

Current operations of the Canadian Forces are widespread. The largest concentration of service is in Afghanistan (over 2000 troops), where 154 casualties have already occurred (National Defence 2011c). There is also significant deployment to Libya (~ 700 troops, NATO support), and multiple smaller operations in Sudan, Egypt, and Jamaica, among others. (Details are available on the National Defence website.) Furthermore, the Canadian Forces maintains a leading role in natural disaster and support missions, both in Canada and abroad, as indicated by growth in the Disaster Assistance Response Team (DART). Such efforts spawned from the humanitarian disaster in Rwanda (1996), and focus on medical care, basic supply sourcing (i.e. drinking water), and infrastructure repairs for international locations in need.

Since the global “War on Terror” began in 2001, U.S. military presence around the world, and related casualties, continued to rise through 2011. The United States Department of Defense estimates (January, 2011) service-related deaths were 4,421 in Operation Iraqi Freedom (OIF); 56 in Operation New Dawn (OND); and, 1722 in Operation Enduring Freedom (OEF).¹⁵ The number of wounded in-action from these three conflict theatres is approaching 50,000 troops (U.S. DOD 2011). Recent announcements as to the withdrawal of

¹⁴ I recognize that “deployment” is much more general than “combat exposure” as an indicator of risk for PTSD. In future surveys, I recommend that Veterans Affairs Canada include both measures of combat exposure and assessments of the level of humanitarian crime witnessed by service members during deployments to potentially untangle the true risk of PTSD during international service. Such clarification would benefit both Canadian and American efforts to better treat veterans and prepare future deployment soldiers for risk of multiple origins.

¹⁵ In February 2010, U.S. President Barack Obama renamed Operation Iraqi Freedom (OIF) to Operation New Dawn in order to reflect changes in the role of troops and the overall mission of service in Iraq. Operation Enduring Freedom (OEF) is centered in Afghanistan, but is reflective of the broader “War on Terror” began in 2001.

troops (OND, September 1, 2010) brings some relief, although civilian and non-combat casualties will likely continue due to both lingering tensions and significant presence in Operation New Dawn.

Rates of PTSD in current United States operations are difficult to determine in a definitive manner, but a report by Fischer (2010) of the Congressional Research Service presented increasing annual incidence from 2002 through 2009 (peaking at 14,183 cases). An early report by Hoge et al. (2004) indicated that probable PTSD was higher among OIF troops (18%) than OEF counterparts (12%); although more contemporary numbers would likely include service members deployed to both conflict settings.

The difference in primary service type between the United States and Canada is certainly of relevance, but it also should not be overstated. Cohort effects clearly indicate that even within the U.S., service during peacekeeping and combat periods can impact a number of veteran outcomes. But, it is not realistic to speculate about the relative risk of Canadian peacekeeping efforts to American service trends during times of peace or war – even in regard to PTSD. Suffice it to say that regardless of type of service, rates of PTSD are, in fact similar between U.S. and Canadian veterans. Therefore, the impact on veteran services and the need for pre-service training exists in both countries, with the specific content of each to be established in future studies. The overall use of “deployment” as a risk factor for PTSD is warranted, as “a growing body of knowledge [shows] that soldiers returning from deployment are increasingly likely to have emotional problems, to have somatic complaints, and to use mental health services [T]he highest [population attributable fractions] associated with combat or peacekeeping were for PTSD” (Sareen, et al. 2008:2194).

Veteran Services in Canada and the United States

General well-being care for veterans is an obvious extension of the military institution. The history of American commitment to veteran services is traced back to the 1600s, with Pilgrims gaining legal access to colony support for disability resulting from war; and the formal establishment of the U.S. Department of Veterans Affairs (VA) and hospital system occurred in 1930 (United States Department of Veterans Affairs 2010). Canadian commitment to its veterans is also longstanding, tracing back to the Boer (South African) War (1899-1902) of the 19th century; but the formal establishment of vocational benefits (1919 *Pension Act*) and medical care (1944 *Department of Veterans Affairs Act*) followed increasing service commitments during World Wars I and II (Veterans Affairs Canada 2010b).

The profile of veterans in each country is well documented, so I provide a general overview as it relates to current populations. The U.S. estimates approximately 23 million veterans as of 2009, and this number is reflective of both increases over time and in demographic trends. In the 2000 Census, 6% of veterans are women, and 17% are racial/ethnic minorities.¹⁶ In a report by Westat (2010) prepared for the Veterans Administration, veterans are generally older (64% aged 55 or older), married (70%), and in better socioeconomic standing compared to 2001 as measured by both income (48% report annual income of \$50,000 or more as opposed to 35% in 2001) and educational attainment (6 percentage point increase in proportion of veterans with at least a Bachelor's degree). One interesting finding related to my research is that in 2010, veterans report unemployment at

¹⁶ Both of these numbers are projected to increase in the 2010 Census, based upon VetPop, "a model developed by the VA that projects the number of Veterans in various subgroups over time. It is based on a number of data sources, including the Census American Community Survey (ACS), as well as estimates of Veteran deaths, of service member separation from active duty, etc." (Westat 2010).

9.7% as compared to 2.7% in 2008. Although there is a chance that age effects are relevant, it is much more likely that larger economic conditions influence this change.

In Canada, the combined number of Veterans and Canadian Forces members alive was projected to be 906,000 people in 2006. More recent statistics place the count of Veterans Affairs Clients at 219,150 people (2009). The number of war-service veterans continues to decline (as expected, due to age); however, younger Canadian Forces are increasingly becoming clients of VAC. (See Table 1.1¹⁷.) The unfortunate overall rise of

Table 1.1. Veterans Affairs Canada Client Profile Changes and Projections

VAC Clients	2004	2009	2014
War Service	46%	34%	22%
Canadian Forces	18%	27%	37%
Survivors	34%	36%	37%
RCMP	2%	3%	5%

Source: *Five-Year Strategic Plan 2009-2014*; Veterans Affairs Canada (2010c)

Note: “RCMP” indicates Royal Canadian Mounted Police

clients reflects both a rise in international service and serious injury. Canadian veterans, in general, are also likely to be married or common law (76%); and, the large majority (88%) worked at some point after their release, with an unemployment rate similar to the general public (8%) at that time (Thompson et al. 2011).

In regard to health status, U.S. veterans fare better than veterans of the Canadian Forces. A majority (72%) of American veterans report their health status to be “good” or “excellent;” and only 7% reported they needed services to help complete activities of daily

¹⁷ Although not veterans of the Canadian Forces, those who formerly served in the Royal Canadian Mounted Police (RCMP) are clients of VAC.

living (Westat 2010). However, Canadian Forces veterans (of the regular forces) “had worse health, disability, and determinants of health status than the general Canadian population;” and, only 56% of all veterans included report their health to be “very good” or “excellent.” (Thompson et al. 2011). This report by Thompson et al. (2011) also claims that the majority of veterans with chronic conditions attribute their health problems specifically to military service. But, CF veterans with the worst health profiles were generally integrated into the VAC health care system, thus taking advantage of the resources at their disposal. Among American veterans who utilized health care services in the prior six months, the most common services were outpatient psychological or substance abuse related (Westat 2010).

More recently, the years between 1996 and 2000 marked targeted efforts to comprehensively assess the needs of Canadian Veterans, culminating in the 2006 *Canadian Forces Members and Veterans Re-establishment and Compensation Act* (what is commonly referred to as the New Veterans Charter or NVC). My dissertation project fits clearly into the focus points of this legislation, as the evaluation of client needs centered upon disability / rehabilitation, financial, health, and job placement concentrations. Furthermore, results from supplemental research for development of the NVC directly point to “operational stress” as a core issue among client needs:

“The Canadian Community Health Survey’s CF Supplement on Mental Health (September 2003) further identified mental health problems that were more prevalent among CF members than among the general population. The study found that the rates for major depression and for panic disorder were significantly higher among CF members than among the Canadian civilian population. The following year, the Department of National Defence Operational Stress Injury Social Support Team produced the report, ‘Family Support Needs Analysis,’ which provided an understanding and identification of the issues facing the families of persons suffering from psychological injuries as well as the impact of these issues and the supports families need as a result” (New Veterans Charter 2009:2).

An important note of difference between the Canadian and American perspectives on PTSD (and other combat stress conditions) is that VAC clearly defines PTSD within a class of “operational stress *injuries*” (OSI). As defined, OSIs are “any persistent psychological difficulty resulting from operational duties performed by a Canadian Forces member,” thus clearly linking mental distress to military service (Grenier et al. 2007:266). In comparison, the U.S. conceptualizes operational stress more generally (and non-clinically) along a “continuum” of experience that may or may not include mental diagnoses, such as PTSD.

The implications of this difference are not only based upon medical (clinical) relevance, but also policy decisions that link military service to subsequent benefits. The United States has been conservative in its history of benefits extension to veterans with mental health problems (Gersons and Carlier 1992). A prime example is the way in which such veteran benefits would become a catalyst for lobbying after the Vietnam War. But, the supportive functions sought through government benefits were met with disdain and utter disbelief about the reality of combat-stress conditions, in particular toward “shell shock” established prior, during World War I. Marlow (2001) contends that the racially motivated politics upheld the belief that certain ethnic groups were “predisposed to developing war neuroses;” and this characterization is upheld in an article by Benton (1921), a surgeon and “observer” in public mental hospitals:

“[A]nother group has been present and prominent continuously since the opening of [Public Health Service Hospital for the Care of Psychoneurotic War Veterans]. The particular condition occurs among foreigners, especially, Italians, Greeks, Austrians, and Poles.... [arising] from the general belief that the United States is a very wealthy country and that its government is due and destined to provide for them for the rest of their lives” (Benton 1921:362).

Thus, the “symptoms” of mental distress in the framework presented above (which Benton “facetiously” referred to as “Italianitis”) are based in greed, not disease – a stereotype of American veterans that endured through the Vietnam War.

This legacy of distrust toward claims of mental health problems resulting from military service lingered throughout much of the 20th century in the United States.¹⁸ Contemporary efforts in the U.S. fall more in line with those of Veterans Affairs Canada, as the “proof” of precipitating event for American veteran PTSD diagnosis is less important than the fact that service did entail risk of qualifying traumatic events. Furthermore, the U.S. VA is unquestionably invested in identification, treatment, and prevention of PTSD among service members. In 1989, U.S. Congress established the National Center for PTSD, “with the ultimate purpose to improve the well-being, status, and understanding of Veterans in American society. The mandate called for a center of excellence that would set the agenda for research and education on PTSD without direct responsibility for patient care” (National Center for PTSD 2009). Focus on post-traumatic stress within this Center has extended well beyond veterans to traumas such as sexual assault, violence, and natural disaster, which may also explain why the United States is less willing to characterize PTSD as an “operational stress injury.”

Overall, as military investments in both Canada and the U.S. increase, “[p]ressure to maintain operation-ready forces has resulted in increased interest in factors associated with premature separation from service. Mental health is a key area for consideration” (Creamer et al. 2006:733). Using discrete time series analysis, Creamer and colleagues (2006) establish that among U.S. personnel, military separation (release) for psychiatric reasons is most

¹⁸ Refer back to the *DSM* language shift for Criterion A of PTSD in volumes III (1980) to IV (1994) referenced earlier in this chapter.

concentrated in the year after symptom onset, although inpatient service seems to delay this outcome in comparison to outpatient care. Importantly, it seems that once the individual has passed the first year, separation among those with a psychiatric diagnosis is comparable to those with no diagnosis” (Creamer, et al. 2006:734). Although severity of symptoms was not specifically considered in this analysis, it does seem that if treatment can occur early in a service member’s experience with operational stress, the likelihood of release is decreased. This is certainly grounds for both precise and early establishment of mental health status of military personnel, regardless of country or service type.

In terms of reliability and validity, post-traumatic stress disorder prevalence rates are reported to be “average” at best. The *DSM-IV* reports the lifetime adult prevalence (in the United States) to be 8% of the population (American Psychological Association 1994), and a more recent National Comorbidity Study – Replication (2001-2003) reported an adult lifetime prevalence of 6.8%. Arguably, reliable and valid statistics are difficult to obtain due to a number of barriers to care / diagnosis (stigma, access, etc.) as well as sampling concerns among larger populations. The most often cited estimates for PTSD among American military veterans and service members are based upon service theatre: Vietnam: ~30%; Gulf War: ~12%; Operations Enduring Freedom (Afghanistan) and Iraqi Freedom: ~14% (National Center for PTSD 2011). Veterans Affairs Canada reports a lifetime prevalence of 7.2% among members of the regular force and 4.7% for reservists (Statistics Canada 2002).

Whereas the United States relies upon the National Center for PTSD as a warehouse of information and hub of research activity for post-traumatic stress in general, Veterans Affairs Canada developed a “peer support” program known as Operational Stress Injury

Social Support (OSISS) in 2001.¹⁹ Coinciding with this program, the Canadian Forces overtly “shifted attitudes” about operational stress “by raising awareness and understanding and creating acceptance that these nonphysical injuries are honorable wounds” (Grenier et al. 2007:266). Currently, the United States does not consider PTSD a viable condition for consideration of Purple Heart awards, granted to soldiers wounded or killed in the line of duty. However, Defense Secretary Robert Gates stated (in 2010) that this is a topic worthy of further consideration, as informed by research stating both the increasing prevalence of PTSD among contemporary service members and continued rates of *underutilization* of mental health services by soldiers who are fearful of stigma or status loss due to mental health problems (McMichael 2009).

Overall, Canada and the United States take different approaches to PTSD in veteran populations, although both are clearly invested in the care of those in need. The U.S. is more “general” in regard to PTSD – the National Center for PTSD addresses all research and educational needs extended well beyond veteran populations, despite being formally housed within the VA system. Furthermore, PTSD is within a continuum of “operational stress” which does not necessarily imply clinical diagnosis, nor is it reflective of military *injury*, but rather a more general “reaction” (be it physical, emotional, behavioral, etc.) to military experiences. Finally, the United States is now focused on including families in support of veterans with PTSD: Wounded Warrior project, Joining Forces program, and the America’s Heroes at Work initiative are all relatively recent efforts to aide veterans in their families with PTSD management.

Canada’s OSISS implements a peer support model which stems from the general commitment to the World Health Organization (WHO) definition of health, entailing

¹⁹ OSISS is a collaborate effort between VAC, CF, and DND.

comprehensive well-being (physical, mental, and social) and by extension, commitment to social support as health promotion. “Dealing with the issue of operational stress injuries within the military clearly extends beyond the realm of medical treatment alone” (Grenier et al. 2007:271). Initial assessments of this program are very positive, as the OSISS Peer Support Network program “was found to be the only common and continuous formal social support capability available to a CF member and/or retiree suffering from OSI experiences in his or her recovery and/or transition from regular military service to retirement” (Richardson 2009:59). Although progress is certainly achieving positive outcomes, a study by Fast, Yacysan, and Keating (2008) as well as review of the literature on family impacts of PTSD (and other operational stress injuries) by Fikretoglu (2008) establish that even more commitment to social support assessments is warranted. The positive outcomes for both veterans with PTSD and the mental health of their families resulting from OSISS efforts certainly add momentum to this objective.

In sum, there is need for more research to better aide the clients of Veterans Affairs Canada who are managing PTSD, particularly as VAC is committed to “families” as “clients.” Furthermore, although the United States takes a different approach to both PTSD in particular and veterans in general, there is relevance for international comparison. Findings specific to the conceptualization of PTSD will directly improve care of anyone diagnosed with the condition, whether based upon refined measurement tools or better understanding of “illness experiences” in regard to PTSD symptom profiles. Perhaps most relevant to my work is the need to more clearly understand the economic consequences of PTSD beyond direct care of clients of VAC. The “whole person” health directives of VAC imply a commitment well beyond the clinical setting, so economic well-being is unquestionably a target for long-

term success of veterans as individuals, family members, and labor market participants. I will build upon the initiatives of Canada in which “there is an ongoing significant attempt by a consortium of government agencies [including Veterans Affairs Canada] to articulate a life course perspective that will support public policy development” (Marshall and Clarke 2007:8).

VETERANS AFFAIRS CANADA CLIENT SAMPLE

I use the VAC Canadian Forces Survey (1999), which is a representative sample of clients of Veterans Affairs Canada ages 65 or less. VAC Canadian Forces clients include some who are still serving , but received entitlement for a condition. However, most clients are no longer serving and began affiliation with VAC by virtue of pension or the entitlement to one. Two VAC data systems were used for the population base: the Benefits Delivery System, and the Pensions Status and Inquiry System.²⁰ A total of 1871 mail questionnaires were returned, which yielded a response rate of 68%. Of those submitted, 49 were discarded due to overwhelming missing data (n=12), outside sample range (n=4), or late arrival (n=33). An additional 133 surveys from the pilot study were included in the final database for a total of 1968 total respondents. (See Marshall et al. (2000) for a full description of the sample.) The Canadian Forces Survey also includes a weight variable to account for the sampling process (province of residence, type of service, and age). All analyses will incorporate data weights, unless otherwise indicated. In addition, the focus of this discussion lends attention to potential age or cohort effects.

²⁰ Among initial survey questionnaires, 480 were mailed in French language, and 2280 were English language. (In the attained sample, 15.9% of questionnaires were French language).

In my research, the sample is limited to men (excluding 112 women), which is of particular relevance when considering economic outcomes. Specifically, the military occupationally excludes women (from combat duty), which implies that although rates of PTSD are similar for female veterans, the origin of trauma is more likely non-combat related. Kelty et al. (2010) cite sexual trauma as the leading risk factor for PTSD among women who serve in military, as opposed to combat. Furthermore, women face different labor market opportunities and financial concerns than men in the civilian context. So, including women in the analysis would potentially alter findings in meaningful ways that ultimately do not lead to a better clarification of the links between PTSD and economic outcomes. Thus, analyses specific to women are recognized as highly necessary, but not the focus of my research.

Because PTSD is the primary variable of interest, my final sample includes 1473 male clients aged 20-65, as I chose to exclude respondents who did not fully complete the PCL-M instrument.²¹ Also, including respondents ages 20 to 65 may not accurately account for service and post-military experiences. Age cohorts vary in important ways that shape outcomes of interest in my study. Therefore, I limit portions of the analysis to clients aged 20-50, when sample size allows for meaningful assessment. In these instances, I proceed with the assumption that post-military life is likely influenced by a common civilian employment context among the aged 20-50 cohort, whereas those of older ages (51-65), face different economic opportunities (or plan to retire) at the time of their release. This is further supported because client age is significantly related to the number of years since release.

Finally, the use of cross-sectional data indicates a caution in regard to age and PTSD status. The likelihood of current PTSD symptomology (as a correlate of military service) is

²¹ A discussion of missing data analysis is included in Chapters 3 and 4 specifically as it relates to the analysis focus in each.

decreased among veterans released years (or decades) prior. Thus, if PTSD symptoms persist among clients of the oldest age groups, it may be that their experience with the disorder is reflective of extreme (or persistent) cases, and therefore should be considered outliers.

Overall, the goal is to accurately portray the relationship between PTSD and economic outcomes among VAC clients in ways that inform policy. Therefore, the final sample of male clients, with full PCL-M information is sensitive to age cohort differences (20-50 versus 20-65) whenever possible. But the primary limitation to my analyses is that the findings must be interpreted cautiously in comparison to veterans in general. Namely, clients of VAC are known to present health challenges due to their eligibility status for services. So, linking policy specifically to Veterans Affairs Canada is critical, but not without implications for veterans' services beyond this specific program.

SUMMARY OF STATISTICAL ANALYSES

The first analytic chapter (Chapter 3) presents an overview of VAC clients, and then turns to the role of “probable PTSD” as a risk factor for labor force participation, income, and financial security. “Probable PTSD” is measured using the PCL-M (Post Traumatic Stress Disorder Checklist – Military Version)²², which is scored according to the current *DSM-IV-TR* (Diagnostic and Statistical Manual) of the American Psychiatric Association (2000). A full discussion of this measure and the diagnostic requirements for clinical PTSD is included in the chapter. In general, I investigate the relationship between the composite diagnosis (clients as either “probable PTSD” or “no PTSD”) and multiple socioeconomic outcomes, controlling for demographics, general health status, and military service characteristics.

²² A copy of the PCL-M instrument is included in Appendix A.

Findings for the composite diagnosis investigation demonstrate that PTSD is consistently related to disadvantage in the workplace, in economic standing, and for perceptions of financial security. In the broader context of a “contested” conceptualization of clinical PTSD, the link between needs and services (particularly those beyond a clinical setting) is complicated to identify. A forthcoming revision to the *Diagnostic and Statistical Manual (DSM-V)* is scheduled for release in 2013; and post-traumatic stress disorder is a targeted classification for change. Thus, the second analysis project, Chapter 4, establishes the unique contribution of symptom clusters as defined by the current *DSM-IV-TR* on economic outcomes. Essentially, the use of symptom clusters rather than a composite diagnosis of PTSD refines the information gained in Chapter 3. I then trace the theoretical justifications in psychometric assessments of PCL-M factor loading that suggest an alternate scheme of symptom clusters. I perform confirmatory factor analysis (CFA) on the VAC client sample to understand which collection of latent symptom structures best fit the data (items in the PCL-M checklist), as opposed to the current criteria.

Overall, this work is original, and of growing importance to deciding how to best match treatments and services to clients of Veterans Affairs Canada. Furthermore, through the detailed description of the relationship between PTSD (composite or symptom clusters) and economic outcomes, I identify both needs and risks for clients who may present with sub-clinical, yet meaningful symptom profiles, particularly as correlates of successful transitioning into a civilian lifestyle. Finally, because Veterans Affairs Canada is progressive in its stance toward both PTSD and an ecological approach to client needs in general, I recommend focal points for ongoing change in the VAC system.

Chapter 2 LINKING PTSD AND ECONOMIC STATUS

“There are at least three reasons why military service may be related to subsequent [civilian] attainment. First, veterans may differ from non-veterans on relatively stable measured or unmeasured background characteristics that are related to attainment. Second, military service may alter veterans or their characteristics in some fashion that affects later attainment Third, employers may make use of veteran status as an indicator of ability or skill in a way that influences hiring decisions and thus occupational attainment and income” (Teachman and Call 1996:3).

INTRODUCTION

The literature addressing the role of military service within the life course of members and veterans is growing; but, it is challenging to navigate, if not contradictory in regard to overall conclusions. Suffice it to say, understanding the importance of military experience within an individual's biography is dependent upon historical context: peace versus wartime service, military policies (recruitment, retirement benefits, etc.), economic and political climates of the country upon deployment and return, social trends (educational attainment, divorce rates, etc.), and public opinion about military activity are all critical elements that vary greatly over time (MacLean and Elder 2007). Therefore, the utilization of a sociological eye is critical to such inquiries, as C. Wright Mills stresses the value of locating individuals within broader social environments through the use of the sociological imagination (Mills 1959).

This chapter bridges the theoretical underpinnings of my focus on post-traumatic stress disorder and post-military socioeconomic correlates to the data analysis in Chapters 3 and 4. In particular, a review of the literature addressing social and economic impacts of PTSD informs my research hypotheses and frames subsequent analyses. Although the data I use are cross-sectional, the literature attests to the importance of life course as a critical guide for understanding patterns of military service and post-military attainment.²³ Similar to the way in which life course perspective underscores the importance of long-term health sequelae of PTSD, socioeconomic attainment is best understood as a process in which military service is a critical stage, particularly if it culminates in a disrupted career due to post-traumatic stress disorder.

A growing focus of military sociology is that of the “transition” out of military service into civilian roles, increasingly called “reintegration.”²⁴ Sociology in general has long been interested in the socialization (or “professionalization”) of people or groups at the *entry* point into work or institutional roles, recognizing that status positions within various organizations entail learning social norms and expectations that either differ from mainstream values, or are precisely unique to functioning within a given context. Such interest in work and occupations logically extends to retirement as an *endpoint* to relations with formal employment or service organizations. Sparked by “aging populations,” more

²³ In light of this limitation to my work, I focus on significant associations rather than predictions about causality.

²⁴ I would argue that the use of the term “reintegration” is also reflective of important military and social shifts. In particular, military service was previously a stable *career* choice from which soldiers more often retired than occurs today. This is due to a number of trends: the number of conflict theatres, deployments, and combat zones is increasing – all of which present risk of injury; soldiers who are injured during service have access to battlefield medical services, which arguably save lives of many who would not have been as fortunate in the past; and a general delay of retirement in the larger population. Dowd (2001) does show, however, that officers – namely, US Generals – do largely turn to retirement post-service. But, this does not detract from the point that many more service members return to civilian life in need of employment.

countries face policy and service-provision concerns due to a growing number of retired citizens; thus, understanding “successful retirement planning” is of economic importance for individuals and broader society. Beyond the employment sector, research understanding the transition *out of* institutions, such as mental hospitals or prison systems (Goffman 1961), historically focuses on rehabilitative success (i.e. understanding risk of recidivism), which is not an applicable focus for military release / retirement studies.

Military service is unique and complex in both its institutional setting and role as employer. The military serves as a key institution in society, focused historically on protection, security, and expansion, and as an employer, offering clear advancement opportunities and professional development (Levy 2007; Moskos 1976). Yet, military service is recognized (at least in more contemporary media) as potentially *disruptive* to life histories, even though it is not an institution in which men and women seek curative or corrective behavioral changes. The historical lens through which society once viewed military service as heroic, patriotic, and a marker of success transformed into an arena of hastened public criticism for all-too-often “ruining lives” of soldiers and their families. Therefore, the focus of my review is also to untangle the age, period and cohort effects that contribute uniquely to socioeconomic outcomes of PTSD in the post-military milieu in order to show the unique risks and rewards of service. This approach is strengthened through a life course perspective, as it provides overt recognition of “social location” as a key dimension of understanding individual or group life histories and life chances.

PTSD AND POST-MILITARY ECONOMIC WELL-BEING

Both the complexity of a changing sociopolitical environment and the multitude of individual paths into, during, and out of the military lead to a number of conflicting issues in the “role of military service” debate. My research cannot clarify much less elaborate upon all of the vast concerns of such an extensive body of literature. However, there is a clearly defined need for understanding the role of military health correlates in regard to post-service, civilian well-being. A recent review of the role of military within the life course by Kelty et al. (2010) contends that the contemporary “military is both career-oriented and family-oriented, and ... material and social support the military provides to young men and women promotes responsible membership in family relationships and the wider community. As a result,... the transition to adulthood, including economic independence from parents, is more stable and orderly for military personnel than for their civilian peers” (181).

However, a key issue for understanding the potential detriment of military service is hidden in comparison to such overtly positive views of military service. Namely, wartime service (in particular, combat exposure) is characterized as disadvantageous to servicemen and women, seemingly in ways that override many of the benefits of the aforementioned goals of military participation. Essentially, the *structure* of military service suggests great potential for future socioeconomic well-being, through the development of human capital, personal growth, and network ties; however, this path is potentially (or, more often, greatly) disrupted if soldiers develop PTSD (or other injuries) during the course of their service.

The current climate of international relations and media coverage of war zones (as well as terrorist attacks) hallmarks many of the negative, immediate impacts of military combat (and traumatic events more generally). However, the consequences of military participation in war extend well beyond the immediate and obvious needs of soldiers who

return battle weary. Individuals, families, and communities – if not countries – may come together to support troops’ efforts and national agendas against common enemies, although this has not always been the case. Furthermore, time may fade public attention to the needs of veterans long before those hardships resolve. As noted by MacLean and Elder (2007), the military can be stratifying institution because during times of war, “preliminary evidence suggests that military service had a negative effect on most of those who were exposed to combat. To the extent that relatively disadvantaged veterans were more likely to be exposed to combat, military service therefore increased social inequality” (77).

Such recognition of the complexity of military service as a factor in socioeconomic outcomes exists seemingly above and beyond direct attention to the growing incidence of post-traumatic stress disorder. Thus, for the purposes of my research, it is important to remain mindful of the assumption that PTSD (or other health conditions) is only one of many of the potential risks to social well-being after military service. That said, I will integrate the more general literature related to military service and subsequent socioeconomic well-being with the more sparse research that directly assesses the role of post-traumatic stress disorder as a risk to economic attainment.

Marshall (2005) prepared a comprehensive literature review of the economic effects of post-traumatic stress disorder for Veterans Affairs Canada, largely to inform future research needs and policy development. The report notes:

“Although research efforts in military-related PTSD has grown significantly in recent years, the bulk of research focuses on the determinants of PTSD and the possible contributions or interaction effects of risk factors prior to the military experience on the development of PTSD or, alternatively, when looking at the consequences of PTSD, attention focuses on psychiatric and psychological consequences of PTSD and on sorting out the relationships of PTSD to depression and other psychiatric and psychological phenomena” (Marshall 2005:2).

My data analyses originated in collaboration with this work, so it is useful to begin with this review in an effort to synthesize the important research identified by Marshall (2005) with some of the more contemporary investigations of PTSD as a socioeconomic risk factor. For instance, the literature on post-traumatic stress has grown considerably, even in the past few years; but, most critical developments focus on PTSD psychometric assessment, treatment evaluation, and service delivery and accessibility. Again, the socioeconomic dimensions of civilian reintegration are largely disregarded.²⁵

Some cautions of observations are worth noting. First and foremost, it is critical to differentiate the unique political economy of a source sample, especially in regard to policy implications. To avoid taken-for-granted assumptions I consider the experience of military service uniquely within both Canadian and American contexts. On a positive note, comparison allows for comprehensive and efficient practical applications of research – as there are many lessons to be learned in juxtaposing political systems for developmental purposes. Another important caution of direct relevance to my research is the consideration of whether or not respondents are based within clinical samples. Again, the data used in my study include clients of Veterans Affairs Canada, rather than a more general sample of Canadian Forces veterans, suggesting that for any number of reasons, my data are characteristic of former (or current) CF members who are formally integrated into care services.

²⁵ It will be discussed later in this chapter, and in Chapter 5, that both Veterans Affairs Canada and the US Department of Veterans Affairs have turned specifically to *families* as a critical dimension of soldier support and healing, particularly in regard to managing post-traumatic stress disorder. Furthermore, a number of programs have grown to address vocational needs of transitioning veterans, including the Citizen Soldier Support Program for American Reservists and National Guards, housed at UNC-Chapel Hill (<http://www.citizensoldiersupport.org/>) and the aforementioned OSISS program in Canada. However, the research and literature in this area focus primarily on means of support other than economic and educational activities specifically.

Other research also notes that mental health and disability status are potential areas for response bias. Rosenheck, Frisman, and Sindelar (1995) argue that non-veteran studies largely substantiate that reporting biases do not influence disability pensions and labor force participation. But, findings by Aldwin, Levenson, and Spiro (1994) warn that “there might also be reporting biases due to recall or motivational factors, or to the recovery process, that influence the ways in which veterans describe the severity of their combat experiences” (Marshall 2005:6).

Of further importance are differences in the type of service commitment of the military’s country of origin, because it directly affects likelihood of combat exposure, a primary risk for service members. As discussed in Chapter 1, the Canadian Forces is primarily a peacekeeping military, whereas the United States is more widely active in peacemaking. Clearly, this has implications for PTSD risk, although reports of prevalence are quite similar. However, it is also warranted to consider that military institutions may vary their structure and size to accommodate current military engagements. Beyond military service and PTSD risk, peacekeeping and peacemaking efforts translate into unique skill development and service trajectories (number and length of deployments, etc.). Therefore, it is important to remain mindful that direct comparison between studies is not straightforward.

Significant variables in the relationship between military service and subsequent socioeconomic well-being include the following factors: marital status (MacLean and Elder 2007; Pavalko and Elder 1990; Rosenheck and Fontana 1994; Settersten 2006), race / ethnicity (Kelty et al. 2010; MacLean and Elder 2007), and socioeconomic status at time of entry / parental SES (Anderson and Mitchell 1992; Angrist 1998; Fitzgerald 2006; Kelty et al. 2010; MacLean and Elder 2007; Sampson and Laub 1996; Settersten 2006), and age

(Clipp and Elder 1996; Hastings 1991). An ensuing finding of substantial importance is that demographic factors (race, SES, and gender) play a large role in predicting combat exposure (Freidman and Rosenheck 1996), which is a clear (but neither necessary nor sufficient) marker of PTSD risk.²⁶ A study by Lyons et al. (2006) used American twin study data (Vietnam Era Twin Study of Aging) to illustrate that “combat experience and entering military service at a younger age may reduce lifelong educational prospects, even after cognitive ability is controlled” (38).

It is also clear, however, that women in particular may develop post-traumatic stress disorder during military service for reasons other than combat exposure, largely due to sexual assault.²⁷ In regard to age, Clipp and Elder (1996) cite research by Stouffer (1949) and Hastings (1991), to clarify the importance of age at mobilization as a critical factor for outcomes related to combat experience. In particular, younger soldiers of World War II displayed increased risk of stress reactions; however, the complexity of age is highlighted by the fact that the authors also “found numerous socioeconomic disadvantages associated with late-age recruitment [L]ate entrants often encountered problems in restarting their interrupted careers after leaving the service” (40). Clipp and Elder (1996) conclude that late entrants are disadvantaged relative to the “life disruption” in work and family careers from military service, whereas younger entrants face disadvantage relative to “less mature coping abilities” (42).

²⁶ In particular, women are withheld from direct ground combat operations, but exposure to combat has grown significantly among women currently serving. Despite early assumptions that women, on average, would not handle combat stress as well as men, recent investigations of women serving in U.S. Operations Enduring and Iraqi Freedom are as resilient as their male counterparts (Vogt et al. 2011).

²⁷ A recent report by RAND Corporation that reviews the literature on both military and civilian sexual assaults indicates that a range of 2-51% of women serving in the military are sexually assaulted, depending upon the way in which the abuse is defined. This is not outside of the maximum of the range for community estimates: 15-51% (Harrell et al. 2009).

Age of respondent is also clearly linked to rank within the military, as “up or out” policies (Dowd, 2001; MacLean and Elder 2007) characteristic of military service. In some ways this policy creates a selection effect among members.²⁸ MacLean and Elder (2007) clearly explain the benefit of achieving rank within the military: “Officers who had active duty service earned more than officers without such service [and] had greater mobility in the postwar civilian labor market than did non officers. Military service provided a positive turning point in the lives of those who achieved officer status” (187). A recent article by MacLean and Edwards (2010) attempts to generalize the socioeconomic gradient in health outcomes *within* the military; meaning, the authors focus on military occupational structure as a proxy for the Duncan socioeconomic index (SEI) in order to test the relationship between service rank and health (Duncan, 1961). In general, MacLean and Edwards (2010) find that officers report better health status²⁹, and “that the protective effect of officer status stems at least in part from length of service” (780). Although this investigation is limited due to potential selection effects, “occupational” rank in military service is positively associated with health outcomes, even when controlling for educational attainment and income. Thus, we can regard the hierarchy structure of military service to be protective of health, keeping in mind that rank “may be a marker, not a treatment” in relation to causation (MacLean and Edwards 2010:780).

Attention to response bias also elucidates the role of stigma in a willingness to report symptoms as well as mental illness diagnoses (Hoge 2010). Recent accounts suggest that

²⁸ Others, including Smith, Marsh, and Segal (2010) recognize military service, in particular, the U.S. Armed Forces, to be a “meritocracy” in which achievement is a marker of successful development. Thus, human capital gains are an important dimension in military service.

²⁹ In this research, health status is measured by global self-reports; and, data spans four surveys: 2003 Survey of Retired Military (SRM), 2001 National Survey of Veterans (NSV), 1994 Panel Study of Income Dynamics (PSID), and the Wisconsin Longitudinal Study (WLS). See Maclean and Edwards (2010) for detailed discussion of data and methodology.

soldiers and veterans remain leery of disclosure of mental illness symptoms, particularly during deployment (Hoge 2010), but also upon return. In an evaluation of active Canadian Forces members, Fikretoglu and colleagues (2008) found significant delays in treatment (of the 82-100% who will seek care, between 7-37% will do so in the first year of symptoms), due primarily to age, military service, and presence of comorbid conditions. Essentially, those of older ages, longer service histories, or increased health problems were more likely to seek care without significant delay (Fikretoglu et al. 2008). Response bias thus exists in regard to directly assessing the prevalence of PTSD, but it is also an important consideration for any discussion of socioeconomic status, as respondents tend to forego reports of financial status more frequently than other variables of interest in general sociological inquiry.

The final point concerns issues that I attempt to address through sensitivity toward life course issues. For instance, a primary example of the importance of cohort effects is MacLean's (2005) examination of the availability of government funding for educational attainment among U.S. veterans. In particular, "funds were unavailable from 1955 to 1965, the years between the Korean and Vietnam wars" (MacLean 2005:250). The lack of service provision led to *negative* transitions based upon military service such that "veterans were less likely to go on to college than were the nonveterans at all levels of socioeconomic status This negative effect is consistent with the argument that men who had less control over the timing of their service [through draft policies] were more penalized by that service; in other words, military service was a 'tax on reluctant recruits' (Bailey and Cargill 1969; Oi 1967)" (MacLean 2005:263). Although analyses of the long term consequences of this lack of funding for veteran education are in development, it must be noted that MacLean's (2005) sample included only those who had *completed high school prior* to entering the military

(due to data restrictions). Regardless, veterans of this era experienced a negative turning point due to service.

In sum, at play are two dynamic trajectories, both of which vary in regard to age, period, and cohort effects. Military service takes place in broader sociopolitical environments during times of war and peace; and, the nature of combat is ever-changing as well, due in part to unique conflict theatres and technological advancements. Secondly, PTSD can be marked by acute or delayed onset, with markedly different paths and health outcomes based upon demographic factors and life opportunities. It is difficult in the absence of longitudinal data to draw firm deductions about causal relationships. Therefore, in lieu of the more appropriate longitudinal data, I use a life course perspective for theory and hypothesis development – which is by no means considered to be an equal substitute. It does, however, frame limitations of the data in an informed manner, and thus provides an excellent springboard for presenting future research needs. Clarifying the literature with attention to aforementioned points of concern undoubtedly strengthens logical assumptions made within research hypotheses.

Military Service and Educational Attainment

One of the correlates of socioeconomic status is educational attainment, and this dimension is certainly relevant in regard to military service. “Education is the most substantial and proximate determinant of occupational status and income, evidencing a strong, positive relationship. Because education is not a fixed background characteristic, military service may influence the amount and type obtained [and] may also alter educational aspirations, as veterans’ benefits ... affect access to education” (Teachman and

Call 1996:5-6). Recognition of the importance of educational attainment in the lives of service members largely focuses upon achievement at the time of entry into the military, or as continued development upon release / retirement. As highlighted in the above review of MacLean (2005), both demographic and contextual variables influence the role of military service in education trajectories.

In a previous report prepared for Veterans Affairs Canada, Marshall and Matteo (2004) specifically investigated the importance of education among clients as a predictor of economic status and financial security. Reflecting upon the role of veteran benefits in socioeconomic well-being, “many VAC clients are poorly educated, and lower educational status is associated with cohort--older VAC clients are more likely to have entered the service with lower educational attainment than younger, more recent entrants” (Marshall and Matteo 2004:48). Efforts to enhance the educational status of VAC clients have certainly developed since the completion of that report; and, the overall policy recommendations put forth suggest that the situation of clients of Veterans Affairs Canada are not unique in their motivation or need for continued education. However, all of the services may be misdirected if *access* is limited; and, PTSD may interfere with even the greatest intentions of continuing educational attainment.

One targeted endorsement by Marshall and Matteo (2004) was an effort to provide each member of the Canadian Forces an opportunity to complete high school, during service if possible. Namely, continuing education or vocational training after release from the CF has a “multiplier effect”: “the higher the educational attainment, the more likely is a respondent to take additional education or training post-discharge” (Marshall and Matteo 2004:47-48). Characterizing the Canadian Forces as a military institution that facilitates educational

achievement has direct and positive effects on post-release socioeconomic status and perceptions of financial security, whereas low educational attainment is a risk factor for both financial status and subjective assessment of economic hardship.

Such focus reflects the more general “bridging hypothesis” of military service. As explained by Settersten (2006), “[w]artime service therefore represented a ‘structural intervention’ of sorts, permitting large numbers of men to overcome disadvantaged backgrounds at a crucial time: as they navigated the transition to adulthood” (19).³⁰ Arguably, whether individuals enlist in the military with the intention of a lasting career or as a way to enhance skills and personal development (similar to college), there is hope of a springboard effect to greater socioeconomic well-being. The literature reviewing the GI Bill within U.S. military history can help to clarify the relationship between military service and educational attainment.

MacLean and Elder (2007) summarize major findings in this area, as “veterans benefitted from the educational funding provided by the 1944 Servicemembers’ Readjustment Act and its successors, commonly known as the GI Bill [T]hose who used military educational benefits after service in every period beginning with World War II have attained more education and had higher earnings than those who did not” (187). As clarified by the U.S. Department of Veterans Affairs, the focus on educational opportunities developed out of failed policies during the Great Depression, namely, the “Bonus Act” or World War Adjusted Act of 1924 that intended to provide payment to veterans in accordance with days served. When payments were identified as “forthcoming” – up to 20 years in wait - subsequent veteran protest led to Congressional attention toward expanding the VA to

³⁰ MacLean (2005) also presents an informative discussion of the “bridging hypothesis” of military service in comparison to positive/negative turning points and individual characteristics.

include education support, home and business loans, and unemployment benefits (U.S. Department of Veterans Affairs 2009).

The commitment of the U.S. to the education of veterans recognizes both the likelihood that service will end prior to retirement age, and that the transition from military to civilian employment is not likely to be seamless. Even so, the evaluation of education programs for veterans is largely positive. “A measure of the success of the GI Bill is that, for the decade when such funding was not available, academically ambitious men were significantly less likely to attend and graduate from college if they entered the armed forces than if they did not” (MacLean and Elder 2007:187). To note, the educational policy established in the US is unique, as reported by Veterans Affairs Canada (2010d); in comparison to Canada, the UK, and Australia – all of whom provide “vocational training, employment services, one-on-one support, and job finding assistance the United States is the only country which provides all Veterans up to 36 months of education benefits” (Veterans Affairs Canada 2009).³¹

Returning to the role of military service as a bridge to educational and/or economic gain, it is important to note that both demographic profiles of military service members and broader socioeconomic context impact such assessments. Teachman and Call (1996) trace the history of the U. S. GI Bill with a particular interest in uncovering whether or not disadvantages in educational attainment by race (African American versus White) were addressed by policy.³² The review presented finds that overall, “results suggest that during

³¹ Veterans Affairs Canada historically addressed educational attainment through benefits to children of “certain deceased CF members” – a plan that was introduced in 1953, phased out in 1995, and re-established in 2003. (Please see the New Veterans Charter for details: <http://www.veterans.gc.ca/eng/sub.cfm?source=forces>.)

³² Recent studies have begun to investigate trends among Latino service members within the U.S. military – largely as military enlistment can expedite naturalization of citizenship. Kelty et al. (2010) specifically note that

the AVF [all-voluntary force era] the military has served as a bridging environment for less advantaged white men, although there is no evidence of this bridging for African-American men” (Teachman and Call 1996: 25). The authors caution, however, that this may be in part because of efforts to specifically recruit white men with low educational attainment, which is contrary to the focus of recruitment efforts for African-Americans, as illustrated by Teachman, Call, and Segal (1993). Furthermore, the shift in educational funding as primarily grant-based to loan distributions (1970s) is argued to have encouraged African-Americans to seek non-college opportunities after military service. Teachman and Call (1996) argue this is due to both the “more precarious” economic situation of African-Americans relative to whites, and to a general tendency to “discount the future value of a college education” (9).³³

Two other factors are highlighted in the literature on educational attainment and military service. Beyond race, the social, political, and economic context of military release influences veteran decisions about the pursuit of continued education. First, the public acceptance of military efforts greatly influences reception upon release. As discussed by Kelty et al. (2010), “[b]ecause of the scale of [World War II, Korea, and the post-Korea cold war] and the support they received from the American public, relatively high numbers of men served who were not only well positioned to attend college, but also were well received on college campuses following their service” (194). This argument directly addresses the idea that Vietnam veterans benefitted less from continued education opportunities, in part, because they felt unwelcome to do so.

enlistment numbers among Hispanic service members have to some degree replaced African-Americans within the all-volunteer force.

³³ It is unclear whether Teachman and Call (1996) suggest a widespread perception of diminishing returns to education among veterans (regardless of race), or if this is implied to be limited to African-Americans in particular. The latter scenario, of course, implies a culture-of-poverty thesis.

The second, and perhaps broader, issue for social “climate” upon release is the job market itself. Arguably, human capital should develop during military service due the “increasingly technical nature of military occupations” (Teachman and Call 1996:8). Thus, both educational benefits and market demands shape the choices of veterans in regard to pursuit of advanced degrees. (This will be discussed more specifically in relation to military-civilian skills transfer below.) So, both the value and pool of educational opportunities are shaped by labor market openings, which illustrates the importance of targeted benefits and career support – a clear focus of Veterans Affairs Canada in its recent policy development for vocational services.

Overall, policies similar to the GI Bill have been successful, but it is important to note, perhaps, diminishing returns in regard to college education. Settersten (2006) reviews the role of military service in the life course of veterans stating that “[c]ontrary to popular belief, the educational and occupational patterns of veterans did not, in the end, approach those of middle- or upper-class men. But military service and the benefits it accrued did improve technical skills, which significantly increased market chances” (19). Arguably, the United States has become mindful of this pattern as reflected in recent legislation. In 2008, the U.S. enacted a Post-9/11 G.I. Bill targeted at encouraging veteran enrollment in institutions of higher education. The Post-9/11 Veterans Educational Assistance Act of 2008 provides “more money toward tuition and books, as well as a living allowance; [and] for the first time it allows service members to transfer unused educational benefits to their spouse or children” (Kelty et al. 2010:194). Such amendments also reflect a growing recognition of the important “legacy” of education inherent in Veterans Affairs Canada policy, which has long directed educational benefits to children of soldiers.

Such family-focus is also highly relevant in regard to desired retention of military personnel. Noting the difficulty in simultaneously managing educational attainment and military service, Kelty et al. (2010) state: “the longer they served, the more [veterans] fell behind their peers’ attainment” (194). Therefore, if continued education is a granted benefit to soldiers, there is an inherent contradiction between attainment and full-time career service in the military, particularly in times of war. Therefore, commitment to shared (family-friendly) benefits also accommodates “disruptive” military service, such as for active reservists who may be called to duty during periods of professional or educational development. If a veteran surpasses a point at which educational attainment is beneficial for civilian career development, it is valuable for the larger economy to pass such opportunities along to the families of those who served.

In sum, educational attainment proves important in the success of military personnel, both within service (through promotion opportunities) and in transitioning to civilian roles, particularly if seeking employment. However, there are critical barriers to attainment. In particular, there appears to be advantage to military status if high school diploma is achieved prior to or within the early phase of service. Thus, if militaries target the enlistment of unskilled or low-status individuals, it proves disruptive to future economic well-being to deny (or distract from) basic educational attainment. Furthermore, the relationship between demographic factors is worth attention, as race, class, gender, age and marital status are all significant elements in the relationship between military service and educational attainment. Trends in more general educational achievement paired with dynamic political economies (most substantially in regard to job markets) highlight the need for continued attention to the

role of education – in attainment and access – for the livelihood of soldiers, both during and after service.

Turning specifically to the importance of post-traumatic stress disorder within this relationship, mental health is both a cause and consequence of socioeconomic achievement. Thus, if soldiers are knowingly placed at risk of combat exposure – a key predictor of PTSD onset – then it is perhaps in the best interest of militaries to ensure either basic educational attainment prior to deployment, or to provide benefits that acknowledge the unique struggles the disorder presents for continued education if health is compromised during service.³⁴ Education is a protective factor for a host of potential life disruptions post-service. For instance, post-traumatic stress disorder consistently presents high comorbidity rates with other mental health conditions; and, Anderson and Mitchell (1992) find that among U.S. Vietnam veterans, “the more education or income the respondent reports, the less likely he was to be diagnosed with substance abuse or other problems” (562),³⁵ a known correlate of PTSD. Furthermore, many of the concerns about the challenges of managing PTSD while maintaining consistent work performance are certainly applicable to continued education. In support, Kessler, et al. (1995) used the U.S. National Comorbidity Study to show that “persons with psychiatric disorders ... account for 14.2% of high school dropouts and 4/7% of college dropouts” (1026). Although post-traumatic stress disorder is not isolated in the

³⁴ Although often hypothesized that American soldiers of lower educational attainment and minority status were more likely to be placed in combat zones, Rosenheck and Fontana (1994) find no consistent overrepresentation of these patterns among World War II, Korea, and Vietnam veterans. According to the authors, this is due to both minimal demographic differences in combat veterans of World War II and public sensitivity to equality in the Vietnam era. Of note is that Korean War veterans report higher socioeconomic attainment post-service, but this is largely, if not entirely, due to pre-service status (Rosenheck and Fontana 1994).

³⁵ Interestingly, the study by Anderson and Mitchell (1992) also found that respondents with higher educational attainment were significantly more likely to report symptoms of depression. This may be insightful when considering the role of PTSD and socioeconomic consequences, but study compares veterans to nonveterans and specifically notes that “military service increased the probability of alcoholism, drug abuse, or other DSM conditions except depression” (Anderson and Mitchell 1992:563). Thus, the relationship between education and depression reported should be interpreted with caution, particularly in regard to veteran status.

research, it is grouped with “anxiety disorders” which significantly decreased likelihood of educational attainment at all levels.

Military Service, Civilian Employment, and Skills Transfer

Veterans (or anyone) diagnosed with post-traumatic stress disorder face challenges in employment settings. The current *DSM-IV-TR* articulates this as a necessity for diagnosis in Criterion F, as the traumatic event must lead to “clinically significant distress or impairment in social, occupational, or other important areas of functioning” (American Psychiatric Association 2000). The requirement of work disruption is thus critical to the assessment of PTSD, although it is possible that an individual is not of working age nor previously employed at the time of diagnosis (thus relying upon social and other aspects of normal functioning for judgment). Recent work in psychology, in fact, argues for a focus on the “psychology of PTSD in the workplace.”³⁶ However, I will begin with a general review of the relationship between military service and subsequent civilian employment before turning to issues specific to post-traumatic stress disorder correlates.

Returning to the Teachman and Call (1996) review of socioeconomic outcomes related to prior military service, a number of important issues arise. First, military service can act as a marker of credential in the hiring process. Because of military entrance requirements and occupational hierarchies in the bureaucratic structure of service, “employers can infer that veterans possess a level of physical and mental capacity that exceeds the national average. In addition, successful completion of a tour of duty in the military indicates a willingness to accept orders, along with the maturity and motivation to see that those orders are fulfilled” (Teachman and Call 1996:6). Imbedded in this are issues of human capital,

³⁶ See Penk, Drebing, and Schutt (2002) for a more complete articulation of this view.

skills transfer, personal qualities, and general employer preferences. If we consider that neither the United States nor Canada rigidly require high school completion prior to service³⁷, the assumption in the above view must be that human capital is gained throughout service.

Post-military occupational status appears to be explained fully by either educational attainment or enlistment selectivity criteria according to the review of Vietnam era veterans presented by Teachman and Call (1996). However, among more recent all-volunteer force American veterans of the 1980s, Angrist (1998) argues that contextual changes in the labor market also enhanced the socioeconomic standing of those who served. “[V]eterans in the early eighties ... were insulated from a major cyclical downturn while in the military. The proximate cause for any longer-term positive effects on earnings would seem to be an increase in employment rates, explained perhaps by continued military service and the hiring preferences enjoyed by veterans in the public sector (Angrist 1998:282). Thus, there is quite clearly an interplay between individual characteristics and broader socioeconomic context in determining the occupational success of veterans who seek civilian employment. This directly reflects upon the broader literature which argues for attention to conflict theatre and/or time period of service as distinguishing factors among military service members.

As evidence, Rosenheck and Fontana (1994) report that “[s]ome have suggested that both the guerilla nature of combat in Vietnam and the public controversy surrounding the war resulted in a degree of social alienation and psychological stress among Vietnam veterans

³⁷ The unified Canadian Forces mandates formal education through grade 10, whereas the United States military branches vary slightly in enlistment standards based upon education. In some cases, such as the Air Force, very few enlistees hold a GED as opposed to a high school diploma; but other branches, such as the Army, are more lax in their requirements, in part because of the development of the Army Preparatory School that aides those who wish to enlist complete high school equivalency. (See the Army’s official website for details: <http://www.army.mil/article/12070/>)

that was relatively uncommon among veterans of World War II” (331). Such risk for distress also exists beyond direct combat situations, as the level of humanitarian crimes witnessed by peacekeeping troops of the Canadian Forces (particularly in Rwanda and Bosnia) were emotionally devastating in their own right. Much of the work by Elder and colleagues in this area directly applies a life course perspective to provide attention to the age, period, and cohort effects mentioned previously. Therefore, differences between employment outcomes of veterans from unique conflict theatres are gaining clarity. However, the gap that my research fills is a more direct assessment of the importance of PTSD as a barrier to socioeconomic well-being, and the literature is generally sparse in this area.

A question of critical importance is the likelihood of skills transfer from military service to civilian employment. Mangum and Ball (1989) discuss two ways in which transferability is measured in the literature: through direct assessment of skills (comparing military to civilian occupational codes, or through questions regarding the extent of military skill usage in civilian employment settings); and, indirect measures of the impact of military service on employment outcomes (unemployment, wages, etc.). In their review of the latter, Mangum and Ball (1989) report that time in service is critical, because “the civilian labor market rewards civilian work experience more than military experience (that is, the longer the period of military service beyond 20 years, the lower the average level of post-service earnings)” (233). Thus, although it is optimistic to assume time in the military can lead to development of valuable employment skills, this is by no means guaranteed.

Specifically, a study by Anderson and Mitchell (1992) that compared American veterans to nonveterans using data from the National Institutes of Mental Health (NIMH) Epidemiological Catchment Area (ECA) program, illustrates the risk-reward of military

service: "... some military skills are highly transferable to the civilian labor market and other components of military training are specific to the military and are less useful in the civilian labor market. However, most of the evidence indicates that military service adversely affected the earnings of workers" (555). These findings are consistent with a study of German men in which length of military service negatively correlated with occupational attainment, even when controls for educational attainment were included (Maas and Settersten 1999). Seemingly, skill transferability can become more complicated if overly specialized within long service careers.³⁸

The important caveat of the skills transferability dynamic that remained previously untested is that of employer-provided training. Specifically, when Mangum and Ball (1989) investigated AVF American veterans, they found comparable rates of skill transfer (45-50%) between civilian and military vocational training. "Furthermore, within two years of their return to civilian life, those who received military training had higher earnings than those who received training in the civilian sector – a finding that contrasts with the results of Vietnam veterans, but agrees with the results found for veterans of World War II and the Korean Conflict" (Mangum and Ball 1989:230). Marshall (2005) elaborates that the results may imply that technological advancements in military operations likely enhance the direct skill transfer (or perception among veterans of this correlation in work tasks) for specific occupations, but that general traits developed in service (leadership, discipline, time management) account for success beyond occupations similar in task to military positions.

³⁸ Maas and Settersten (1999) also note that military veterans experienced more occupational instability in terms of both upward and downward mobility; but, the data were insufficient to clarify the role of age versus cohort effects in regard to occupational stability. The authors present two hypotheses for consideration: (1) citing Pavalko and Elder (1993), age effects such that older men experience increased disruption due to well-established lives; and, (2) a mix of age and cohort effects such that younger veterans faced a tight labor market during wartime without any pre-service occupational history to fall back upon (Maas and Settersten 1999:226). Marshall (2005) also notes that this research is specific to post-war Germany, which faced a crumbling economy that likely influence the labor market for nonveterans as well.

Of particular importance to my research is a study presented by Gade, Lakhani, and Kimmel (1991) that argues veterans' subjective impression of military service experiences significantly influence post-service employment. In a test of Browning's (1973) "bridging hypothesis," Gade et al. (1991) found that among single-term U.S. Army veterans, "those who said that the Army experience had been valuable to them also reported having had a significantly easier time finding a civilian job, were more likely to be employed full time, had higher personal incomes, and were more likely to have a high postservice education level" (263). These results must be viewed with caution in two regards, however. First, there is a "downside" to this appreciation of military service such that those who found military service highly rewarding, but were no longer active, found their post-service standard of living less satisfactory while also reporting lower income. Secondly, in regard to PTSD, this appears to be a critical dimension for focused reintegration programs. Arguably, the experience of a traumatic event that leads to post-traumatic stress disorder is a potential source of overarching dissatisfaction with military service. Whether this is causal to, or in association with the proven lower socioeconomic attainment of veterans of PTSD is not established, but it is certainly an intriguing avenue for future consideration.

The conclusions to be drawn from the overall literature on the role of military service and civilian employment do suggest an important background in which to assess post-traumatic stress disorder. There remains some inconsistency in the literature, largely based upon sample variance and cohort effects of unique service venues, but a few trends are clearly established. Angrist (1990) uses American Social Security earnings data from the Continuous Work History Sample (CWHs) to test a "loss-of-experience" hypothesis which would assume those who serve in the military lose "market value" when competing for

civilian jobs due to limited experience that cannot be directly substituted from military service, and this premise is supported. “Experience-earnings profiles estimated using Social Security data imply that white [Vietnam-era] veterans suffered an earnings reduction equivalent to the loss of two years civilian labor market experience” (Angrist 1990:331). But, MacLean and Elder (2007) cite research by Bryant and Wilhite (1990) in their argument that: “...AVF veterans improve their socioeconomic attainment if they make use of their military training in the civilian labor market. One month of military training counteracts the negative effect of five months spent in the armed forces” (187).

The work of Rosenheck and Fontana (1994) also attempted to clearly isolate the contribution of PTSD to work challenges, through the presentation of a comparative study of American veterans in a general sample (1987 Survey of Veterans (SOV-III)) and a VA clinical sample of veterans assessed within the PTSD Clinical Teams (PCT, 1988) program. The latter sample included questions targeted at assessment of military experience, symptom profile, service utilization and social adjustment post-military in relation to PTSD. In comparison to the general veteran sample used (SOV-III), Rosenheck and Fontana (1994) report that the clinical (PCT) respondents are “more likely to be older, more frequently divorced or unmarried, less likely to be employed, and far less well-off financially than their counterparts in the general population (343). Savoca and Rosenheck (2000) more recently established that among a nationally-representative survey of U.S. Vietnam veterans, “a veteran with a lifetime diagnosis of PTSD was 8.5 percentage points less likely to be currently working” (199); and, veteran respondents who met the criteria for PTSD but were employed “earned, on average, \$2.38 less per hour (\$3.61 in 1999 U.S. dollars)” (199).

The Compensated Work Therapy (CWT) program of the U.S. Department of Veterans Affairs aims to address issues of job placement through rehabilitation, workshops, and transitional employment and residence.³⁹ Citing Losardo (1999), Penk, Drebing, and Schutt (2002) explain that “[t]he stated goal of CWT is to help maximize participant levels of functioning while preparing as many veterans as possible for a successful return to competitive employment” (235). Essentially, the data collected from participants in the CWT program are focused on assessing difficulties at work in addition to stated goals for entering the program. The review presented by Penk et al. (2002) shows that 23% (n=150) participants reported a diagnosis of PTSD, and were similar to other participants based upon demographic factors; yet, significant differences affect work among those with PTSD as compared to others. “The participants with PTSD are almost twice as likely as other participants with psychiatric problems to blame their current unemployment on those psychiatric problems. Similarly, they are much more likely to state that the reason they are entering rehabilitation is to work in a setting that enables them to cope with their psychiatric problems” (Penk et al. 2002: 235). The authors conclude that the increased difficulty navigating treatment and employment may explain why veterans with PTSD show a slight advantage in subsequent competitive employment, primarily due to willingness to participate in more challenging vocational rehabilitation programs (Penk et al. 2002).⁴⁰

Yet, as stated previously with regard to educational attainment, broader social contexts are also important to consider. For instance, Marshall (2005) notes a “secular move

³⁹ For a full profile of the Compensated Work Therapy program, please visit the U.S. Department of Veterans Affairs website: <http://www.cwt.va.gov/index.asp>

⁴⁰ Of note, participants in Compensated Work Therapy diagnosed with PTSD experience better employment outcomes without spending greater amounts of time in vocational programs (Penk et al. 2002).

to earlier retirement in the years following World War II”⁴¹ is reflective of later retirement age during earlier conflicts in the Rosenheck and Fontana (1994) comparative study of American veterans from World War II, Korea, and Vietnam theaters (19). Furthermore, among the different combat groups in the Rosenheck and Fontana (1994) study, “Korean veterans fall in between Vietnam and World War II veterans on [mental health service use, suicide attempt, antisocial activity, divorce, social isolation, and work instability] measures, but it is not clear whether this reflects their intermediate age or the fact that the war in which they fought was in some ways like World War II, and in other ways like Vietnam” (351). Thus, the distinction between cohort and age effects is again in need of further clarification.

Military Service, Civilian Earnings, and Financial Security

The literature that addresses education and employment patterns among veterans is predictive of patterns in earnings and financial security. The influence of cohort and period effects are also clearly at play. However, all things considered, it is perhaps most accurate to conclude that military service has generally negative effects on financial standing, in general. Angrist (1990) contends that military experience is a less than adequate alternative civilian labor force experience, supported by evidence that Vietnam-era U.S. veterans earn approximately 15% less over their lifetime when compared to non-veterans. Anderson and Mitchell (1992) characterize military service to be little more than a “partial substitute” for skill development (555).

Settersten (2006) characterizes this as an age effect, because on average, “men experience rapid growth in earnings during their 30s, and time out [from the civilian labor force] during this period significantly lowers lifetime earnings. Older men who returned to

⁴¹ Marshall (2005) highlights that more contemporary research indicates a “slight reversal of that [earlier retirement] trend only since about 1985” (19). See also Marshall and Taylor (2005).

different lines of work after the war were doubly disadvantaged” (22). Others focus on selectivity as a primary cause for veteran and nonveteran differential earnings. Specifically, Angrist (1998) found that white veterans experience reduced lifetime earnings, whereas service increased (although moderately) civilian income rates for nonwhites. Beyond selection into service, it could also be argued that nonwhites disproportionately benefit from the use of military service as a resume-builder, in part because of stereotypical assumptions about the opportunities of nonwhites outside of service. Although speculative, military experience may be considered a “proving ground” for nonwhites in a manner that differs from whites.

Fitzgerald (2006) looks at financial accumulation in a broader sense, as general wealth over time. There are limitations to this study (in regard to the sample stratification), but non-finances “associated with serving time in the military (e.g., the use of base housing, limited military retirement savings plans, and high rates of job-related migration) could contribute to differences in wealth accumulation between preretirement-age veterans and nonmilitary individuals” (Fitzgerald 2006:56-57). In regard to benefits, the “military offers its most junior enlisted personnel higher pay and better benefits than are available to civilian age-matched peers” (Kelty et al. 2010: 195). Again, the structure of military service is protective to members; but, the disruption of a lifetime career in the military – for any number of reasons – seemingly ends, if not counteracts productive gains. This is certainly a viable agenda for future research, but for now, I focus on PTSD as the source of transition out of the military.

A successful military career can be highly fulfilling. Dowd (2001) describes what he believes to be the unheralded value of service when seen through to completion. “The

military profession develops and nurtures in its members a set of characteristics that are not only advantageous for mission-related purposes but which also are highly conducive to a satisfying and productive retirement;” and, these traits include personal growth (confidence, efficacy, competency) that is manifest in a continuing desire to learn new skills and attempt new projects” (235). However, “[i]f people feel that they can make more money working as civilians and receive better benefits, chances are that they will not serve long terms in the military” (Fitzgerald 2006: 58). Therefore, there is no definitive conclusion, because one cannot predict what “could have been” if service continued. Suffice it to say, however, if a person commits to the service, with the expectation of a lifetime career, disruption can be life-altering. The perception of overall military experience could also be overshadowed by the more immediate reason for service termination. Post-traumatic stress disorder is both a risk factor to military career disruption and the ability to subsequently achieve in the civilian labor force.

PTSD AND SOCIAL WELL-BEING

Although not a primary focus of my research, both the growth of family-friendly policies and the importance of social support in the management of illness merit discussion of the implications of PTSD for social functioning. A number of studies consider how the risks of service (in regard to physical and mental health status) coincide with the loss of the formal, secure, and systematic structure of the military, as an institution. Furthermore, social support can certainly work to enhance the well-being and civilian productivity of veterans. “Social support does not emerge as a panacea for all occupational stress and health problems. But it is clear that the right kind of support from the right kind of people can be of significant value in reducing occupational stress, improving health, and buffering the impact of stress on

health” (House 1981:59). The key to successful transitioning, according to recent media, is “healthy reintegration,” which requires family and community supports beyond a veteran’s personal resiliency.

Arguably, encouraging veterans to be productive civilians is beneficial to both themselves and society. Yet, understanding the reality of PTSD in the lives of those affected can fundamentally alter the perception of “healthy” activity among veterans. For instance, Clipp and Elder (1996) reference a study by Lipton and Schaffer (1986) that suggests veterans with delayed onset of PTSD “worked more than one job to induce sleep through exhaustion, in this way they were able to ward off symptoms until increasing age forced a slower pace” (29). Such a finding is also reflective of cohort effects, as veterans of World War II faced better economic opportunities than those of the Vietnam era. For instance, MacLean and Elder (2007) surmise that whereas some “troubled” youth were able to use military service as a positive turning point, others, particularly those of the Vietnam era show higher rates of drug and alcohol abuse, as well as criminal activity. Although selection or period effects may explain such a trend, MacLean and Elder (2007) feel a “third possible explanation is that the economy of the immediate post-World War II era offered more opportunities to returning veterans than did the economic circumstances of later eras,” thereby altering the risk for antisocial behaviors among veterans (179-180).

The role of family, or marriage in particular, holds great potential for all veterans, but particularly those leaving service with health challenges. The literature on the impacts of war on family stability is growing, but a number of studies specifically consider PTSD as a correlate. Again, combat exposure (the primary risk factor for PTSD) “as much as tripled the odds of divorce. It increased a cluster of symptoms that threatened the degree to which

veterans could be nurturing and emotionally available or stable in family roles” (Settersten 2001:6). PTSD in veterans is also linked to greater risk of partner violence (MacLean and Elder 2007). It is also highly possible that general family estrangement could exacerbate symptoms of PTSD among veterans. In essence, both the service member and his or her family become victims of post-traumatic stress disorder, whether a marriage dissolves or not (Pavalko and Elder 1990; Settersten 2001).

There is certainly potential for strengthened relationships upon return from service. In reviewing research from a number of veteran cohorts, Settersten (2006) concludes that “[c]ouples who remained intact in the immediate postwar years were actually less prone to divorce or separation, reminiscent of the adage ‘That which does not kill us makes us stronger’” (17). Furthermore, supportive communities can alleviate symptoms of post-service mental distress. MacLean and Elder (2007) found that “negative perceptions of homecoming such as fights with and insults from relatives and veterans’ own shame or anger were found to be strongly associated with PTSD” (182). Support is also beneficial if military-based. Evidence is building for group therapy among veterans, and Clipp and Elder (1996) found mental health gains when veterans are reunited with their military units post-service.⁴²

Overall, social support can be positive in many ways: military reunion, marital strength, homecoming services, etc. However, the relationship between positive reports of social support and abatement of PTSD symptoms is complex as “the direction of causality may run from health to social support, rather than the reverse. Veterans who returned with fewer symptoms of PTSD may have elicited greater social support” (MacLean and Elder 2007:182). In either case, social relationships may be critical to help-seeking behaviors for veterans with mental health problems. Fikretoglu et al. (2009) considered Canadian veteran

⁴² Military connections after release from service is a hallmark feature of Canada’s OSISS program as well.

health care utilization for mental disorders. Sadly, “less than four out of ten accessed available mental health services in the past year” (363). This is becoming a consistent pattern, as Hoge et al. (2004) documented similar trends among U.S. veterans, with less than half of service members of recent (Iraq and Afghanistan) conflicts seeking care for diagnosable mental conditions.

Of further concern is that military service itself may increase the likelihood that service members delay, if not avoid treatment altogether. Fikretoglu et al. (2006) argue that the relationship between longer military service and increased use of health services may be partially a result of “fear that it may prematurely end their military career, especially before completing the number of years of military service required for pension or retirement eligibility” (365). To clarify, if pensions are linked to length of service, service members may delay seeking care until entitlements are established. Furthermore, higher rank was also associated with decreased care utilization (even in the presence of known conditions), which is speculated to be an effect of stigma. Those of higher rank “hold more publicly scrutinized positions within the military and as a result may feel both a greater fear of stigma and a greater sense of obligation to overcome their mental health symptoms on their own,” although this is not a direct research focus of the study (Fikretoglu et al. 2006:365).

IMPLICATIONS FOR RESEARCH

Overall, the relationship between military service and socioeconomic well-being is complicated at best, due to changes in social, economic, and military contexts. Whether the “type” of warfare changes or the meaning of “service” varies, soldiers of different eras all face the risk of combat exposure or witness of humanitarian crimes. But, they are also

exposed to unique opportunities (education, occupational skills transfer, health care advancements) and vulnerabilities (divorce rates, public acceptance of war efforts) by era. Citing Elder, Modell, and Parke (1993), Smith et al. (2010) recognize the cost-benefit of military service in regard to socioeconomic achievement. Namely, service members risk time away from “on-the-job training and seniority, networking opportunities, and earnings” that occur in the civilian labor force in exchange for military service as a bridge for those who may face limited opportunities prior to enlisting (Smith et al. 2010:3).

This contemporary study offers some clarity to the role of military service as a potential socioeconomic life course “event” or “transition.” Smith et al. (2010) analyzed cross-sectional data across a 50 year period to depict the educational, occupational, and income attainment of World War II veterans. Although health measures were not included in the analysis (as mediators), the bridging hypothesis (military service translating into civilian advancement opportunities) is supported, with diminishing advantage over time. Seemingly, although military service *does* enhance the socioeconomic status of veterans (at least in the case of American World War II servicemen), the gap between veteran and nonveteran groups diminishes as time elapses, or over Census period.

However, this research must be interpreted with caution, as health status is not included, yet has been shown to be a critical mediating factor in the post-military experiences of service members.⁴³ But, more to the point of the role of military service as a “springboard” for socioeconomic well-being, it appears that programmatic efforts should focus on the initial transition period (from military service to civilian labor market participation or retirement).

⁴³ Smith, et.al. (2010) do reference a selection effect in regard to median age differences between veterans and nonveterans in the study: “One could argue that morbidity rates for nonveterans might be higher than those of their veteran peers, excluding combat deaths, because only healthy members of the population are conscripted” (8).

The benefits of veteran status may expedite class mobility (particularly among those who enter with lower levels of pre-service economic means) for younger age groups.⁴⁴ Yet, service does not appear to indicate a different overall path for service members – in time, nonveteran peers “catch up” in regard to education, income, and occupational status.

Overall, the effects of military service are subject to historical variation: public perceptions of military action, the array of job training and educational programs available to veterans and non-veterans, shifts in military and civilian pay scales, and general labor market trends that shape both enlistment patterns and post-service opportunities. Military service is seemingly *protective* if those enlisted can remain active. Such positive benefits are linked to clearly defined occupational structures, standardized and transparent policies, formal hierarchy, and strong social support networks (Kelty et al. 2010:198-9). Some of these risk factors and consequences of service are out of the control of veterans or the military, in general. But, other aspects are certainly relevant for future attention, as I discuss in Chapter 5 as a conclusion to my statistical analyses.

Similarly, the role of post-traumatic stress disorder within patterns of military service or broader socioeconomic well-being may be beyond medical treatment alone. “A clinical approach to the problem of stress, ... tends to focus primarily on the individual, since it is with individual cases that clinicians must ultimately deal We need to recognize, however, that the source of, and solution to, many problems of stress and health ... sometimes must be, social or structural rather than individual” (House 1981:xiii). The ability of the military (or pre-service screenings) to predict vulnerability with any high degree of accuracy is unlikely.

⁴⁴ This research specifically considers race (black versus white) differences in regard to socioeconomic outcomes, and although service in World War II proved largely advantageous to black veterans relative to nonveteran peers, military participation did not prove to be a “great equalizer” between racial groups. (Smith, et.al, 2010)

Combat exposure or general trauma is hard to predict, as are individual reactions to such experiences. So, programs and policies – both future-sighted and family-focused – can alleviate some of the problems, if not concerns, that become barriers to economic well-being. Ideally, such efforts benefit all service members, regardless of PTSD status. But, the next two chapters investigate areas of need for clients of Veterans Affairs Canada, in ways that intentionally concentrate on post-traumatic stress disorder and financial well-being.

Chapter 3

PTSD IN MILITARY TRANSITION TO CIVILIAN LIFE

“The creation of new beginnings, a time-out or moratorium to rethink and rework one’s future, and a broader range of skills, interpersonal contacts, and cultural experiences do not exhaust important features of military experience for new entrants, but in combination they define a bridge to greater life opportunity and a potential turning point, especially for disadvantaged youth. As a total institution that presses from all angles, the military is uniquely suited to recasting life trajectories” (Elder and Shanahan 2006:698-699).

INTRODUCTION

This chapter seeks to understand the health and socioeconomic profile of Canadian veterans, with a specific focus on post-traumatic stress disorder as related to economic well-being. Specifically, the analysis focuses on the importance of mental health disability, attempting to understand post-traumatic stress disorder as a unique barrier for VAC client transition from military to civilian life. I describe the impact PTSD exerts on VAC client population, in general, and then turn to the relationship between PTSD and socioeconomic well-being. Who, among VAC clients are likely to be challenged by PTSD; and, how does this diagnosis relate to current economic standing and perceptions of future well-being? Finally, how is this relationship affected by important demographic factors (such as education and marital status), military career indicators, and overall health status?

Although causation is not addressed due to the cross-sectional data used, it is possible to better understand if PTSD relates to socioeconomic status (or disadvantage, in particular),

and how this might be coupled with vulnerabilities beyond the single diagnosis of PTSD (such as social hardships, comorbid health burdens, or employment weaknesses). Although future studies are needed to better address the causal processes in regard to post-traumatic stress, military-to-civilian transitions, and subsequent economic attainment, this descriptive presentation certainly informs Veterans Affairs Canada about client risk and needs, both in a health care setting and in relation to home and employment well-being.

Because the life course perspective guides my understanding of military service and financial outcomes, I limit the sample to target one cohort of Canadian veterans. Although the relationship between post-traumatic stress disorder and economic standing is of importance for all VAC clients, limiting the sample by age (to 20-50 rather than 20-65) better informs policy about effective programs to aid the transition of Canadian Forces veterans to civilian life. In particular, veterans of a more narrow age range more likely to face similar opportunities in the labor force compared to VAC clients who were either in the service for significantly longer periods or released years (if not decades) prior. Furthermore, older veterans may transition from the CF into retirement, thus altering the implications of findings as related to work reintegration programs.

LITERATURE REVIEW AND CONCEPTUAL MODEL

The shift from draft selection (during World War II and Vietnam) to an all-volunteer service in contemporary United States comes with lifelong implications (Kelty et al. 2010). No longer is military service a period of “deferment” of adult responsibilities, but rather, it has become “an experience through which youth become adults” in regard to both human capital gains and personal growth, such as responsibility, maturity, and confidence (Kelty et

al. 2010:182). Understandably, this “developmental” role of military service is increasingly important in both the United States and Canada, particularly because many soldiers return from deployment in need of civilian employment, but also with physical or mental health disabilities. The military as a lifelong career is more difficult to navigate in the current global context of political unrest, and service is often one of a number of organizational affiliations a person holds in regard to occupation.

As discussed in Chapter 1, PTSD is not formally considered an “operational stress injury” in the U.S. as it is in Canada. Until July, 2010, the U.S. depended upon a rigid classification of veteran benefits eligibility through a clear diagnosis of PTSD (based upon clinical evaluation) and evidence that the veteran “actually experienced a stressor related to hostile military activity” (VA 2009). However, the United States overtly recognizes post-traumatic stress disorder as an important and growing concern for the military, Veterans Affairs (health care delivery), and for the economy. If soldiers return from deployment unable to fully participate in the labor force, especially in times of economic downturn, the loss is felt well beyond veterans themselves.⁴⁵ Thus, the role of clinicians in the United States VA is shifting to one more similar to that of their Canadian counterparts; veterans are less scrutinized as to the “proof” of military trauma. Instead, the clinician must (more simply) illustrate that “the Veteran’s symptoms are related to the claimed stressor” (VA 2010). Regardless, the social meaning of a PTSD diagnosis may differ (in regard to “injury” in Canada, and “illness” in the United States), which impacts compensation and benefits eligibility; but, the criteria for diagnosis are identical in both countries. The *DSM-IV-TR* criteria for clinical significance are uniform (American Psychological Association 2000).

⁴⁵ To reiterate, Veterans Affairs Canada considers the veteran *and* his or her family to be the client for all services. Although the United States is developing more family-friendly policies and programs, the focus remains generally on veterans themselves.

In a recent epidemiological study of PTSD prevalence in the general Canadian population, Van Ameringen et al. (2008) estimate the lifetime prevalence rate to be 9.2% and the current (1-month) rate to be 2.4% of Canadians. This frequency of post-traumatic stress disorder within the general population is comparable to, if not higher than the United States⁴⁶, which is somewhat surprising considering the relatively smaller military force, lower rates of violent crimes, and less frequent natural disasters⁴⁷ (Van Ameringen et al. 2008:175). Furthermore, prevalence of PTSD is important in the specific economic climate into which a person is released from service. Health care service availability is only one aspect of veteran needs; labor market trends as well as support networks (such as family) are critical to better understand how to help military service members transition into civilian lives.

Clipp and Elder (1996) highlight the importance of social perspectives in order to tap experiences of veterans with mental illness beyond the biomedical context. “In contrast to a psychiatric perspective, which begins with pathology in the individual and then traces backward to etiology, a life course approach begins with an event such as war and traces forward the proximal and distal effects of that event or social change in lives” (Clipp and

⁴⁶ Recent lifetime prevalence estimate of post-traumatic stress disorder in the general population of the United States based upon the National Comorbidity Study is 6.8% (Kessler et.al. 2005).

⁴⁷ Assessing the community level epidemiology of traumatic event experiences is complicated by a number of important factors, including potential for natural disaster, war, population density and demographic characteristics, economic climate, and many other concerns. However, in the Van Ameringen et al. (2008) study, 76% of respondents reported at least one traumatic event experience significant enough to precipitate PTSD, with the leading risk exposures being (in order of frequency): unexpected death of a loved one, witnessing death or severe injury to someone, and sexual assault. Comparable epidemiological studies in the United States vary in methodology related to the events included in respondent inquiries and population of interest, however, the most common traumatic experiences in the onset of post-traumatic stress are generally identified as sexual assault, physical assault, motor vehicle crash, and tragic death – with 61% of the population experiencing at least one such event over a lifetime (Norris 1992). Rates and type of trauma exposure vary by gender, age, and race / ethnicity (Roberts et al. 2010; Kessler et al. 1995); but of importance to this study is the recognition that combat (or military) trauma is confined to a generally small percentage of the population in general, as well as among those diagnosed with PTSD, in both Canada and the United States.

Elder 1996:20). Although longitudinal data are not available to address the causal relationship between veterans (and their military service), mental illness, and subsequent socioeconomic experiences, the VAC Canadian Forces Survey (1999) does provide opportunity for a rich description of the client population. Coupled with the discussion of broader economic climate presented in Chapter 1, this discussion will help to elucidate the importance of client profiles at a point in time as informative to policies and service provision for PTSD as well as vocational and educational needs.

The experience of a serious mental health condition such as PTSD is debilitating; but, in the situation of pending adjustment from military to civilian life (often entailing employment in younger cohorts) is unsettling, at best. In addition to the likelihood of comorbidity with other service-related health problems, instability is not uncommon for veterans. Marshall and Matteo (2004) discussed medical release from the Canadian Forces as a marker of vulnerability among clients; and, Marshall et al. (2005) linked this to socioeconomic outcomes in particular. This discussion centers on mental illness as a risk factor for occupational career outside of the military, understanding that a condition such as PTSD may, in fact, be the impetus for the release from employment with the Canadian Forces at the outset. “Changing jobs, voluntarily or involuntarily, is an increasingly prevalent feature of the modern world of work Even where workers do not formally change their jobs, the nature of their jobs may change radically around them as a result of technological and organizational change” (House 1981:63). So, occupational instability is not uncommon in contemporary labor markets; and, for individuals with health challenges, the situation can be even more precarious to lifetime socioeconomic well-being.

Furthermore, with post-traumatic stress disorder, a chronic condition with a broad spectrum of symptoms and relatively novel treatment options (at least in regard to evidence-based medicine), disruption of employment careers is likely. For instance, in a review of work stress literature, House (1981) noted that “[t]he important stressor in [a male industrial worker] study turned out not to be loss of a job per se, but how long the worker was unemployed” (64). Clients of Veterans Affairs Canada are largely attuned to their own health challenges, which can lead to negative perceptions that, in effect, anticipate career disruption (if not unemployment specifically). This, in turn, may create increased stress for those already vulnerable. The unique importance of PTSD as a risk factor for employment is well-documented, as Vietnam veterans diagnosed with PTSD were “8.5 percentage points less likely to be currently working;” and, among those who were employed “veterans with PTSD earned, on average \$2.38 less per hour (\$3.61 in 1999 U.S. dollars)” (Sacova and Rosenheck 2000:199). Furthermore, Anderson (1992) and Kessler (1997), among others, note specifically that PTSD is often comorbid with depression⁴⁸, which carries its own risk for employment trajectories.

The conceptual model I employ seeks to clarify adult transitions specific to the military experience of PTSD. Mental health is related to economic well-being, so my attention to PTSD among Canadian veterans who seek to reintegrate into civilian occupational roles clarifies this general trend in an important way. Policy and programs can certainly aid veterans seeking to develop civilian careers, ultimately enhancing economic

⁴⁸ Contemporary research also focuses on the comorbid relationship between musculoskeletal pain, depression, and PTSD. In particular, Grieger et al. (2006) note that soldiers with serious combat injuries (physical problems) were significantly at risk for later development of PTSD and depression. In their explanation, the authors suggest that the late onset of mental health problems may be due to a number of factors, including high levels of medical/social support at the immediate time of injury, persistence of “physical problems, anticipation of returning home and starting work, concern over health care, and pending disability determinations” (Grieger et al. 2006:1781-1782).

well-being. But this is an efficient process only if the impact of mental illness is clarified in a way that refines the focus of such efforts. Therefore, in the context of both resource limitations and a spectrum of health challenges among VAC clients, isolating the unique relationship between PTSD and economic status is a critical starting point.

DATA AND MEASURES

I use the VAC Canadian Forces Survey (1999), which is a representative sample of clients of Veterans Affairs Canada under the age of 65.⁴⁹ The sample is limited to men (women were <5% of the original sample), which is of particular relevance when considering both military service and economic outcomes. Analyses specific to women are recognized as warranted, but not the focus of my research. Data are weighted to account for stratification variables in the sampling process (province of residence, type of service, and age).

Because PTSD is the primary variable of interest, my final sample includes 1473 male clients aged 20-65, as I chose to exclude respondents who did not fully complete the PCL-M instrument.⁵⁰ As mentioned, the focus of this discussion lends attention to potential age or cohort effects. Therefore, I limit portions of the analysis to clients aged 20-50 (n=589) with complete PCL-M information, when sample size allows for meaningful assessment. In these instances, I proceed with the assumption that post-military life is likely influenced by a common civilian employment context among the aged 20-50 cohort, whereas those of older ages (51-65), face different choices (such as retirement) at the time of their release.⁵¹

⁴⁹ The CFS is discussed in greater detail in Chapter 1.

⁵⁰ A discussion of missing data analysis is included in the “Methods” section to follow.

⁵¹ As noted in Chapter 1, the relevance of PCL-M scores is also important in relation to time since release. In particular, clients who are long-standing members of VAC and still present clinical PTSD symptomatology

Post-traumatic stress disorder is assessed using the PCL-M, a 17-item self-report rating scale for assessing the potential of PTSD.⁵² Consistent with Weathers and colleagues (1993), I classified respondents as “probable PTSD” dependent upon *DSM* criteria rather than cut-off scores of the total sum of item scores. (See Table 3.1 for a comparison of these methods as they relate to prevalence of probable PTSD in this sample.) Therefore, respondents who reported “quite a bit” or “extreme” symptom experience on at least one Criterion B item (re-experiencing), three Criterion C items (avoidance/numbing), and two Criterion D items (hyperarousal) are considered cases of probable PTSD. Clients who meet the requisite for any two of these above criteria are elsewhere classified as cases of subthreshold (or “subsyndromal”) PTSD;⁵³ but for the purposes of the current discussion, attention is first and foremost on clients with probable PTSD. All other respondents (including those with subsyndromal PTSD) are characterized as not having PTSD.

I use a number of dependent variables to represent socioeconomic status, or economic well-being. Total household income from the previous year is the general measure of current economic standing.⁵⁴ The data were collected as ordinal categories: “10,000 or Less,” to

likely reflect cases of persistent PTSD. Because it is not known from the survey whether or not a client received treatment specifically for PTSD, lengthy experience with illness is best considered reflective of outliers, and excluded from my analysis.

⁵² For a detailed discussion of the PCL-M, please see Weathers et al. (1993). A copy of the PCL-M is included in Appendix A. Overall reliability of the instrument is well documented, with internal consistency ranging from .94 to .97 (Cronbach’s alpha) and test-retest reliability as .96 (2-3 days) and .88 (one week). See Blanchard et al. (1996), Weathers et al. (1993), and Ruggiero et al. (2003) for a detailed discussion.

⁵³ For a detailed discussion of the importance of subsyndromal PTSD (specific to VAC clients), please refer to Asmundson (2000) and Yarvis, Bordnick, and Spivey (2008).

⁵⁴ For all analyses, I cross-checked the findings using the measure for annual individual income as well. Generally, there were no differences of significant importance in using household income. Although some might argue that individual income would provide a more accurate depiction of the influence of PTSD on economic standing, I consider other markers of individual status (i.e. employment, education, etc.) as compensatory. Furthermore, in accordance with VAC’s recognition of the family as client, the household measure of income seems more appropriate for this research.

“80,000 or More” in \$10,000 increments. The measures for perceived economic stability include three questions concerning the ability of respondent income and investments to satisfy economic needs. In terms of present concerns, respondents were asked: “Do your current income and investments satisfy your needs?” Responses were dichotomized into categories of: “Yes” (N=275) and “No / Don’t Know” (N=286/23).

Concern about future economic well-being was separated into two questions. The first addresses how well a client’s current economic standing will accommodate future necessities: “Do you anticipate your current income and investments will continue to satisfy your needs?” Again, responses were dichotomized into categories of: “Yes” (N=188) and “No / Don’t Know” (N=289/105). The second dependent variable assessing economic stability anticipates future resources in regard to perceived needs: “Looking to your future, how well do you think your income and investments will continue to satisfy your needs?” The response scale was dichotomized into categories of: “Very Well / Adequately” (N=24/201) and “Not Very Well / Totally Inadequately / Don’t Know” (N=199/59/101). For each measure of perceived economic stability, I included a response of “Don’t Know” with the negative answer choices because I believe this indicates a general lack of confidence about financial security.

I also include “military release readiness” as an outcome of interest for post-military well-being, as it relates to both economic resources and human capital development. If clients are no longer serving in the Canadian Forces (N=406), two separate questions were asked. The first variable captures timing of active preparation for retirement or release: “How long before leaving the Canadian Forces did you begin to actively prepare for your retirement or release?” Responses were categorical: “Did not prepare” (N=144), “1-2 Years” (N=93),

“3-5 Years” (N=34), “6-10 Years” (N=13), and “More than 10 Years” (N=9). In some analyses, I recoded this to a dependent variable of “Did not prepare” versus “Made preparations.” The second measure of military release readiness is a variable that asks clients to check any number of preparations that were made for eventual retirement: (1) change in work pattern, (2) develop physical activities, (3) develop other leisure activities or hobbies, (4) gather retirement information, (5) contribute to an RRSP⁵⁵, (6) build up savings, (7) make other investments (including properties), (8) pay off or avoid debts, and /or (9) make major purchases. These items were considered separately in relation to PTSD status. In some instances, this variable was dichotomized into categories of “No Adaptations” (N=42) versus “At Least One Adaptation” (N=252) to reflect a baseline vulnerability of VAC clients in regard to readiness for release.

One additional question on the survey concerns military release readiness, but responses are limited to clients who self-identified as being released from the Canadian Forces earlier than planned (N=247). Specifically clients were asked: “Between the date you received official notification of your impending release from the Canadian Force to the official date of your release ... (a) did you feel you had sufficient time to prepare yourself from transition to civilian life, including locating a civilian job if that was your wish?; and (b) did you take any training/education courses in preparation for a second career?” Because of small counts, these questions are considered only in the descriptive analyses; however, I include general descriptive assessment of these variables because it is likely that clients who suffer physical or mental health problems as a result of their military service are among those

⁵⁵ An RRSP is a Registered Retirement Savings Plan administered through the Canada Revenue Agency: “An RRSP is a retirement plan that we register and that you or your spouse or common-law partner establish and contribute to. Deductible RRSP contributions can be used to reduce your tax. Any income you earn in the RRSP is usually exempt from tax for the time the funds remain in the plan. However, you generally have to pay tax when you cash in, make withdrawals, or receive payments from the plan” (Canada Revenue Agency 2010).

released prior to expectations. Therefore, this is a target group of interest for VAC, because veterans in this circumstance represent those in need of veteran services.

Independent variables are grouped into a series of blocks to test nested models in the regressions: demographics, health status, markers of military service, current employment status, and work stability indicators. (The final two blocks, current employment status and work stability are also treated as outcomes in the descriptive analyses.) In the regression analyses, blocks are entered according to hypothesized effects on the relationship between PTSD status and the outcome variable. For instance, general demographic characteristics, such as age and measures of human capital, are known to have profound predictive ability on employment and economic outcomes, so they are included first to determine if PTSD status maintains a significant relationship with the dependent variables. I then input health measures to understand if comorbid conditions or overall health status subsume the association between post-traumatic stress disorder and economic measures.

This is also important in considering the particular sample – current clients of Veterans Affairs Canada – most of whom face health challenges to some degree. For instance, in previous analyses of these data, it was found that a disproportionate percentage of VAC clients express symptoms consistent with a diagnosis of either major depression or PTSD with a high prevalence of comorbidity with these conditions (Marshall, et al. 2005). Finally, I include military career variables followed by employment status measures. Chronologically, military service precedes employment status and work stability in this sample, since civilian labor force experience is only measured *after* release from the Canadian Forces. Due to collinearity, measures of current employment status and work stability are considered separately in the models.

General demographic characteristics include respondent age (range 20 – 50 when appropriate; 20 - 65 elsewhere); current level of educational attainment, coded as: “Secondary Diploma Not Completed,” “Completed Secondary Diploma,” “Some or Completed Post-Secondary Diploma,” and “Completed Bachelor’s or Post-Graduate Diploma”; and, marital status, coded as “Single/Never Married,” “Married / Common-law,” “Divorced / Separated,” or “Widowed.” In other research, marital status was coded into a dummy variable of “married” versus “not married;” however, being divorced / separated is an important classification in its own right. Therefore, I use the more expansive category scheme where data variability allows.

Health status measures include the global health indicator: “Compared to other people your age, would you say that in general your health is: excellent, good, fair, or poor?” The response categories were collapsed to create a dichotomous indicator: “Excellent / Good” or “Fair / Poor.” The second general health measure is a scale of current level of pain or discomfort, which was created from two survey questions: (1) “In general, do you have any trouble with pain or discomfort?” and (2) “How would you describe your usual intensity of pain or discomfort?” Respondents who reported no pain or discomfort in the first question were coded as “None;” respondents who indicated that they did experience pain or discomfort in the first question were coded as their response to the second question: “Mild,” “Moderate,” or “Severe.” I collapsed the categories of “None” and “Mild” because I assume that each of these responses indicate minimal levels of disability in regard to ability to manage employment settings.

The survey also included a scale of activities of daily living (ADL)⁵⁶ marking difficulty as “none,” “some,” “great deal,” or “unable to do” for the following: standing for long periods; lifting or carrying approximately 10 pounds; going up or down stairs; walking; stooping, bending, or kneeling; using hands or fingers; and reaching with one or both arms. The total score for ADL items is calculated by summing each activity: 0 “no difficulty,” 1 “some or great deal of difficulty,” or 2 “unable” to do activity. Total ADL limitation ranges from 0 (no difficulty with any activity) to 14 (unable to do all activities). Instrumental activities of daily living (IADL) are assessed using the question, “Do you need help?” with the following activities: meal preparation; grocery shopping; everyday housework; light household chores; yard work; personal finances like banking or paying bills; and transportation.⁵⁷ The total score for IADL items is calculated by summing each activity: 0 “no” help needed; or 1 “yes” help needed for each activity. Total ADL limitation ranges from 0 (no help needed for any activity) to 7 (help needed with all activities).⁵⁸

Because the focus of the analysis is the investigation of VAC client success in employment after service, hearing loss is also considered as a dichotomous (yes/no) control.

⁵⁶ This scale is not identical to the more commonly used Katz et al. (1970) Index of Independence in Activities of Daily Living; however, it does provide a general indication of independent functioning for VAC clients, particularly in regard to mobility.

⁵⁷ This scale is not identical to the more commonly used Lawton and Brody (1969) Instrumental Activities of Daily Living Scale; however, data available for VAC clients includes many of the focus points of this instrument. Although Lawton and Brody (1969) differentiated between male and female activities (males are not assessed in regard to meal preparation, housekeeping, and laundering), the CF survey asked the list of activities for all respondents, regardless of gender. The scoring method (1 = “need help” versus 0 = “does not need help” sum across all activities) parallels the IADL scale construction. Therefore, it is assumed that with the exception of telephone use and medication regimen maintenance, which are contained in the original IADL scale, rates of independence for instrumental activities is generally reflective of VAC client ability to complete the activities included in the CF survey.

⁵⁸ The CF survey also includes a series of questions about mobility “in and around [client] home.” Specifically, the questions ask about walking, navigating stairs, and moving between rooms. Evaluation of these questions proved similar in nature to the ADL scale in analyses, therefore were excluded to avoid issues with collinearity. The ADL scale is generally accepted as a reliable measure of functional mobility, and although the CF survey includes an amended version of this instrument, I feel it is best to proceed with the more comprehensive scale as opposed to the individual questions related to mobility. (Data available upon request.)

Respondents were asked: “Do you have any difficulty hearing what is said in a group conversation with at least three other people?” Although respondents were also asked about whether or not they utilized a hearing aid, I feel it is more important to know if clients experience hearing loss, regardless of the use of such equipment, as an indicator of risk for employment. Finally, medical release status, coded as “Yes” or “No” is used as a measure of current health because it is linked to formal consequences of health status among Veterans Affairs Canada, thus tapping into a slightly different dimension of health.⁵⁹

A number of diagnosed health conditions are included in the survey (in addition to PTSD). Respondents completed the CES-D, a 20-item scale for epidemiological assessment of depression. Consistent with Radloff (1977), clients with a total score of 16 or higher (range 0-60) are classified as potential cases of depression. I imputed data for all clients who were missing one or two items on the scale (N=171; 9% of full dataset). Respondents were given the average value of their responses on the scale for missing items. The relationship between depression and PTSD is considered in Table 2, and due to the high comorbidity of these conditions, collinearity diagnostics were performed within all regression analyses. In all cases, VIF values and eigenvalues are within acceptable ranges to indicate that multicollinearity is not a factor influencing coefficient estimates.

Other health conditions were included in the question: “Do you have any of the following long-term conditions that have been **diagnosed by** a health professional?”

Descriptives are presented for relevant conditions; which I originally collapsed into

⁵⁹ The Research Directorate for VAC highlights the fact that “medical release” does “mean released by CF physician(s); the term describes CF members who are released because they have a physical and/or mental health condition which led to release by the CF” (MacLean, Thompspon, and Poirier 2010). This clarifies that the CF did not seek out those with “medical release” status, and that the termination of service may have been initiated by the client himself.

“Serious” (Alzheimer’s disease/other dementia; arthritis / rheumatism; back problems excluding arthritis; cancer; cataracts; diabetes; emphysema; epilepsy; heart disease; high blood pressure; migraine headaches; stroke; and urinary incontinence) and “Non-serious” (acne requiring prescription medication; allergies / food; allergies / other; asthma; glaucoma; sinusitis; and stomach or intestinal ulcers) diagnoses.⁶⁰ The category “any other diagnoses” is not used in this analysis because it is likely that respondents included PTSD and/or depression in their decision to respond affirmatively, thus creating collinearity concerns. This dichotomous classification (experience any “serious” condition or not) is limited in that the severity of diagnosed conditions is not addressed, thus risk to economic status is presumed based upon diagnostic label itself. This is a variable used only for descriptive purposes, rather than as a definitive assessment of health status. In regression analyses, only conditions with acceptable variability in the cohort sample are considered: arthritis / rheumatism (37.7%); back pain (56.6%); high blood pressure (13.4%); migraine headaches (18.3%); stomach ulcers (10.4%); and sinusitis (10.7%).

Indicators of military career include element of service (land only, sea only, air only, or multiple elements), age on date of release (range 17-50, among cohort sample; range 17-63 among all respondents); and, number of overseas deployments (range 0-5). Clients may have experienced more than 5 deployments; however, the survey limits respondents to 5 descriptions of deployment venues. Highest rank achieved (either at time of release, or

⁶⁰ A number of classification schemes are used in the literature to differentiate between “serious” and “non-serious” conditions as well, with inconsistency in approach. In a previous analysis for VAC, Marshall et al. (2000) employed an amended classification by Musick (1996) by adding Alzheimer’s / dementia to high blood pressure, heart disease, cancer, stroke, and diabetes. However, because the focus of the current analyses pertains to economic outcomes, it would appear necessary to consider any condition that might potentially interfere with employment as serious. I thus chose to group “readily treatable” conditions as non-serious. A true scale of serious conditions should also include depression, but this diagnosis is used separately, because of the known comorbidity with PTSD specifically.

current if still serving) is included, and is coded as: “Non-Commissioned Officer or Below,” “Junior or Subordinate Officer,” or “General, Flag, or Senior Officer.”

A measure of current employment status was created from a combination of three questions in the original survey. Respondents were initially asked if they were currently serving in the Canadian Forces (N=152 in Regular Forces; N=31 in Reserve Forces). Clients who are released were asked if they are “currently working for pay” (N=258) or if they were “actively looking for a job” (N=46). Respondents currently working for pay were coded as “In the Civilian Labor Force” and those actively looking for a job were coded as “Unemployed.” Finally, a respondent neither currently employed nor unemployed was coded as “Inactive” (N=71). There are potential limits to this measure due to uncertainty about whether “actively looking for a job” means unemployment or dissatisfaction with a current occupation. Furthermore, “inactive” may mean retired or some other arrangement, such as in school full-time or in an institutionalized health care setting. However, I assume this is not a serious misrepresentation of the data in regard to the classification of VAC clients as gainfully employed or in some other (non)employment situation.

In terms of work stability, respondents who are no longer serving in the Canadian Forces were asked if they have ever worked for pay, and if so, the “number of different jobs or positions held since leaving the Canadian Forces” (range 0-20). Furthermore, an indicator of unemployment since discharge from the Canadian Forces is included: “At any time since leaving the Canadian Forces, were you out of work and looking for a job in the paid labour force?” This is a dichotomous variable; and, respondents were also asked about the total number of periods of unemployment experienced since discharge (range 0-11). The manner in which the employment and work stability questions are asked limits the sample size, at

times in ways which disallow for inclusion in analyses. I indicate sample size as appropriate and discuss any data concerns as they arise in the “Results” section.

METHODS

The analysis for this chapter is twofold: (1) present a descriptive portrait of VAC clients, in particular, as related to probable PTSD status; and, (2) explore the relationship of probable PTSD to economic variables while controlling for multiple factors using ordinary least squares and logistic regression models. I used nested models to better understand how the relationship between PTSD status and economic indicators change in the following order:

demographic variables, military service indicators, health status, and finally, additional markers of economic standing. I used SPSS (Version 18) for all assessments in this chapter.

As noted above, the “cohort” sample included 589 male VAC clients, aged 50 or younger; whereas the broader sample (ages 20-65) includes 1473 male VAC clients. For all analyses, SPSS defaults to listwise deletion. Thus, the descriptive presentation includes larger samples than the regressions due to the number of included variables. All tables note sample size.

Missing data analysis indicates an important caveat to my ability to generalize the findings. Briefly, in previous reports prepared for Veterans Affairs Canada, Marshall et al. (2002) focused on medical release status; and, clients of higher income status (beginning at \$30,000 and above) are less likely to have responded to the medical release question.

Therefore, the results of previous work on the relationship between medical release and socioeconomic outcomes cautions against *overestimating* the challenges to post-military well-being, as those of higher status may have been disproportionately excluded from the sample due to listwise deletion. In this chapter, the opposite is true. Missing value analysis

indicates that those of lowest income (\$29,999 or below) and/or lowest educational attainment (incomplete secondary education) are *less* likely to have completed the PCL-M. Therefore, as PTSD is the current focus, failure to complete the PCL-M items led to removal from the sample. It is noted that this procedure disproportionately removes clients of low socioeconomic attainment, so the results may *underestimate* challenges faced by clients with probable PTSD.⁶¹ Furthermore, respondents with higher CES-D scores (probable depression) were *less* likely to complete PCL-M, which also suggests some of the most at-risk clients are not included in the analyses. However, it is unclear whether or not those clients are at risk of probable PTSD in particular.

RESULTS

As mentioned in Chapter 1, Veterans Affairs Canada is specifically committed to addressing the prevalence of post-traumatic stress disorder among clients. Table 3.1 presents prevalence of PTSD in VAC clients, both in regard to the full sample of the Canadian Forces survey, and among the targeted cohort sample of those ages 20-50. Although I focus on the *DSM* criteria for probable diagnosis, I present alternative (more conservative) estimates from the literature as well. Table 3.1 outlines the manner of determination for probable diagnosis; but in general, whereas the *DSM* requires meeting a standard of symptom experience in each of the three clusters of symptoms (re-experiencing, avoidance/numbing, and hyperarousal), both Weathers et al. (1993) and Blanchard et al. (1996) recommend an overall threshold (cutoff) for symptoms.

⁶¹ Missing value also identified clients who are separated or divorced at the time of the survey to be more likely to have incomplete PCL-M data than those who are married / common law, widowed, or never married. Although not addressed specifically in this chapter, this is important as family support and targeted policies are recognized as extremely valuable to PTSD treatment and recovery. This furthers the logic that any challenges faced by VAC clients in this study may be underestimated due to missing data patterns.

Using the *DSM* classification, 11.5% of VAC clients are probable for PTSD; and, when limiting the focus to address cohort differences (ages 20-50), the rate of PTSD increases to 18.6%. This is not surprising, considering that older clients may well have experienced, and successfully resolved (treated) post-traumatic stress such that at time of survey, symptoms were not indicative of current PTSD probability. Furthermore, even if I chose to utilize the more conservative estimates of PTSD likelihood from PCL-M scores (cutoff methods), over 10% of the cohort sample are probable for PTSD diagnosis.

Table 3.1. VAC Client Prevalence of PTSD Using Different Diagnostic Standards

	Cutoff Weathers et al. (1993)	Cutoff Blanchard et al. (1996)	DSM Criteria: <i>Probable</i> PTSD	DSM Criteria: <i>Subsyndromal</i> PTSD
Full VAC Client Sample^a	7.3 %	10.6 %	11.5 %	9.6 %
VAC Clients Age ≤ 50^a	12.7 %	17.4 %	18.6 %	12.7 %
<i>Method</i>	PCL-M Total Score ≥ 50	PCL-M Total Score ≥ 44	1 of 5 Re-experiencing 3 of 7 Avoidance 2 of 5 Hyperarousal Probable: Meet 3 Criteria Subsyndromal: Meet 2 Criteria	

^aFor the full client sample, N=1473; For clients ages 20-50, N =589.

Considering that clients in the CF survey may have been released years, if not decades, prior to the survey, even cautious estimates indicate attention to post-traumatic stress remain

warranted well beyond time of release.⁶² Relatively high rates of subsyndromal PTSD (meeting 2 of the 3 *DSM* criteria for diagnosis) further support focus on the condition. Whether clients who are subsyndromal for PTSD are managing military trauma in subclinical ways, or they are experiencing some recovery due to awareness and treatment for post-traumatic stress, this is an additional marker of morbidity that impacts need for services.⁶³

PTSD and Demographics

The cohort sampling (focusing on clients ages 20-50) highlights that those with probable PTSD are, on average, younger. Although this is not a significant relationship within the cohort (Table 3.2), it is reflected in the full sample of VAC clients. (See Table A3-1 in the Appendix.) Other important relationships between client demographics and PTSD status are highlighted in Table 3.2. Of particular importance is marital status; those with probable PTSD are significantly more likely to be divorced or separated than their non-PTSD counterparts (18.3% versus 7.7%; $p < .001$). This finding reflects the importance of creating family-focused policies for veterans. Although cross-sectional data do not allow for assessment of the timing of marital dissolution relative to PTSD onset (or even military service more generally), it is worth noting that clients with probable PTSD may well be in home situations with less support (if not greater tension) than their peers who are not at current risk of PTSD.

⁶² Clients with probable PTSD are released, on average, 2 years more recently than those without PTSD, based upon mean comparison. Number of years since release is 4.07 on average for those with probable PTSD and 6.81 for those without PCL-M scores for diagnosis (F-statistic: 14.949***).

⁶³ Subsyndromal PTSD is not a specific focus of this chapter; however, symptom clusters are addressed in Chapter 4 to follow, which will touch upon the need to be cautious in limiting clinical or more general support services to clients who meet the full composite diagnosis of PTSD.

Table 3.2. Demographic and Military Characteristics of Cohort Sample by PTSD Status

	No PTSD	PTSD	Total ^a		No PTSD	PTSD	Total ^a
<i>Demographics</i>				<i>Military Career</i>			
Mean Age	40.12	38.99	39.91	Elements of Service			
<i>sd</i>	(6.41)	(6.57)	(6.45)	<i>Land Only</i>	56.6	67.9	58.7
<i>Range</i>	20-50	20-50	20-50	<i>Sea Only</i>	5.8	5.5	5.8
				<i>Air Only</i>	11.9	8.3	11.2
Marital Status			***	<i>Multiple Elements</i>	25.7	18.3	24.3
<i>Single, Never Married</i>	9.4	7.3	9.0				
<i>Married / Common Law</i>	82.8	72.5	81.0	Overseas Deployment			
<i>Divorced / Separated</i>	7.7	18.3	9.7	<i>Never</i>	30.5	14.0	27.4***
<i>Widowed</i>	0.0	1.8	0.3	<i>At Least Once</i>	69.5S	86.0	72.6
Education							
<i>Secondary Incomplete</i>	14.8	16.2	15				
<i>Secondary Complete</i>	30.2	27.6	29.7	Mean # of Overseas	1.27	1.60	1.33**
<i>Post-Secondary (Some)</i>	25.1	27.6	25.5	Deployments <i>sd</i>	(1.18)	(1.12)	(1.18)
<i>Post-Secondary Degree</i>	30.0	29.6	29.7	<i>Range</i>	0 - 5	0 - 5	0 - 5
Individual Income			**				
<i>Less Than \$10,000</i>	1.2	4.5	1.8				
<i>\$10,000 - \$19,999</i>	3.9	13.5	5.6	Highest Rank			
<i>\$20,000 - \$29,999</i>	11.4	15.7	12.2	<i>General/Flag/Senior</i>	7.4	8.3	7.6
<i>\$30,000 - \$39,999</i>	20.8	13.5	19.5	<i>Junior/Subordinate</i>	8.2	6.5	7.9
<i>\$40,000 - \$49,999</i>	19.1	19.1	19.1	<i>Non-Comissioned Officer</i>	84.4	85.2	84.5
<i>\$50,000 - \$59,999</i>	15.5	16.9	15.7				
<i>\$60,000 - \$69,999</i>	10.4	5.6	9.6	Mean Years in	16.43	15.34	16.22
<i>\$70,000 - \$79,999</i>	7.3	4.5	6.8	Regular Forces <i>sd</i>	(7.23)	(7.00)	(7.19)
<i>\$80,000 or More</i>	10.4	6.7	9.8	<i>Range</i>	0 - 33	1 - 30	0 - 33
<i>Military Career</i>							
Age on Date of	34.60	35.34	34.76				
Release <i>sd</i>	(7.84)	(7.45)	(7.75)	Mean Years in	5.59	5.10	5.49
<i>Range</i>	17-50	18-48	17-50	Reserve Forces <i>sd</i>	(5.58)	(5.46)	(5.54)
				<i>Range</i>	0 - 25	0 - 26	0 - 26
Number of Years	34.60	35.34	34.76				
Since Release <i>sd</i>	(7.84)	(7.45)	(7.75)	Medical Release Status			*
<i>Range</i>	17-50	18-48	17-50	<i>No</i>	53.2	39.5	50.3
				<i>Yes</i>	46.8	60.5	49.7

^a Level of significance: F-statistic for continuous variables (means) and Pearson χ^2 for categorical variables (%). *** p<.001; ** p<.01; * p<.05

Current levels of human capital are also important to consider. Educational attainment (at time of survey) does reflect a pattern of lower attainment among clients with probable PTSD, but this is not statistically significant in either the full sample, or the limited age sample. Whether this is due to attainment prior to military service or the ability to continue education upon release is not able to be established here; but, Table 3.4 indicates that completion of further education or training after release from the Canadian Forces does not vary significantly among those who are likely affected by PTSD and those who are not.

PTSD and Military Service

Military service is related to PTSD in meaningful ways. As discussed in Chapter 2, combat exposure is consistently shown to be the greatest risk factor for development of PTSD. Table 3.2 shows this is also the case for VAC clients, as measured indirectly through deployment. Specifically, although 72.6% of VAC clients have been deployed at least once, 86.0% ($p < .001$) of those with probable PTSD have served in at least one overseas conflict theatre. Furthermore, this relationship is direct, such that more deployments further increase likelihood of PTSD. The average number of deployments for those without PTSD is 1.27 (of a possible 5) compared to 1.60 for those with probable PTSD ($p < .001$).

Two indicators of military service that are often linked to onset of post-traumatic stress disorder are service element and time in the forces. In regard to service type, VAC clients are more likely to have probable PTSD if military experience is limited to the land element, but this is not a significant relationship. Although the pattern is significant in the full sample, this may be due to changes in the general nature of Canadian Forces activity within an increasingly hostile global context. In particular, those in the younger cohort (ages

20-50) are more likely to serve in multiple elements than previous service members. Clients with probable PTSD also serve less time in the Canadian Forces, however this is not a significant finding either. Perhaps of greater importance is that those with probable PTSD are significantly more likely to be released for medical reasons (60.5% versus 46.8%; $p < .001$). So, in the event that PTSD onset occurs during service, the Canadian Forces is able to recognize health challenges and remove service members from active duty. Arguably, PTSD is only one of many health conditions that affect Canadian Forces members as a result of service, but this will be discussed further in relation to comorbidity trends.

One finding that is perhaps initially unexpected is the lack of significant association between military rank and probable PTSD. Although statistically relevant in the full sample (those of higher rank are significantly less likely to have PTSD), the pattern is not established in the younger clients (ages 20-50). I would expect that this is likely due to the fact that a higher proportion of clients in the younger sample are still serving in the Canadian Forces (39.3%) as opposed to the older cohort (ages 51-65, 5.3%). However, it may also be the case that even within the 20-50 age group, different conflict theatre deployment patterns exist in ways that influence military service.⁶⁴ Achieving rank is not only dependent upon time serving, but it is also likely that a selection effect exists such that clients who might be on a path to higher rank are released (or choose to leave) due to health problems.

PTSD and Health Comorbidities

Current health status beyond probable post-traumatic stress disorder is a likely influence on socioeconomic well-being. Table 3.3 includes a profile of comorbid conditions

⁶⁴ Chapter 1 considers how the experience of overseas deployment varies greatly by conflict theatre, particularly among peacekeeping duties for Canadian Forces.

among VAC clients. Although a number of conditions beyond those are presented, I focus on those that are prevalent in at least 5% of the sample, or those with significant associations to probable PTSD. It is not surprising that those who meet the *DSM* standard for PTSD are also significantly more likely to report their health as “fair” or “poor” in comparison to others their age (83.5% versus 47.9%; $p < .001$). Two general trends clarify this relationship. Clients who are likely to have PTSD also report higher levels of functional limitations and comorbid conditions.

In regard to functional ability, 34.9% of those with probable PTSD report experiencing “severe” pain on a daily basis, as opposed to 15.2% of those without probable PTSD ($p < .001$). This association is also reflected in both ADL and IADL measures. Both summary scores for general and instrumental activities of daily living are significantly higher among those with probable PTSD, suggesting that level of functional independence is compromised among these clients in both physical and mental health capacities. Two other “performance” measures of health are included: diagnosis of cataracts and self-perception of hearing loss. In both cases, clients with probable PTSD are significantly more likely to be disadvantaged. Difficult hearing in a group is more common (58.9% versus 46.3%, $p < .05$) among those with PTSD, which may be related to combat exposure, although the survey does not allow for assessment of this argument. It should also be noted that cataracts, although more common among clients with probable PTSD (3.8% versus 0.6%, $p < .01$), are a relatively rare occurrence in VAC clients (approximately 1% of total cohort sample). So, this limitation should be interpreted with caution.

The other aspect of compromised health among those with probable PTSD is comorbidity rates. Clearly, the literature consistently establishes depression (measured here

Table 3.3. Health Status Characteristics of Cohort Sample by PTSD Status

	General Health Status				Diagnosed (Serious) Health Problems ^{a,c}		
	No PTSD	PTSD	Total ^b		No PTSD	PTSD	Total ^b
Global Health Status			***	Arthritis / Rheumatism			*
Good/Excellent	52.1	16.5	45.5	No	65.8	53.3	63.6
Fair/Poor	47.9	83.5	54.5	Yes	34.2	46.7	36.4
Current Level of Pain			***	Back Problems			***
Mild/None	33.0	14.2	29.5	No	48.5	31.1	45.4
Moderate	51.8	50.9	51.7	Yes	51.5	68.9	54.6
Severe	15.2	34.9	18.8	Cataracts			**
				No	99.4	96.2	98.8
Functional Health Status				Yes	0.6	3.8	1.2
ADL Score	3.22	4.65	3.49***	High Blood Pressure			*
sd	(2.23)	(2.46)	(2.34)	No	89.9	83.0	88.6
Range	0 - 12	0 - 10	0 - 12	Yes	10.1	17.0	11.4
IADL Score	1.09	2.57	1.37***	Migraine Headaches			***
sd	(1.77)	(2.37)	(1.98)	No	84.7	65.1	81.1
Range	0 - 7	0 - 7	0 - 7	Yes	15.3	34.9	18.9
Hearing Difficulty			*	Stroke			**
No	53.7	41.1	51.4	No	99.2	95.3	98.5
Yes	46.3	58.9	48.6	Yes	0.8	4.7	1.5
				Urinary Incontinence			**
				No	97.7	90.7	96.4
Comorbid Mental Health Problems				Yes	2.3	9.3	3.6
Depression (CES-D)			***	Any Serious Diagnosis			**
No	75.2	12.8	63.7	No	27.1	14.7	24.8
Yes	24.8	87.2	36.3	Yes	72.9	85.3	75.2

^a Level of significance: F-statistic for continuous variables (means) and Pearson χ^2 for categorical variables (%). *** p<.001; ** p<.01; * p<.05

^b A number of health conditions are present in less than 5% of the sample. I present information for those conditions that reflect significant associations with PTSD only. Nonsignificant relationships: Alzheimer's / dementia (0.7% total); cancer (2.4% total); diabetes (2.4% total); heart disease (4.5% total); emphysema (3.9% total); and epilepsy (1.4% total).

^c A number of "nonserious" diagnoses are also significantly more common among VAC clients with PTSD: food allergies***; stomach / intestinal ulcers***; and acne***. (Data available upon request.)

by the CES-D) as a likely diagnosis in connection with PTSD. This is true of VAC clients as well. Although 36.3% of the total cohort sample (ages 20-50) meets the CES-D standard for depression, 87.2% of those with probable PTSD are in range of epidemiological catchment for depression ($p < .001$). As mentioned previously, missing data analyses indicate that those who scored high on the CES-D were significantly more likely to have incomplete data for the PCL-M. As mentioned previously, missing data analyses indicate that those who scored high on the CES-D were significantly more likely to have incomplete data for the PCL-M. It may also be that the imputation procedure for CES-D scores altered the assessment of likelihood for depression. Regardless, it is clear that, at least from a non-clinical standpoint, depression and PTSD are highly correlated among VAC clients.

Other conditions are also related to probable PTSD, some of which reflect upon the previously discussed functional limitations of clients. In particular, those with PTSD are significantly more likely to have been diagnosed with arthritis / rheumatism (46.7% versus 34.2%, $p < .05$) and back problems that are not a result of arthritis (68.9% versus 51.5%, $p < .001$). Again, if deployment is considered, it is not surprising that those more likely to serve in conflict theatres are at greater risk for physical health concerns in addition to PTSD. Another condition of interest is migraine headaches, which are also more likely to be diagnosed among those with probable PTSD (34.9% versus 15.3%, $p < .001$). Recent attention to the relationship between traumatic brain injuries (not addressed in this study) indicate that head trauma and PTSD are important conditions to assess in regard to similarities and unique symptomatology. Migraines might relate to this discussion more generally, particularly if onset occurs *after* military service (which is not assessed in the Canadian Forces survey). Regardless, many of the conditions that are related to probable PTSD carry their own

potential limitations to successful economic attainment. Understanding such relationships is where I turn my focus below.

PTSD and Economic Standing

Limiting the sample to an age group which, in theory, experiences a similar economic climate helps to better understand the role of PTSD in relation to economic standing. Table 3.4 illustrates that measures of *current* economic standing and perceived financial stability are significantly associated with PCL-M scores. Specifically, the employment status of VAC clients (ages 20-50) at time of survey is significantly related to probable PTSD. Clients who are likely to have PTSD are less likely to be active in the Canadian Forces, which is not surprising considering the treatment of PTSD as an operational stress injury which qualifies for medical release. However, the interesting trend is that those who have probable PTSD are *just as likely* to be employed in the civilian labor force (44.0% versus 46.7%). Seemingly, the comparison (based upon PTSD status) is most meaningful in regard to a higher likelihood of unemployment (11.0% versus 7.6%, $p < .01$) or “inactivity” (22.0% versus 10.7%, $p < .01$) among VAC clients with probable PTSD. The fact that clients may “retire” from the Canadian Forces into what is categorized as “inactivity” perhaps due to poor health must not overshadow the fact that clients who are affected by PTSD not only work in the civilian labor force at similar rates to those without PTSD, but they also face higher rates of unemployment.

This relationship (PTSD status and current employment) is not significant in the full sample of VAC clients. However, a number of the employment stability measures are statistically relevant when considered among the more complete age range of VAC clients.

Table 3.4. Post-Release Characteristics of Cohort Sample by PTSD Status

	No PTSD	PTSD	Total ^a		No PTSD	PTSD	Total ^a
<i>Employment Characteristics</i>				<i>Income / Investments Satisfaction</i>			
Current Employment Status			**	Satisfaction with Current Level			***
<i>Employed in Canadian Forces</i>	34.9	23.0	32.8	<i>Yes</i>	52.8	21.1	53.1
<i>Employed in Civilian Labour Force</i>	46.7	44.0	46.2	<i>No / Don't Know</i>	47.2	78.9	46.9
<i>Unemployed but Looking for Job</i>	7.6	11.0	8.2	Current Level Will Continue to Satisfy Needs			***
<i>Inactive</i>	10.7	22.0	12.7	<i>Yes</i>	37.8	9.2	32.3
Ever Worked for Pay^b				<i>No/Don't Know</i>	62.4	90.8	67.7
<i>Yes</i>	86.8	85.0	86.4	Level of Future Satisfaction of Needs			***
<i>No</i>	13.2	15.0	13.6	<i>Very Well / Adequate</i>	55.9	14.5	46.9
Mean # of Different Jobs^b	3.47	3.61	3.50	<i>Not Very Well / Totally Inadequately / Don't Know</i>	44.1	85.5	53.1
<i>sd</i>	(2.99)	(3.10)	(3.01)				
<i>Range</i>	1 - 20	1 - 15	1 - 20				
Ever Unemployed^{b,d}				<i>Release Readiness / Preparation</i>			
<i>Yes</i>	56.4	65.0	58.2	Sufficient Time to Prepare for Release^c			***
<i>No</i>	43.6	35.0	41.8	<i>No</i>	57.1	85.9	64.6
Mean # Unemployed Periods^{b,d}	1.78	2.26	1.88	<i>Yes</i>	42.9	14.1	35.4
<i>sd</i>	(2.07)	(2.37)	(2.14)				
<i>Range</i>	0 - 11	0 - 11	0 - 11	Timing of Release Preparations^c			*
Further Education or Training Completed^b				<i>Did Not Prepare</i>	45.9	63.3	49.5
<i>Yes</i>	49.8	50.0	49.9	<i>At Least 1 Year Prior</i>	54.1	36.7	50.5
<i>No</i>	50.2	50.0	50.1				

^a Level of significance: F-statistic for continuous variables (means) and Pearson χ^2 for categorical variables (%). *** p<.001; ** p<.01; * p<.05

^b Question only asked of VAC clients who are no longer serving in the Canadian Forces.

^c Question only asked of VAC clients who are no longer serving in the Canadian Forces, and were released earlier than planned.

^d Relationship is significant in the full sample. See Appendix A, Table A3-2.

(See the Appendix A, Table A3-2.) It remains consistent that all VAC clients, regardless of PTSD status, are highly likely to seek civilian employment at some point after release (~87%). Clients also hold an average of ~3.5 jobs, irrespective of PTSD probability. However, whether or not a client is ever unemployed, and number of episodes of unemployment is disproportionately likely among those with probable PTSD. This relationship is significant in the full sample of clients, but not among the younger cohort, which may be more reflective of time since release than of age. Meaning, it may be that high PCL-M scores at a given time reflect a trajectory of disrupted work which is not captured in those newly released from the Canadian Forces. This is speculative, however, as PTSD diagnosis and treatment history are not established by the survey data.

Client income is, however, disproportionately affected by PTSD (see Table 3.2).⁶⁵ Specifically, clients with probable PTSD are significantly more likely to be in the lowest income brackets (<\$39,999), and this is established in light of missing data that suggest the most financially disadvantaged VAC clients were more likely to skip PCL-M items. It is possible that those clients were, in fact, less likely to be classified as probable PTSD candidates, but this is unlikely considering the well-established relationship between PTSD and reduced socioeconomic status in the literature. Furthermore, the fact that *household* income is depressed again indicates the importance of family (or more specifically, marital status) for VAC clients. Whether increased likelihood of divorce/separation reduces household income, or that clients with PTSD who are married require care from spouses that affects their earning power is not established here. But, both situations are possible and solid justifications for policies that address families, rather than clients alone.

⁶⁵ Although I focus on household income, the pattern of significant disadvantage for financial status holds when considering individual income as well.

Financial security is a critical aspect of economic well-being, and all three measures of perceived satisfaction with income and investments (current or potential) are indicative of disadvantage for those with probable PTSD. Client satisfaction with current level of income and investments is significantly lower for those of younger ages with probable PTSD (21.1% versus 52.8%, $p < .001$). This is not surprising considering that those with probable PTSD have, on average, lower household incomes. However, of concern is that despite the aforementioned similarity of continued education and current attainment among all clients, those with PTSD are also significantly less optimistic about their enduring financial status. VAC clients with probable PTSD are less optimistic (9.2% versus 37.8%, $p < .001$) to feel current income and investments will continue to meet needs. This pattern continues into perceptions of future ability, as those with PTSD are significantly more likely to report an inability to meet forthcoming financial needs (85.5% versus 44.1%, $p < .001$).

Arguably, one explanation for such a lack of confidence in the ability of VAC clients to provide for their financial needs is the general lack of preparation for release from the Canadian Forces. A significantly greater proportion of clients with probable PTSD felt they did not have sufficient time to prepare for release as opposed to those without PTSD (85.9% versus 57.1%, $p < .001$). Important to note is that all clients who were asked this question felt they were released sooner than they had planned, so PTSD presents a risk among a group who are all disadvantaged in regard to military release readiness. Table 3.5 further illustrates this point. Although on average, clients ages 20-50 are less likely to have prepared for retirement from the Canadian Forces than their older counterparts, those with PTSD are even less organized. (See Appendix, Table A3-3, for list of retirement preparations among the full sample of VAC clients.)

Among a list of typical retirement planning activities, clients with probable PTSD were significantly less likely to contribute to an RRSP, build savings, make investments, or develop leisure activities. Although this may, in part, reflect the importance of age, the use of a narrower cohort (as opposed to the full sample) uncovers that even among those of similar life stage, more specifically, transition out of the military. It is likely that this is in part due to the unanticipated nature of health decline (or medical release) as a result of service in the Canadian Forces.

Table 3.5. List of Preparations for Retirement Made Prior to Release by PTSD Status^a
(Age ≤ 50)

	No PTSD	PTSD	Total		No PTSD	PTSD	Total
Contribute to RRSP *	57.7% 177	44.4% 36	54.9% 213		Gather Information	44.6% 135	35.8% 29 42.7% 563
Build Up Savings **	33.8% 102	16.3% 13	30.1% 115		Change Work Pattern	18.0% 55	17.5% 14 17.9% 69
Make ** Investments (i.e. Property)	33.9% 104	18.5% 15	30.7% 119		Develop Physical Activities	14.1% 43	9.9% 8 13.2% 51
Pay Off or Avoid Debt	56.5% 173	47.5% 38	54.7% 211		Develop ** Leisure Activities	30.2% 92	13.8% 11 26.8% 103
Make Major Purchase	26.2% 80	21.0% 17	25.1% 97		Made Any Adaptations (Summary)	87.2% 204	78.3% 47 85.4% 251

^a Cells include percentage followed by n. **Note:** Significance is based upon chi-square value for each individual adaptation and F-statistic for average number of adaptations. *** p<.001; ** p<.01; * p<.05

PTSD, General Health, and Economic Outcomes

In order to better understand the relationship between PTSD and economic standing, it is important to return to the issue of comorbidity, or general health status, in regard to post-

traumatic stress. Table 3.6 includes a number of important health correlates to PTSD (as established in Table 3.3) and their respective association with financial security measures.⁶⁶ Regardless of time focus (current, continued, or future) of financial security, clients who report their health to be “fair” or “poor” are significantly less likely to be optimistic about their ability to meet needs. The reliability of global assessments of health are well documented in the literature in regard to mortality and overall well-being (including socioeconomic status), thus such a strong relationship between low self-perceptions of health and financial security suggest that VAC clients, in general, are in need of resources for financial planning and development in addition to health care services.

Current level of pain, or more specifically, the regular experience of “severe” pain, is another critical marker of financial insecurity. Over three-quarters of VAC clients of a similar cohort (ages 20-50) feel unprepared to meet their financial needs currently, or into the future. This relationship is supported by increased financial insecurity for clients who have lower levels of functional independence, as measured by ADL and IADL scales. In all cases, clients who report limitations to functional mobility and activity are significantly less likely to feel satisfied with income and investments in both a present and future sense. Also note that as with general measures of functional ability, specific diagnoses of arthritis / rheumatism and back problems predict insecurity with finances. But, in the case of these conditions, as well as migraine headaches, VAC clients are more pessimistic about their present economic standing than they are looking into the future. This may indicate a belief

⁶⁶ Associations for the variables listed in Table 6 were also investigated in regard to income (both household and individual). All variables maintain the same levels of significance, in the same directional manner with one exception. In the analysis of *individual* income, both epilepsy and stroke were significantly ($p < .05$) related to lower attainment. However, both of these conditions are present in less than 5% of the sample, so caution is warranted in overall interpretation.

Table 3.6. Perceived Economic Security by Health Status Characteristics of Cohort Sample^a

	Current Satisfaction			Continued Satisfaction			Future Satisfaction		
	Yes	No		Yes	No		Yes	No	
Global Health Status									
Good/Excellent	57.7	42.3	***	44.2	55.8	***	53.4	46.6	***
Fair/Poor	35.8	64.2		21.1	78.9		23.5	76.5	
Medical Release Status ^b									
Yes	28.5	71.5	***	21.0	79.0	***	29.6	70.4	***
No	48.8	51.2		37.1	62.9		43.4	56.6	
Current Level of Pain									
Mild/None	61.5	38.5	***	47.1	52.9	***	52.2	47.8	***
Moderate	43.8	56.2		29.1	70.9		35.7	64.3	
Severe	24.8	75.2		14.0	86.0		15.7	84.3	
ADL Score									
	2.92	4.09	***	2.64	3.98	***	2.88	3.96	***
sd	(2.29)	(2.32)		(2.33)	(2.27)		(2.33)	(2.31)	
Range	0 - 12	0 - 14		0 - 12	0 - 14		0 - 12	0 - 14	
IADL Score									
	.88	1.84	***	.84	1.67	***	.88	1.72	***
sd	(1.64)	(2.12)		(1.59)	(2.08)		(1.71)	(2.10)	
Range	0 - 7	0 - 7		0 - 7	0 - 7		0 - 7	0 - 7	
Hearing Difficulty									
No	51.1	48.9	**	34.0	66.0		41.5	58.5	**
Yes	39.5	60.5		28.4	71.6		31.7	68.3	
Depression (CES-D)									
No	57.7	42.3	***	40.9	59.1	***	47.6	52.4	***
Yes	26.3	73.7		15.5	84.5		18.8	81.2	
Arthritis / Rheumatism									
No	50.2	49.8	***	34.9	65.1	**	39.7	60.3	*
Yes	37.7	62.3		25.0	75.0		31.8	68.2	
Back Problems									
No	52.3	47.7	***	38.1	61.9	***	42.7	57.3	**
Yes	39.8	60.2		25.4	74.6		31.7	68.3	
Migraine Headaches									
No	47.8	52.2	**	33.2	66.8	*	38.2	61.8	
Yes	33.3	66.7		22.5	77.5		30.2	69.8	

^a Level of significance: F-statistic for continuous variables (means); Pearson χ^2 for categorical variables (%). *** p<.001; ** p<.01; * p<.05

^b Asked only of clients no longer serving in the Canadian Forces.

that health services will alleviate functional limitations into the future, or perhaps that clients have faith in their ability to adapt to negative physical health conditions.

The link between financial security and mental health conditions, however, remains rather bleak. Similar to clients with probable PTSD, those who are likely depressed (as measured by the CES-D) are highly doubtful about their own ability to meet financial needs. In regard to all time points, clients with high levels of depressive symptoms are overwhelmingly unlikely to feel financially capable of meeting needs. It is unclear if with depression, as perhaps may be the case with PTSD, clients' financial insecurity is reflective of a general malaise about personal abilities, or if it is a marker of acceptance of personal ability to manage economic requirements. Such an explanation cannot be definitively argued in the present study, but it is an important issue for future consideration.

Overall, it is clear that PTSD status significantly impacts employment status and perceptions of financial security. However, it is also established that among a cohort of VAC clients, a number of factors and health conditions are associated with financial well-being. As mentioned at the outset, the cross-sectional nature of the data does not allow for meaningful causal arguments, particularly in regard to the impact of health conditions on subsequent socioeconomic status. However, I performed a number of regression analyses with the intention of better understanding the association between PTSD and financial status while controlling for other variables of interest. Results to follow are specific to the cohort of VAC clients ages 20-50 years old, but the Appendix includes similar regression analyses performed on the larger VAC client sample (ages 20-65). I interpret the regression analyses with caution, as sample size is greatly reduced due to missing data. Therefore, I only included variables of critical importance (as indicated in the descriptive analysis).

To better assess the unique contribution of PTSD (probable) diagnosis, I treated household income as a continuous dependent variable, and used ordinary least squares regression to test a series of nested models. Table 3.7 presents the OLS regression on annual household income. Further analyses not included considered different measures of health status, because due to multicollinearity, not all health indicators could be included simultaneously. Table 3.7 utilizes general measures of health (global assessment, ADL score, and IADL score), which produced similar results to the models that included health diagnoses (arthritis, back problems, migraine headaches). Furthermore, regressions were performed using annual individual income as the dependent variable, and no fundamental differences were found. Therefore, I will limit my discussion to Table 3.7 specifically.

In regard to current income, PTSD is not significantly associated with earnings when demographic characteristics are included as controls. Of importance, however, is the relationship of PTSD to income when other health conditions are considered. Although PTSD is related to lower income controlling for demographics and military service (nonsignificantly), the relationship inverts when health comorbidities are included. Specifically, when controlling for overall health status, clients with probable PTSD are more likely to report increased earnings than those without PTSD. Although the loss of respondents due to missing data on the dependent variable may influence this result, it is worth noting that other health comorbidities may be more influential in understanding veteran's current income.

To note, the OLS regression of annual household income on client characteristics for the full sample provided a more logical understanding of the data. (Please see Appendix A, Table A3-4.) Specifically, PTSD status maintained a significant negative relationship with

Table 3.7. OLS Regression of Household Income on Demographics, PTSD Status, Military Career, Health Status, and Current Employment Status of Cohort Sample (n=463).

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
<i>Demographics</i>					
Age	.067*** (.014)	.066*** (.014)	.051*** (.013)	.059*** (.013)	.074*** (.013)
Marital (1=married/common law)	1.595*** (.250)	1.583*** (.251)	1.555*** (.240)	1.671*** .229	1.573*** (.219)
Current Education (Secondary Incomplete)					
Completed Secondary Diploma	.587* (.282)	.568* (.282)	.543* (.270)	.312 (.259)	.216 (.249)
Some Post-Secondary	.030 (.282)	.024 (.282)	.040 (.273)	-.118 (.261)	-.136 (.250)
Completed Post-Secondary (i.e. Trade, Business, etc.)	.477 (.297)	.476 (.297)	.580* (.287)	.446 (.275)	.443 (.263)
Completed Bachelor / Graduate Diploma	1.700*** (.371)	1.686*** (.371)	.683 (.394)	.567 (.376)	.617 (.362)
<i>PTSD Status</i>					
PTSD (1=probable)		-.252 (.228)	-.313 (.222)	.178 (.223)	.269 (.216)
<i>Military Service</i>					
Highest Rank (Non-Comissioned Officer)					
Junior / Subordinate Officer			1.306*** (.287)	1.293*** (.274)	1.206*** (.264)
General / Flag / Senior Officer			1.868*** (.337)	1.449*** (.328)	1.310*** (.317)
Number of Deployments			.019 (.071)	.007 (.067)	-.082 (.068)
<i>Health Status</i>					
Current Health (1=good/excellent)				.709*** (.188)	.720*** (.181)
ADL Score				-.091* (.044)	-.063 (.042)
IADL Score				-.080 (.051)	-.026 (.051)
<i>Current Employment</i>					
Work Status (In Canadian Forces)					
In Civilian Labor Force					-.557** (.187)
Unemployed					-1.464*** (.306)
Inactive					-1.539*** (.275)
Constant	.813 (.608)	.917 (.615)	1.300 (.596)	1.099 (.589)	1.112 (.567)
R²	.190	.192	.265	.340	.399

Note: Coefficients are unstandardized regression weights (standard errors); significance ***p<.001; **p<.01; *p<.05

earnings when controlling for demographics (age, marital status, and education) and health measures (global assessment and depression); but, controlling for military service (rank and deployment count) and current employment status rendered PTSD nonsignificant. Thus, it is possible that the role of military service in civilian labor force experiences is important for veterans as reflective of one's ability to maintain employment in the military. Meaning, health status that disrupts military service is also disruptive of economic status. This is not a surprising finding, but it is important when considering how to best understand the association of military service and veteran economic well-being.

A life course perspective that recognizes cohort differences is critical to develop the most complete understandings. For instance, some variables (in the full sample regression) reflect associations that carry over into the logistic regressions of financial status. (See Appendix A, Table A3-4.) In particular, being married is a strong and consistent predictor of higher income; education is protective of earnings only at the highest levels of attainment; positive global assessments of health relate to better earnings; and clients who remain in the Canadian Forces fare better than their release counterparts, all else considered.

In order to address the issue of missing data for income categories moving forward, I include the variable (household income) in all models, but also ran analyses without income controls. In all cases, the major impact of not including income is that age and marital status remain marginally significant, and highest level of educational attainment ("completed Bachelor or graduate degree") maintains significance with perceptions of economic security.

However, because the income information is relatively complete at higher levels, I felt it best to *underestimate* the disadvantage faced by VAC clients through inclusion of the variable.⁶⁷

PTSD and Economic Security

Logistic regression models of perceived economic security help to explain the relationship of PTSD status as a risk factor for well-being. In regard to current satisfaction (Table 3.8) and future ability (Table 3.10), the impact of PTSD is tempered by the inclusion of additional health measures (both outcomes), military service indicators (future satisfaction) and current employment status (current satisfaction). Each outcome will be discussed in turn. It is also interesting, however, to consider that in regard to perceptions of how *current* income and investments will *continue* to provide financial security, PTSD remains significant throughout the analyses (Table 3.9). Therefore, controls for demographics, comorbid health conditions⁶⁸, military service, and current employment do not explain away the association between PTSD and perceived security. It may be that currently (Table 3.8), clients are aware of their ability to meet (or not) financial needs largely due to their understanding of “now” in regard to health and work status. In terms of future security (Table 3.10), clients may be optimistic about their ability to either adjust to PTSD (but perhaps not other – physical – health limitations) or change their employment standing

⁶⁷ In previous analyses with the CF survey, Marshall, et al. (2002, 2004) chose not to impute data for income, largely due to the categorical nature of the data. It was explained that imputation procedures would compromise an already moderate portrait of financial standing; thus, I continued in this vein for the current study.

⁶⁸ In all analyses, I ran models with “general health” indicators of global assessment, ADL scores, and IADL scores as well as separate models using specific health outcomes of arthritis, back problems, and migraine headaches. (Depression was included regardless of other health variables due to the high rates of comorbidity.) The findings are consistent such that “functional impairment” predicted by the specific diagnoses mimic the findings for the more general ADL/IADL scales. Therefore, I only include the general models in the presentation.

Table 3.8. Logistic Regression of Satisfaction with Current Income/Investments on PTSD, Demographics Health, Military Career, and Current Employment Status of Cohort Sample (n=465).

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
Probable PTSD (1=yes)	-1.344*** (.285)	-1.333*** (.308)	-.627 (.354)	-.712* (.363)	-.657 (.373)
<i>Demographics</i>					
Age		.020 (.017)	.025 (.018)	.020 (.018)	.038 (.020)
Marital (1=married/common law)		.048 (.328)	.084 (.350)	.123 (.353)	.211 (.362)
Current Education (Secondary Incomplete)					
Completed Secondary Diploma		.495 (.337)	.378 (.350)	.403 (.353)	.394 (.360)
Some Post-Secondary		.114 (.338)	.057 (.352)	.109 (.356)	.068 (.364)
Completed Post-Secondary (i.e. Trade, Business, etc.)		-.521 (.361)	-.493 (.375)	-.411 (.379)	-.404 (.387)
Completed Bachelor / Graduate Diploma		.678 (.494)	.697 (.506)	.388 (.557)	.476 (.586)
Household Income		.365*** (.063)	.310*** (.067)	.281*** (.069)	.232*** (.072)
<i>Health</i>					
Current Health (1=good/excellent)			-.001 (.257)	.021 (.258)	-.010 (.268)
Probable Depression (1=yes)			-.861** (.272)	-.885*** (.274)	-.939*** (.280)
ADL Score			-.074 (.060)	-.058 (.061)	-.042 (.063)
IADL Score			-.112 (.076)	-.116 (.077)	-.140 (.081)
<i>Military Service</i>					
Highest Rank (Non-commissioned Officer)					
Junior / Subordinate Officer				.501 (.404)	.623 (.413)
General / Flag / Senior Officer				.822 (.526)	.813 (.558)
Number of Deployments				.078 (.093)	-.017 (.101)

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Table 3.8 (cont). Logistic Regression of Satisfaction with Current Income/Investments on PTSD, Demographics, Military Career, and Current Employment Status of Cohort Sample (n=465).

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
<i>Current Employment</i>					
Work Status (In Canadian Forces)					
In Civilian Labor Force					-.676* (.279)
Unemployed					-1.838*** (.512)
Inactive					-.530 (.425)
-2 Log Likelihood	570.796	525.887	501.158	496.857	481.099
Hosmer & Lemeshow Test		.577	.384	.614	.200

Note: Odds ratios are presented (with standard errors in parentheses). * p<.05; ** p<.01; *** p<.001

Table 3.9. Logistic Regression of Continued Satisfaction with Current Income/Investments on PTSD, Demographics, Health, Military Career, and Current Employment Status of Cohort Sample (n=465).

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
Probable PTSD (1=yes)	-1.746*** (.388)	-1.846*** (.421)	-1.198* (.470)	-1.261** (.484)	-1.293** (.487)
<i>Demographics</i>					
Age		.028 (.018)	.038* (.019)	.034 (.019)	.033 (.020)
Marital (1=married/common law)		-.268 (.357)	-.093 (.378)	-.063 (.379)	-.053 (.382)
Current Education (Secondary Incomplete)					
Completed Secondary Diploma		.086 (.362)	-.014 (.378)	-.008 (.378)	-.006 (.379)
Some Post-Secondary		.020 (.367)	-.054 (.381)	-.029 (.383)	-.048 (.384)
Completed Post-Secondary (i.e. Trade, Business, etc.)		-.288 (.393)	-.273 (.410)	-.225 (.412)	-.238 (.413)
Completed Bachelor / Graduate Diploma		1.247* (.504)	1.228* (.524)	1.028 (.567)	1.020 (.574)
Household Income		.379*** (.065)	.294*** (.069)	.269*** (.071)	.267*** (.075)
<i>Health</i>					
Current Health (1=good/excellent)			.350 (.266)	.378 (.268)	.346 (.271)
Probable Depression (1=yes)			-.505 (.310)	-.516 (.311)	-.513 (.311)
ADL Score			-.151* (.065)	-.140* (.066)	-.139* (.067)
IADL Score			-.079 (.090)	-.085 (.091)	-.092 (.093)
<i>Military Service</i>					
Highest Rank (Non-commissioned Officer)					
Junior / Subordinate Officer				.410 (.402)	.414 (.405)
General / Flag / Senior Officer				.485 (.493)	.502 (.502)
Number of Deployments				.039 (.098)	.040 (.104)

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Table 3.9 (Cont.) Logistic Regression of Continued Satisfaction with Current Income/Investments on PTSD, Demographics, Health, Military Career, and Current Employment Status of Cohort Sample (n=465).

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
<i>Current Employment</i>					
Work Status (In Canadian Forces)					
In Civilian Labor Force					.058 (.284)
Unemployed					-.431 (.520)
Inactive					.133 (.469)
-2 Log Likelihood	546.564	478.508	453.088	451.245	450.114
Hosmer & Lemeshow Test		.580	.633	.395	.590

Note: Odds ratios are presented (with standard errors in parentheses). * $p < .05$; ** $p < .01$; *** $p < .001$

Table 3.10. Logistic Regression of Perceived Future Income/Investments as Satisfactory on PTSD, Demographics, Health, Military Career, and Current Employment Status of Cohort Sample (n=465).

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
Probable PTSD (1=yes)	-1.567*** (.341)	-1.602*** (.364)	-.678 (.413)	-.725 (.426)	-.858* (.431)
<i>Demographics</i>					
Age		.023 (.018)	.032 (.018)	.028 (.019)	.015 (.020)
Marital (1=married/common law)		.029 (.343)	.211 (.367)	.251 (.369)	.250 (.378)
Current Education (Secondary Incomplete)					
Completed Secondary Diploma		.158 (.353)	.001 (.374)	.023 (.374)	.052 (.378)
Some Post-Secondary		.297 (.354)	.216 (.375)	.220 (.376)	.210 (.380)
Completed Post-Secondary (i.e. Trade, Business, etc.)		.167 (.374)	.129 (.397)	.168 (.401)	.133 (.403)
Completed Bachelor / Graduate Diploma		1.411** (.495)	1.448** (.520)	1.111* (.559)	1.021 (.570)
Household Income		.316*** (.061)	.223*** (.066)	.192** (.069)	.218** (.073)
<i>Health</i>					
Current Health (1=good/excellent)			.908*** (.260)	.942*** (.263)	.877*** (.267)
Probable Depression (1=yes)			-.857** (.297)	-.874** (.298)	-.867** (.300)
ADL Score			-.051 (.063)	-.035 (.064)	-.046 (.064)
IADL Score			-.047 (.084)	-.051 (.084)	-.062 (.086)
<i>Military Service</i>					
Highest Rank (Non-commissioned Officer)					
Junior / Subordinate Officer				.460 (.400)	.441 (.406)
General / Flag / Senior Officer				.757 (.500)	.897 (.518)
Number of Deployments				-.033 (.097)	.032 (.103)

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Table 3.10 (Cont). Logistic Regression of Perceived Future Income/Investments as Satisfactory on PTSD Demographics, Health, Military Career, and Current Employment Status of Cohort Sample (n=465).

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
<i>Current Employment</i>					
Work Status (In Canadian Forces)					
In Civilian Labor Force					.577* (.284)
Unemployed					-.204 (.508)
Inactive					.794 (.453)
-2 Log Likelihood	570.010	513.369	475.724	472.539	465.475
Hosmer & Lemeshow Test		.331	.324	.063	.388

Note: Odds ratios are presented (with standard errors in parentheses). * p<.05; ** p<.01; *** p<.001

over time. But, Table 3.9 implies that if all things remained the same, PTSD significantly and consistently interferes with clients' ability to feel economically secure.

Table 3.8 shows that VAC clients are almost 35% more likely to feel insecure about their current income and investments if PCL-M scores indicate probable PTSD ($p < .001$). This relationship holds with the inclusion of demographic variables, including education and income, which are generally classified as determinants of financial standing. However, when other health markers are considered, post-traumatic stress disorder is nonsignificant, such that general measures of health status subsume the explanatory contribution of PTSD on financial security. This is important, in that at least in the context of current economic standing, PTSD is perhaps less influential to client perceptions of ability to meet needs than depression. Probable depression leaves VAC clients approximately 14% less likely to be satisfied with current income and investments ($p < .001$). The relationship between depression and current satisfaction holds throughout the analysis (although the strength of the relationship diminishes to a 6% decrease in satisfaction with the inclusion of current employment). It may be that depression, in the perception of clients, is more detrimental to economic attainment; but, it is important to note that rates of probable depression are generally high among VAC clients, which may contribute to the significant findings here.

Of other important note is that functional ability is limiting to perceptions of current financial security, but not in a significant manner. Previous analysis of these data by Marshall and Matteo (2004) which did not account for cohort effects through a limited sample consistently found global health status and functional ability (measured through pain level

and ADLs) to be a significant predictor of current financial satisfaction.⁶⁹ This implies that younger VAC clients perhaps see their financial standing as relative (to age), or are “healthier” than their older counterparts. I assume both explanations are viable; and, that the connotations for VAC include differentiating services by age if not health status alone. (This will be discussed fully in Chapter 5.)

In regard to employment status, current activity is significantly associated with immediate satisfaction with income and investments. Clients who are in the civilian labor force are 32% less likely to be satisfied with their finances compared to those who remain in the Canadian Forces. Also, being unemployed suggests clients to be 84% more likely to be dissatisfied financially when compared to those still serving, controlling for all other variables. Being “inactive” is not significantly related to dissatisfaction, relative to remaining in the Canadian Forces. Taken together, this suggests that remaining in the service is perceived to be protective of financial security. In the current context, however, it is also important to note that compensation or benefits likely to be a part of the financial standing of clients who are “inactive” are associated with decreased economic security, although not in a significant manner. This suggests that Veterans Affairs Canada might invest in finding ways to further maintain Canadian Forces members despite health challenges. This is a difficult task, for sure, but perhaps a priority if civilian opportunities for employment are either limited or a poor match for clients (based upon health needs).

Continued satisfaction (Table 3.9) with current economic position is, however, strongly associated with PTSD status, regardless of control variables. Clients with probable PTSD are 75% more likely to be financially insecure; and, this perception remains

⁶⁹ I also ran models for the full sample including the indicator for depression, which was not included in the earlier cited study. In all cases, global health and functional ability remained significant predictors of financial security (as did depression) for the broader VAC client sample.

throughout the models, although slightly decreased in strength as controls are added. Of particular interest for perceptions of security beyond the immediate context is that functional disability is consistently associated with financial insecurity. This relationship does not discount the relationship between PTSD and economic worry; but, it does imply that clients who experience functional limitations are concerned with future ability to meet economic needs in a way that mental health concerns do not. Depression is perhaps not as concerning in a financial sense as impairments to mobility, which perhaps highlights the complexity of PTSD as both physically and mentally debilitating in ways that depression is not. Whether the change in significance from depression to functional ability (and continued influence of PTSD) indicates optimism about relief from depressed affect or a perceived unique financial consequence of limited mobility is unclear. But, this is certainly an issue for further consideration.

It is also worth noting that employment status does not maintain a significant association with continued satisfaction with current finances. It may be that clients are more optimistic about their ability to accrue employment (or compensation) than manage health concerns when looking into the future. Or, it is possible that VAC clients in the younger cohort are aware that occupational status will likely change moving forward. In either case, perceptions about current income as continually satisfactory are reflective of client awareness that prior military service may not benefit them into the future, and current employment is temporary – which could indicate optimism or pessimism.

The final marker of financial security addresses future status more directly (Table 3.10), as it asks not about current standing specifically, but future anticipation (both in regard to financial security and income / investments). Clients with probable PTSD are 57% more

pessimistic about future economic standing (Model 1, $p < .001$). Educational attainment is also important in regard to future perceptions, but only at the highest level of attainment. Clients who currently hold a Bachelor's or graduate degree are about 40% more likely to be optimistic about future economic satisfaction controlling for other demographics and health conditions (Models 2 and 3, $p < .001$). However, in light of current employment, this relationship loses significance (Model 5).

Unlike the previous assessment of continued satisfaction with current investments, functional ability does not maintain a significant association with future economic security. Better health perceptions do relate to increased financial security, controlling for all other variables; and, depression is significantly related to diminished client confidence in ability to meet future needs. All together, the findings for continued and future economic security suggest that the temporal implications of survey measures (specifically in regard to current income/investments versus future attainment) alter the way in which PTSD, depression, and general health measure are associated with perceptions of security. This is an issue to consider in future studies, as overall assessments of global health are important, but physical versus mental challenges appear to differentiate the ways in which clients feel confident (or lack confidence) about their financial futures. Such clarifications would certainly help with both needs assessment in transitions out of the military and service distribution based upon client health profiles.

DISCUSSION

In general, there is debate about the relative value of military service as an enhancement to lifetime socioeconomic attainment. This analysis cannot fully address such broad concerns, but the description of VAC clients relative to health, social, and economic

standing does shed light as to vulnerabilities, if not status-altered trajectories based upon military service. Kessler, et al. (1995) note that early-onset (prior to age 16) psychiatric conditions greatly influence the ability of those affected to manage educational attainment. If military service is rightly considered a “developmental” stage (for both socioeconomic standing and personal growth) as suggested in contemporary literature, then the risks for psychological trauma – PTSD – are profound (Kelty et al. 2010). The descriptive analyses here suggest that PTSD in and of itself, as well as in relation to comorbidity with other health risks, is a critical issue for Veterans Affairs Canada.

Chapters 1 and 2 address the context of military-to-civilian transitions in regard to economic climate, occupational skills transfer, and human capital. But, the assessment of VAC clients clearly illustrates the potential risks associated with military service. “Although the military’s extensive social support system facilitates the transition [into adulthood] for many, the unique risks of military service can also make that transition seriously problematic” (Kelty et al. 2010:182). The Canadian Forces Survey (1999) conducted by Veterans Affairs Canada was targeted at assessing the needs of VAC clients across a number of broad dimensions, particularly in terms of health status and health service requirements. Although the relationship between military service and the transition to civilian socioeconomic well-being has become a growing focus of investigation for VAC, it was not a primary concern at the time of administration of the survey. Thus, a number of important variables reflective of military service, human capital, and socioeconomic status in relation to the transition out of the Canadian Forces are not available in the present research. The research is also limited by the cross-sectional design of the survey data, making causation

difficult to assess in a meaningful way beyond respondent recall in regard to timing of military, education, and employment events.

But it is clear that PTSD, in general, is a risk to economic standing – both in terms of finances and feelings of security – among clients. Furthermore, because of the likelihood of multiple health concerns among VAC clients, it is clear that treatment and rehabilitation services must address compounded vulnerabilities and often overwhelming symptom profiles for young veterans to become gainfully employed and financially secure in the civilian labor force. The next chapter considers PTSD more specifically in regard to the complexity of the diagnosis itself, as it relates to economic status.

Chapter 4

SYMPTOM CLUSTERS AND ECONOMIC STATUS

“Reaching a ‘breaking point’ in combat does not mean that a warrior is broken But they also are not the same person after deployment as they were before, and this is part of what it means to be a warrior There is a strength of character that is sharp and direct, but one that may at times make others feel uncomfortable Warriors are more independent, but this may make it difficult to tolerate authority at work Unfortunately, PTSD has become confused with various normal reactions that warriors experience”
(Hoge 2010: xiii-xix).

INTRODUCTION

Post-traumatic stress disorder is measured by three clusters of symptom experiences. The meaning and behavioral implications of symptoms are reviewed in Chapter 1, recognizing that the difference between the concepts of disease (biological) and illness (experience) generates attention for theoretical links to research. Furthermore, the need for concise operationalization of variables in analyses better matches clinical understandings to patient needs. The progressive manner through which researchers develop concepts and measures greatly affects the conclusions and subsequent implications of research findings. In addition, the illness experience of individuals and groups is largely influenced by determinations made by researchers and clinicians, as well as the medical, social, and economic context in which disease occurs.

Because the processes of theory and methodological development are continual, social and institutional change are important factors in understanding illness experiences. In contemporary society, as post-traumatic stress disorder (PTSD) gains increasing political,

medical, and media attention, the scientific understanding of the disease and the ecological context of resulting illness experiences change. To effectively match social structures to population needs requires a clear understanding of the dimensions of disease manifestation and symptomatology. Furthermore, public scrutiny of trends in the relationship between military service and post-traumatic stress disorder no doubt influence every discipline interested in developing the appropriate treatment for veterans (if not soldiers). Although all efforts are ultimately aimed at limiting individual, family, community, and social consequences of PTSD, unclear or inconsistent understanding of the disease itself has profound effects.

Research on post-traumatic stress disorder includes a targeted focus of efforts to clarify the symptom structure as currently listed in the *DSM-IV-TR*.⁷⁰ This is extremely relevant to social concern about the cost (both social and economic) of the prevalence of the disorder among military service members and veterans, particularly in the context of active war. Furthermore, from a socioeconomic perspective, broad trends in the economy – in particular, those related to unemployment and housing concerns – necessitate both an accurate portrait of PTSD epidemiology and the rehabilitation needs of veterans.⁷¹ In order for families and communities to both absorb health costs of care for wounded veterans and potentially reintegrate young men into civilian labor roles, the relationship between PTSD symptoms and socioeconomic status is ever critical.

⁷⁰ The American Psychological Association is currently reviewing the diagnosis classification of PTSD, to be released in May, 2013.

⁷¹ Chapter 1 briefly sketches the political economy and military institutional differences between the United States and Canada. Ultimately, the importance of broader social context will be linked to the targeted analysis of this (and the previous chapter), in Chapter 5, in regard to conclusions and policy implications.

In this chapter, I examine the relationship between post-traumatic stress disorder symptom structure and socioeconomic well-being among Canadian Forces veterans. I begin with a review of the literature, in particular linking previous chapters (about the general history of the PTSD diagnosis and trends in social and economic consequences of PTSD) to more detailed research on the unique attributes of each symptom criterion. Research is minimal in this capacity, but it is a contemporary focus that reflects a growing number of studies. I then present hypotheses about the role of each dimension of the PTSD diagnosis classification for socioeconomic outcomes of interest. Finally, I consider the importance of different classification schemes for PTSD as proposed in the literature and in the potential revisions to be included in *DSM-IV-TR*. Although data are limited in regard to both the ability to “reclassify” PTSD and occupational and financial status, descriptive analyses shed light on important concerns and future research potential.

LITERATURE REVIEW AND CONCEPTUAL MODEL

In a study assessing the employment status of American veterans who had participated in a specialized vocational rehabilitation program (Compensated Work Therapy, CWT) administered by the Department of Veterans Affairs, Resnick and Rosenheck (2008) found that those with PTSD were less likely (by 19%) to be employed upon completion of the work training curriculum. Although this is reflective of trends in past research, one interesting finding in this particular inquiry was that those diagnosed with other mental disorders (such as affective or substance use disorders), did *not* experience significant employment status deficits similar to those with PTSD. This differential outcome for PTSD may be due to the unique symptomatology of the disorder, in which the inherent

characteristics of the condition may lead to distinctive disadvantages in terms of the ability to maintain (or even desire) consistent employment in the civilian labor force.

A potential reason for the distinction between PTSD and other serious mental health conditions as vulnerabilities in the workplace may be related to disclosure. Revealing the diagnosis of post-traumatic stress disorder is stigmatized, perhaps even more greatly among those formerly in the military. Research indicates that soldiers are generally unwilling to disclose the presence of mental health concerns to military superiors while in the service or when returning from deployment (RAND 2008). This decision, although “protective” on the surface, may actually lead to serious misunderstandings or barriers in terms of consistent employment. “Society hasn’t yet grasped that ‘transitioning’ home from combat does not mean giving up being a warrior; but rather learning to dial up or down the warrior responses depending on the situation” (Hoge 2010:x). If layers of distance are placed between veterans and employers (i.e. assumptions, prejudice, discrimination), the lack of employment becomes cyclical and increasingly difficult for veterans to overcome. Without a stable employment history, it can be difficult for anyone (veterans included) to maintain gainful employment, if not career growth, over time.

Although Chapter 2 includes a comprehensive literature review focused on the socioeconomic consequences of post-traumatic stress disorder, a brief summary in regard to material specific to the analyses presented here is warranted. The history of the relationship between psychiatric diagnoses and employment is longstanding. In summary of their review of earlier studies, Ettner, Frank, and Kessler (1997) clarify that limited employment productivity may be due to impairment or lowered ability. However, “[p]sychiatric disorders may also affect employment rates directly, through involuntary unemployment in an

imperfect labor market or inability to seek out or retain a job” (Ettner et al. 1997: 64-65).

Further clarification is important, however. Similar to general trends in mental health epidemiology and social outcomes, the *overall* pattern of causal relationship between presence of mental illness and decreased income is well substantiated⁷².

There are also important patterns of mental health and socioeconomic well-being in regard to sex, age, diagnosis classification (i.e. anxiety, substance abuse, neurosis, etc.), treatment accessibility, and other factors. (For a more complete review, see Appendix 1 of Ettner et al. (1997).) Ultimately, comprehensive data in the National Comorbidity Survey validate long standing hypotheses in regard to psychiatric disorders and labor market outcomes among men and women. Specifically, psychiatric diagnoses increase likelihood of unemployment, substantially limit income, and reduce hours worked, among men only (Ettner et al. 2007). Of importance, however, is the absence of PTSD as a diagnosis of interest in this research.

Also using the National Comorbidity Study, Jayakody, Danzinger, and Kessler (1998) seek to elucidate the causal relationship between early-onset (prior to age 16) mental illness and later-life socioeconomic well-being. Overall, “having had an early major affective disorder, anxiety disorder, and other disorder all significantly increase the probability of nonwork” (Jayakody, et al. 1998:383). It must be recognized, however, in that study, post-traumatic stress disorder was grouped within a diverse “other” category of mental illness including: dysthymia, social phobia, simple phobia, and alcohol and drug use without

⁷² It is duly noted in the more comprehensive review in Chapter 2 that there is a scientifically agreed upon *reciprocal* causal relationship between mental illness and measures of socioeconomic status. Although it is certainly warranted to consider how decreased income, education, and employment measures can lead to mental health problems, the focus of the current discussion is on the alternate scenario in which mental illness is associated with diminished socioeconomic well-being into the future. In the context of veteran reintegration, in which PTSD is presumed to result from military experience, subsequent civilian attainment difficulties in education, employment, and income are likely correlates of prior mental illness etiology.

dependence. So, although there is a significant relationship between PTSD diagnosis and the likelihood of nonwork in later life, this finding is tempered by an inability to understand the unique importance of post-traumatic stress in the mental illness spectrum.

For the purposes of my research, it is important that Jayakody et al. (1998) noted specifically that conduct disorders were most disruptive to educational attainment, and anxiety disorders were most troublesome in regard to work status. The multi-faceted experience of post-traumatic stress disorder symptomatology, and its potential for creating challenge across a number of socioeconomic (or even employment) dimensions is therefore an essential consideration. More specifically, because PTSD includes a “mix” of symptoms reflective of a variety of cognitive and behavioral disturbances (both anxiety and depression), it is possible that the various clusters in the diagnostic scheme culminate in meaningful and unique ways during reintegration experiences. For example, in regard to health status across the life course, post-traumatic stress syndromes maintain both high levels of comorbidity and increased probability of future-onset mental illnesses (Asmundson et al. 2004; Jayakody et al. 1998). So, the socioeconomic disadvantage faced by persons diagnosed with PTSD may not only vary based upon current symptom profiles, but also in regard to future mental illness experiences extending from the complexity of post-traumatic stress syndromes.

An earlier work by Kessler and Frank (1997) did consider post-traumatic stress disorder separately from other mental illnesses; and the goal of this study was to consider the impact of mental illness beyond individuals to family and community socioeconomic contexts. Using the National Comorbidity Survey, Kessler and Frank (1997) examined PTSD as a classification within anxiety disorders, and the outcomes of interest included work impairment. Specifically, work loss days (absenteeism) was differentiated from work cut-

back days, where respondents “were able to work ‘but had to cut back on what (they) did or did not get as much done as usual’” (Kessler and Frank 1997:864). Overall, Kessler and Frank (1997) find that “... the disorders are, in general, positively associated with impairment. The coefficients are uniformly [across diagnosis] larger in predicting work cutback days than work loss days” (868). PTSD proved similar in marked impairment to major depression, but not quite as disruptive as general anxiety disorder or panic disorder.

Further clarification notes that occupation type matters, such that work cutback is significantly more common, and *concentrated*, among professionals. Plausible interpretations set forth by Kessler and Frank (1997) include the likelihood of self-regulation or autonomy (lack of direct supervision) among higher-level occupations, or the tendency for professional work to require high levels of “cognitively complex work” that is, perhaps, more prone to disruption when symptoms of mental illness (such as concentration difficulties, etc.) develop. The take-away from this aspect of the literature suggests that the multidimensional presentation of PTSD, particularly in regard to the workplace, leads to potential interference in varied ways – based upon symptom profile, social resources (i.e. marital status or prior socioeconomic attainment), and/or occupational setting.

PTSD Symptomatology

It is well-established that post-traumatic stress disorder is complex, in that it not only includes a unique mix of symptoms within the cognitive spectrum, but these experiences must also be linked to a specific, traumatic event. Thus, as discussed in Chapter 1, a series of

criteria must be met to warrant clinical diagnosis of post-traumatic stress disorder.⁷³ The primary interest for my analysis resides in the physiological (symptomatology) dimensions of the current (*DSM-IV*) classification of post-traumatic stress disorder: “re-experiencing” (Criterion B), “avoidance” (Criterion C), and “(hyper)arousal” (Criterion D). In theory, the diagnostic classification of post-traumatic stress disorder captures the breadth of dysfunction/discomfort experienced by many who are exposed to extreme trauma. However, the structure of the diagnostic protocol has been questioned, when research has moved beyond epidemiological surveys to analyses aimed at understanding the etiology of the disorder. This work is motivated in large measure to match appropriate treatments or to substantiate the condition as viable for disability entitlements. Specifically, the complexity of PTSD, coupled with its inherent overlap with other general anxiety or depressive disorders has spawned quantitative psychologists to further evaluate the diagnostic and screening protocols.

The measure used to assess likelihood of PTSD (or post-traumatic stress symptoms) in my study is the PTSD Checklist – Military Version, or PCL-M instrument.⁷⁴ As noted, this is a self-report list of 17 items which correspond to the diagnostic symptom clusters as presented in the *DSM-III-R* and subsequent versions *DSM-IV* and *DSM-IV-TR* (American

⁷³ The American Psychological Association is currently developing a revised DSM-V, to be released in May, 2013. The diagnosis of “posttraumatic stress disorder” includes a number of proposed revisions that will significantly impact the symptom profile as listed in DSM-IV. Criterion B may be renamed “intrusion symptoms” but most changes are minimal in regard to the “re-experiencing” of traumatic memories. Criterion C may be limited to “persistent avoidance” of both internal and external stimuli. Criterion D may become a more comprehensive list of “negative alterations in cognitions and mood” to incorporate all of the affective symptoms, some of which are currently included in Criterion C. Criterion E will thus become “alterations in arousal and reactivity” to include all behavioral symptoms, many of which are now included in Criterion D. Essentially, the proposed DSM-V revision would recategorize the symptoms of post-traumatic stress disorder into a more expansive list. The current Criteria B, C, and D would be expanded into an extensive four-category configuration, in which “re-experiencing” is renamed “intrusion symptoms”; “avoidance” is isolated as a unique aspect; and distorted “cognitions and mood” are separated from “arousal and reactivity.” (See: <http://www.dsm5.org/proposedrevision/Pages/Default.aspx>)

⁷⁴ For a more complete review of the PCL-M instrument, please refer to Chapter 3.

Psychiatric Association 1987; 1994; 2000). The military version (as opposed to the civilian checklist or PCL-C) includes questions specific to a traumatic event context of military service. In general, this measure is widely accepted as “easily administered” with “excellent test-retest reliability” that “correlates strongly with other measures of PTSD” (Weathers et al. 1993). Reliability and validity are critical to epidemiological studies, as soldiers are being assessed at multiple points of service and in large groups where clinician-administered screens (i.e. CAPS) are not cost effective.

However, further investigation of the PCL-M perhaps call into question the usefulness of structured self-reports to develop in-depth understanding of PTSD experiences. Such concerns are of critical importance to the implications of my research. For instance, Forbes, Creamer, and Biddle (2001) found that although the PCL-M was highly accurate for diagnostic accuracy of PTSD at intake and follow-up of Australian Vietnam veterans, it was “less useful, however, in determining the presence and severity of individual symptoms” (984). Thus, it seems increasingly important to differentiate between assessments of PTSD diagnosis *overall*, versus more detailed understanding of veteran experiences in regard to individual symptom presence and severity. Namely, a composite diagnosis of PTSD may supersede important nuances in illness experience. “In terms of symptom severity, the data suggested that the PCL tended to underrate improvements as a function of treatment [because] it does not seem to accurately reflect individual symptom patterns” (Forbes et al. 2001:984-985).

Socioeconomic Consequences of PTSD Symptom Clusters

Much of the literature that discusses PTSD symptom clusters is focused upon illness experiences generally, or in regard to combat exposure as a predictor of symptom onset. Although limited, there is some attention to the socioeconomic consequences of PTSD based upon unique symptom characterizations. A brief review of the relevant findings are presented below. My analysis fills a gap in the literature by specifically clarifying the association between the symptom clusters and economic outcomes, as opposed to the composite diagnosis used in Chapter 3.

Re-experiencing

Reminders of traumatic events, whether “flashbacks” or more general intrusive memories, lead those diagnosed with post-traumatic stress disorder to feel distress, or even react in uncomfortable or unexplainable manners. Coworkers or employers unaware that veterans may be managing PTSD could interpret such reactions as problematic in the workplace – if not misinterpret such behaviors as indicative of conscious decisions on the part of the veteran. For instance, in his recommendations for managing PTSD upon reintegration, Hoge (2010) cautions that soldiers “are control freaks, by definition. Their training instills this in them They do this continuously to ensure that they can collectively execute combat tasks without hesitation and without mistakes (145). Minimizing error is critical in a combat setting, and Hoge (2010) argues that such consistent attention to detail can render “warriors” to be intolerant of lapses, whether their own or by other’s efforts. Ultimately, soldiers are dependent upon “everyone in their unit doing their job correctly, and [thus] maintain a high level of distrust of others outside of their unit” (Hoge 2010:145). So,

without awareness of the logic behind “perfectionist” tendencies (if not a more general need for control), veterans can be misconstrued as aggressive, manipulating, or micro-managers as opposed to team players. Furthermore, the triggers of re-experiencing combat may be “invisible” to non-military peers, as veterans recognize the smells and sounds of war in situations that may be illogical to those unfamiliar with war zones.

Contemporary research on memories of trauma indicate that such “fight-or-flight” or “survival” reflexes among PTSD patients are directly linked to the limbic system in the brain, an area outside of conscious control (Hoge 2010). Not only may the triggers to this survival response be unexpected, but the veteran him/herself may not initially associate the cause-effect catalyst of flashbacks. “Individuals who experience flashbacks ... may find it difficult to explain to others what is happening to them or may not be functional during these seemingly random episodes” (Resnick and Rosenheck 2008:433). Thus, although the re-experiencing of combat memories is intense, formidable, and dramatic, it can also be vibrant, evoking not just cognitive and emotional retrieval, but also physical actions. Such behaviors are left to be interpreted by others in a context outside of a combat zone, often without understanding of the diagnosis or the trigger itself.

Avoidance and/or Emotional Numbing

Presumably, work and personal (character) skills developed during military service should translate into marketable characteristics for veterans upon entry into the civilian labor force. However, among those diagnosed with post-traumatic stress disorder, in particular, avoidance of experiences reminiscent of military situations is often important in preventing distress. Thus ideally, military skills would translate best into occupations “similar to” those

performed during service, but veterans who are subject to re-experiencing or triggers of traumatic events may choose to forgo work settings that put them at risk of memories, regardless of any potential advantages related to job aptitude. So, similar to affective disorders that dull enthusiasm or lead one to withdrawal socially, PTSD disadvantages veterans beyond merely navigating a complicated and often unpredictable labor force. If labor force participation was either disrupted or never begun based upon entry into military service, then the development of social capital as well as human capital are critically hindered. Transitioning into a new field of employment, or more generally competing in a tight labor market is taxing emotionally, even for those without complications related to post-traumatic stress (Kelty et al. 2010).

Clearly, the symptoms of avoidance may deter veterans from entry into the civilian labor force: “One of the hallmarks of PTSD is the cluster of avoidance symptoms, including a sense of foreshortened future, where the individual may believe that normal life activities such as a career are not available to them. It would follow that one who despairs for the future may not see the logic in obtaining employment” (Resnick and Rosenheck 2008:433). However, others have suggested that the tendency for veterans to avoid triggers of military experience, if not social interactions more generally, may lead to “workaholic” predispositions: “If they have worked like madmen, like they are on a ‘mission,’ it is not for the money, but for the sake of having a mission that shuts everything out from their minds” (Shay 2002:57). Thus, it may be that avoidance can be an asset (or perhaps, protective) in regard to extended labor hours in an attempt to maintain focus on something other than combat memories.

The labor force reintegration scenario is complicated by the fact that the general avoidance criterion of the PTSD diagnosis (as listed in *DSM-IV*) includes general loss of interest, feeling distant, or feeling as if the future will be shortened. Therefore, emotional numbing – arguably a unique criterion of post-traumatic stress disorder in itself – may lead to additional reasons for difficulty in navigating the workplace. Namely, if veterans are perceived to be “present but flat,” they may struggle to excel (or even compete) within a competitive market of employees who are judged on passion, commitment, and general enthusiasm as well as work performance in many occupations. This is further logic behind the conceptual value of separating the avoidance and emotional numbing symptom clusters within the PTSD diagnosis.

(Hyper)Arousal

Because post-traumatic stress disorder is characterized by disruptions in sleep, concentration, and emotions, veterans diagnosed may find themselves unpredictable or unreliable in the eyes of civilian employers, particularly if unaware of their condition. Essentially, being “on edge” leads to inefficiency at the workplace, which as stated, can be coupled with more general difficulties in the transition into civilian work, such as difficulty learning new skills, competition at or for work, and navigating unfamiliar work space and demands. Being watchful or easily startled combined with difficulty concentrating can further disadvantage those veterans diagnosed with post-traumatic stress disorder in ways

that lead to inconsistent performance and potentially decrease the veteran's development of confidence in his occupational skills.⁷⁵

The experience of acute awareness is contradictory to the veteran when faced outside of military service. "Mental health professionals label criterion D symptoms *hypervigilance*, but in combat this state of being revved up and on high alert is a very useful and necessary skill – what warriors call 'situational awareness' or 'tactical awareness'" (Hoge 2010:34). When this level of mindfulness is either misinterpreted by others or misplaced (outside of a combat zone), veterans may experience physiological reactions (anxiety, muscle tension, etc.) which can begin a cycle of sleeplessness and perpetuate heightened emotions. "Anger and irritability are also common symptoms [of PTSD]. In few workplaces can an individual control the environment sufficiently to minimize the influence of these symptoms, and then individuals with PTSD may prefer to stay at home or at other places where people and stimuli are predictable" (Resnick and Rosenheck 2008:433). Therefore, incidence of (hyper)arousal is not only disruptive at the moment of occurrence, but it can also lead to the cumulative interference of work tasks and social relationships, even building upon the avoidance dimension of post-traumatic stress disorder symptomology.

Investigating the Unique Role of Symptom Criteria

In this chapter, I first consider each of the current *DSM* symptom clusters as they relate to economic outcomes. This is done to establish whether or not a composite diagnosis of PTSD adequately captures the relationship between illness experience and economic well-being. Furthermore, such a focused description will allow for the investigation of persons

⁷⁵ Arguably, such a trend would be further complicated by the fact that veterans of current war and peacekeeping efforts are younger, meaning that it is less likely veterans have a work history, or confidence in civilian employment compared to nonveterans, even in the absence of post-traumatic stress disorder.

with subsyndromal PTSD as vulnerable economically. Ultimately, my analysis extends the current literature by seeking to understand the unique relationship of PTSD symptom categories and socioeconomic outcomes. As seen in the previous chapter (Chapter 3), Veterans Affairs Canada clients are, in fact, disadvantaged in regard to socioeconomic well-being, and this is particularly true among those at greatest risk for PTSD diagnosis. Thus, the current investigation will seek to clarify whether particular dimensions of the post-traumatic stress experience are more or less relevant to understanding financial and employment outcomes.⁷⁶ The goal is to link this research to policy and resource allocation agendas, in an attempt to ease the reintegration of veterans into civilian life.

DATA AND MEASURES

Again, the data utilized in this chapter are from the 1999 Canadian Forces Survey (CFS). The sample is of VAC clients – meaning, this is not a representative sample of all Canadian Forces Veterans (or “veterans, in general”), but rather a subset of this broader group who became clients of VAC for any number of reasons. All respondents in this data were current clients of VAC, indicative of an increased likelihood of a medical condition and receipt of disability pension. Therefore, implications of the research will be directly mindful of potential limits to generalizability of results.

Also, the analyses presented here are limited to men, in large part because the CFS original sample included only 107 women (~5%) of total respondents; an additional 5 respondents did not report sex. Therefore, for methodological reasons, non-male respondents

⁷⁶ The majority of VAC clients identified as being probable for PTSD diagnosis are no longer serving in the Canadian Forces (84.7%) This is not statistically significant for service status of VAC clients, in general. Furthermore, it is statistically no more likely that clients who meet the diagnostic standard for any particular criteria (B, C, or D) vary based upon service status. Therefore, “employment” as discussed in this chapter, means being employed in the civilian labor force or the Canadian Forces.

are excluded. This decision is perhaps also warranted because it can be assumed that women experience military service, mental illness, and civilian employment / retirement issues differently than men, as discussed in Chapter 2. Furthermore, conscious exclusions for methodological concerns and data quality control resulting in a final sample of 1841 VAC male clients.⁷⁷

Because PTSD is of critical importance in this analysis, I chose to limit the analyses in this chapter to respondents with complete data for PCL-M. Therefore, a total of 372 additional respondents were excluded, leaving the final analysis sample at 1469 clients of VAC. For all other variables included in the SEM investigation, missing data was handled using maximum likelihood estimation, the default for Amos Version 18 (Arbuckle [1995] 2009). Using SPSS Version 18, the missing value analysis indicated that in regard to all other variables used in this analysis, PCL-M items are missing completely at random (MCAR) among veterans, with the exception of age. Respondents who did not complete full information on the PCL-M were significantly younger on average (50.79 versus 52.37 years, $p < .001$), but within a reasonable range of 2 years. In conclusion, sample size is sufficiently robust for methodologies used in this analysis.

It is important to note also that the statistical procedure used in this investigation (discussed fully in the “Analyses” section) disallows for variable weights. Thus, unlike the previous chapter, which was able to account for stratification within the sampling process (in regard to province of residence, type of service, and age), parts of the current analysis do not include variable weighting. Points at which data weights are excluded are indicated in the

⁷⁷ As outlined by the VCNP, all clients over the age of 65 ($n=3$) at time of survey were also excluded from analyses, as well as those who failed to report a current age ($n=14$).

text and tables; and, implications for such treatment of the data are included in the “Discussion” section of the chapter.

This chapter utilizes all of the same variables discussed in the previous chapter (Chapter 3), so I will forgo a detailed discussion at this point. The only change in the current analysis is the inclusion of PTSD symptom variables. I used the *DSM* classification of PCL-M items to identify whether or not a client met the standard for “diagnosis” in *each criterion* of PTSD. So, rather than focus on clients with a probable PTSD as a composite diagnosis, I consider clients who meet a particular symptom cluster standard as identified by the *DSM*: B “re-experiencing” (n=340); C “avoidance and numbing” (n=240); and D “hyperarousal” (n=457).

METHODS

The previous chapter considered the relationship between post-traumatic stress disorder and economic indicators of employment status, income, and perceptions of financial well-being. This chapter extends the discussion to investigate whether the various symptom clusters of the PTSD diagnostic criteria influence socioeconomic outcomes in meaningful - and unique - ways. In order to perform such an inquiry, I perform a thorough descriptive analysis of VAC clients who meet diagnostic standards for any symptom cluster of PTSD (as opposed to the composite diagnosis used in Chapter 3). This investigation informs VAC about client needs and vulnerabilities in regard to particular PTSD *symptom experiences* as related to economic outcomes, rather than the dichotomous “probable or not” composite PTSD diagnosis conceptualization.⁷⁸

⁷⁸ I did perform a number of structural equation models analyses to evaluate the relative strength of relationships between the previously determined symptom clusters of PTSD and economic outcomes, however,

For investigative purposes as well as treatment and service provision assessments, it is useful to consider whether or not each uniquely defined symptom cluster influences outcomes of interest. In particular, I will examine the way in which symptom aggregates distinctively add to the understanding of the socioeconomic correlates of post-traumatic stress disorder diagnosis. “If all symptom clusters correlate highly with one another and are largely subsumed under a global PTSD construct, ... factors can be approached by examining which is most useful in a particular setting” (Yufik and Simms 2010:772). To clarify, it may be that the dichotomous indicator of post-traumatic stress diagnosis alone is sufficient to explain socioeconomic outcomes of veterans. However, a conceptualization that distinguishes among symptom clusters may better fit the data, and thus lead to more efficient and precise service distribution.

RESULTS

The previous chapter established a general profile of the relationship between probable PTSD and economic standing among clients of Veterans Affairs Canada. It is clearly established that PTSD maintains a significant negative relationship with socioeconomic well-being. To quickly summarize, clients with probable PTSD (those who meet the *DSM* criteria for diagnosis, based upon the PCL-M) are significantly: younger (45.7 vs. 51.9 years old, $p<.001$); less likely to be married (75.7% versus 87.7%, $p<.001$); more likely in “poor” or “fair” health based upon self-reports (82.2% versus 44.8%, $p<.001$); and generally experience more “severe” pain (33.7% versus 14.8%, $p<.001$) and disability (ADL score 4.96 versus 3.33, range 0-7, $p<.001$).

the use of cross-sectional data warrants causal relationships speculative at best. Therefore, I do not include the SEM analysis in the chapter, but data are available upon request.

To better assess the link between PTSD and economic standing, the sample was limited to clients between the ages of 20 – 50, assuming that older clients likely face different motivations and opportunities upon release from the Canadian Forces, such as retirement. Limiting the sample in this manner changed the findings in several important ways. Although the cohort also reports significantly higher rates of separation / divorce among those with probable PTSD (18.3% versus 7.7%, $p < .001$), age is no longer significantly different between diagnosis groups. The associations between PTSD and health are also consistent among the cohort sample, in both statistical relationship and significance level. However, I further developed the relationship between PTSD and other health conditions in order to understand if PTSD in and of itself remained important in regard to economic outcomes, or if the relationships were part of a more general negative health profile.

The regression analyses suggest that although PTSD is strongly associated with a number of other health challenges (in particular, depression, functional disability, general pain, migraine headaches, arthritis, and back problems, among others), the financial insecurity felt by clients of VAC continues to exist when controls for these other diagnoses are included. Furthermore, although current income and employment status are strongly associated with perceived economic security, PTSD remains significantly related to financial concerns. This is particularly true when considering long-term security (as opposed to satisfaction with current income and investments). Although the military service indicators are limited in my analysis, it does appear that among VAC clients, what poignantly persists from their career in the Canadian Forces is subsequent health disadvantage which extends beyond release. In particular, PTSD, among other health conditions, is strongly associated with financial insecurity.

PTSD Symptoms in VAC Clients⁷⁹

The focus of this chapter considers the economic vulnerability of Canadian veterans as a result of PTSD symptoms rather than the composite diagnosis. VAC recognizes that “partial” or subsyndromal PTSD presents challenges to clients, and this is of particular importance when considering rehabilitation outside of the medical context. Table 4.1 illustrates that based upon *DSM* diagnosis standards, VAC clients have high rates of probable PTSD (11.5% of the full sample; 18.6% if limited to the younger cohort). Furthermore, if concern is extended to clients of subsyndromal presentations of PTSD symptoms (meeting 2 of the 3 diagnostic criteria), an additional 10-15% of clients (based upon sample) are in need of services and/or treatment.

Table 4.1. VAC Client Prevalence of PTSD Symptom Clusters by *DSM* Standards

	Criterion B <i>Re-experiencing</i>	Criterion C <i>Avoidance & Numbing</i>	Criterion D <i>Hyperarousal</i>	Probable PTSD	Subsyndromal PTSD
Full VAC Client Sample^a	23.1 %	16.3 %	31.0 %	11.5 %	9.6 %
VAC Clients Age ≤ 50^a	32.0 %	25.4 %	39.7 %	18.6 %	12.7 %
Measurement^b	PCL-M Items B1-B5	PCL-M Items C1-C7	PCL-M Items D1-D5	1 of 5 Re-experiencing 3 of 7 Avoidance 2 of 5 Hyperarousal Probable: Meet 3 Criteria Subsyndromal: Meet 2 Criteria	

^a For the full client sample, N=1473; For clients ages 20-50, N =589.

^b A copy of the PCL-M instrument is included in the Appendix.

⁷⁹ In this portion of the analyses, data are weighted to account for sampling distributions.

The information in Table 4.1 also shows that particularly among clients of the younger cohort, high levels of symptom cluster standards are met. Among those ages 20-50, 32.0% experience clinically significant re-experiencing symptoms; one-quarter report avoidance / numbing symptoms; and almost 40% are clinically hyperaroused. Taken in context, 26.2% (or 34.4% of the full sample) of younger clients do not experience any symptoms based upon their completion of the PCL-M. So, it is clear that there are VAC clients who experience what is considered “clinically significant” symptoms in relation to PTSD, even if full diagnostic standards are not met. Table 4.2 below further elaborates this point.

Table 4.2. Symptom Cluster Association with Composite Diagnosis ^a

	<i>Full Client Sample</i> (Ages 20-65)			<i>Cohort Client Sample</i> (Ages 20-50)		
<i>Probable PTSD Status</i>	<u>Crit. B</u> Re-experience	<u>Crit. C</u> Avoid & Numb	<u>Crit. D</u> Hyper-arousal	<u>Crit. B</u> Re-experience	<u>Crit. C</u> Avoid & Numb	<u>Crit. D</u> Hyper-arousal
No	50.0	29.2	62.8	42.0	26.8	53.4
Yes	50.0	70.8	37.2	58.0	73.2	46.6
Total	100.0 n = 340 23.1%	100.0 n = 240 16.3%	100.0 n = 457 31.0%	100.0 n = 188 32.0%	100.0 n = 158 25.4%	100.0 n = 234 39.7%

^aFor the full client sample, N=1473; For clients ages 20-50, N =589.

Note: Columns represent % of clients within probable PTSD diagnosis who meet the Criterion standard for each individual symptom.

When all clients who meet the clinical standard for each criteria of *DSM* diagnosis are considered, it is clear that distress extends beyond those captured in a composite diagnosis. A pattern emerges within both the full sample and the younger cohort that indicates although most clients struggling with avoidance / numbing symptoms are likely candidates for a full

PTSD diagnosis, re-experiencing and hyperarousal are prevalent well beyond those who are likely to be clinically recognized. Looking first at the complete sample (ages 20-65), 62.8% of clients who meet the clinical standard for hyperarousal are *not* in the probable PTSD group. Although the rates of “undiagnosable” symptom criteria standards are not quite as high in the cohort sample, this may be in part due to a general higher prevalence of hyperarousal symptoms, overall (39.7%).

It appears that in general, if a client meets the standard for PTSD diagnosis in Criterion C (avoidance and numbing), he is likely to meet the overall diagnostic profile. In regard to the other criteria, one might suggest that re-experiencing military events (through memories, dreams, or feelings) is expected, if not generally acceptable. However, hyperarousal appears to be problematic – not only in the level of symptomatology present among VAC clients, but that the symptoms do not necessarily lead to a clinical diagnosis thus linking those clients who are suffering to treatment. Interestingly, the full sample presents a higher level of criteria-based symptom experiences that are *not* captured within the composite diagnosis of PTSD when compared to the younger cohort. Veterans of younger ages report more severe and widespread symptoms. This may reflect the benefits of effective treatment for older veterans (meaning, they may have been at the level of diagnosis at some point, but subsequently report subyndromal levels of PTSD symptoms), but my analysis is unable to assess this trend.

The next three sets of tables (Tables 4.3a/b; 4.4a/b; and 4.5a/b) consider the relationship between PTSD clusters and (1) demographic and military characteristics; (2) health correlates; and, (3) economic outcomes for both the (a) full and (b) cohort samples. I

will talk about the results from the full sample first, and then consider how the younger cohort subsample differs in meaningful ways, if appropriate.

PTSD Symptoms and Demographics

Similar to the general relationship between age and probable PTSD diagnosis among clients, those in the full sample (Table 4.3a) are significantly younger if they report clinically relevant symptom levels in *any* of the diagnostic criteria ($p < .001$). The younger cohort (Table 4.3b), only Criteria B and C qualifiers are significantly younger than their non-qualifying counterparts ($p < .05$). This may be due to the generally widespread nature of hyperarousal (Criterion D) symptoms in this subsample. Arguably, it may also be important that hyperarousal symptoms have been found most prevalent and intense at the period closest to PTSD onset; and, clients of the younger cohort have been released more recently than the full sample, on average.

Marital status is also significantly related to all symptom clusters in the full sample (Table 4.3a), and in all Criteria, symptomatic clients are more likely to be divorced or separated ($p < .001$). Interestingly, in the younger cohort (Table 4.3b), only avoidance/numbing ($p < .05$) and hyperarousal ($p < .01$) are associated with increased divorce or separation. It is unclear whether this is due to factor of time (i.e. length of marriage) or, perhaps that spouses may anticipate, and thus be more compassionate about re-experiencing symptoms in veterans.⁸⁰ This would make sense in regard to both length of time since release (shorter in the 20-50 cohort) and the more “obvious” nature of re-experiencing as a part of military service (rather than a general emotional pattern of symptoms). In either case, this

⁸⁰ It could also be the case that a fragile, conflicted marriage during service could be a factor in the diagnosis of PTSD among veterans.

Table 4.3a. Demographic and Military Characteristics by PTSD Symptom Clusters^a

	B	C	D	Total		B	C	D	Total
<i>Demographics</i>					<i>Military Career</i>				
Mean Age	47.68***	46.03***	48.68***	51.19	Elements of Service	***	*	***	
<i>sd</i>	(11.12)	(10.82)	(10.97)	(10.61)	<i>Land Only</i>	64.3	62.3	59.9	53.4
<i>Range</i>	20-65	20-65	20-65	20-65	<i>Sea Only</i>	5.9	7.5	7.0	9.1
					<i>Air Only</i>	10.0	10.5	10.4	15.8
Marital Status	***	***	***		<i>Multiple Elements</i>	19.8	19.7	22.7	21.7
<i>Single, Never Married</i>	6.2	7.1	6.4	4.6					
<i>Married / Common Law</i>	80.2	76.2	78.8	86.4	Overseas Deployment	***	***	***	
<i>Divorced / Separated</i>	12.7	15.0	13.8	7.9	<i>Never</i>	21.0	21.8	27.7	38.8
<i>Widowed</i>	0.9	1.7	1.1	1.1	<i>At Least Once</i>	79.0	78.2	72.3	61.2
Education		*	*						
<i>Secondary Incomplete</i>	18.4	17.9	22.0	21.0	Mean # of Overseas	1.46***	1.41***	1.27***	1.08
<i>Secondary Complete</i>	27.6	27.9	24.3	25.0	Deployments	<i>sd</i> (1.16)	(1.13)	(1.15)	(1.15)
<i>Post-Secondary (Some)</i>	26.4	27.5	27.3	25.0	<i>Range</i>	0 - 5	0 - 5	0-5	0-5
<i>Post-Secondary Degree</i>	27.6	26.6	26.3	29.1					
Individual Income	***	***	***						
<i>Less Than \$10,000</i>	3.6	6.2	4.3	2.0	Highest Rank	***	**	***	
<i>\$10,000 - \$19,999</i>	11.6	11.3	10.5	6.4	<i>General/Flag/Senior</i>	6.9	7.6	7.1	12.2
<i>\$20,000 - \$29,999</i>	23.5	18.5	22.0	16.0	<i>Junior/Subordinate</i>	8.4	7.6	9.6	12.2
<i>\$30,000 - \$39,999</i>	20.6	22.1	22.3	19.1	<i>Non-Comissioned Officer</i>	84.7	84.7	83.3	75.6
<i>\$40,000 - \$49,999</i>	17.0	15.4	14.8	17.7					
<i>\$50,000 - \$59,999</i>	9.0	11.3	10.8	13.6	Mean Years in	19.20***	17.86***	18.89***	20.85
<i>\$60,000 - \$69,999</i>	5.8	5.1	7.5	8.1	Regular Forces	<i>sd</i> (9.15)	(8.90)	(9.34)	(9.75)
<i>\$70,000 - \$79,999</i>	4.3	5.1	3.2	6.6	<i>Range</i>	1-38	1-37	1-37	0-39
<i>\$80,000 or More</i>	4.7	5.1	4.6	10.6					
<i>Military Career</i>									
Age on Date of Release^b	38.22**	36.87***	37.66***	39.92	Mean Years in	5.26	5.04	4.27***	5.87
<i>sd</i>	(9.44)	(9.49)	(9.70)	(10.28)	Reserve Forces	<i>sd</i> (5.84)	(5.83)	(4.29)	(6.87)
<i>Range</i>	18-59	18-59	18-59	17-63	<i>Range</i>	0-32	0-27	0-39	0-39
Number of Years Since Release^b	10.88***	10.85**	12.59	13.14	Medical Release Status	***	***	***	
<i>sd</i>	(10.84)	(11.42)	(11.63)	(11.05)	<i>No</i>	58.1	54.8	56.3	70.5
<i>Range</i>	0-44	0-44	0-44	0-44	<i>Yes</i>	41.9	45.2	43.7	29.5

^a Level of significance: F-statistic for continuous variables (means); Pearson χ^2 for categorical variables (%). *** p<.001; ** p<.01; * p<.05

^b Only asked of clients no longer serving in the CF.

Note: Columns "B" (Re-experiencing), "C" (Avoidance & Numbing), and "D" (Hyperarousal) include information for clients who meet the DSM standard for the given symptom cluster. Significance is in relation to clients who do not meet the standard for each given criteria, but "total" statistics are presented for reference. Criterion B (n=340); Criterion C (n=240); Criterion D (n=457).

Table 4.3b. Demographic and Military Characteristics of Cohort Sample by PTSD Symptom Clusters^a

	B	C	D	Total		B	C	D	Total
<i>Demographics</i>					<i>Military Career</i>				
Mean Age	39.10*	39.01*	39.45	39.91	Elements of Service				
<i>sd</i>	(6.49)	(6.69)	(6.47)	(6.45)	<i>Land Only</i>	65.4	62.4	60.7	58.7
<i>Range</i>	20-50	20-50	20-50	20-50	<i>Sea Only</i>	5.3	6.7	5.1	6.0
					<i>Air Only</i>	9.6	6.0	9.8	11.1
Marital Status		*	**		<i>Multiple Elements</i>	26.5	24.8	24.4	24.3
<i>Single, Never Married</i>	9.0	8.1	9.4	9.0					
<i>Married / Common Law</i>	76.6	75.7	75.1	81.0	Overseas Deployment	***	***	***	
<i>Divorced / Separated</i>	13.3	14.9	14.6	9.7	<i>Never</i>	14.6	15.8	19.9	27.4
<i>Widowed</i>	1.1	1.4	0.9	0.3	<i>At Least Once</i>	85.4	84.2	80.1	72.6
Education			*						
<i>Secondary Incomplete</i>	14.1	15.0	16.2	15.0	Mean # of Overseas	1.63***	1.54*	1.47*	1.33
<i>Secondary Complete</i>	28.3	29.3	26.8	29.7	Deployments	<i>sd</i> (1.14)	(1.11)	(1.16)	(1.18)
<i>Post-Secondary (Some)</i>	29.3	28.6	30.3	25.7	<i>Range</i>	0 - 5	0 - 5	0-5	0-5
<i>Post-Secondary Degree</i>	28.2	27.2	26.7	29.7					
Individual Income			*						
<i>Less Than \$10,000</i>	4.6	3.8	6.7	3.9	Highest Rank				
<i>\$10,000 - \$19,999</i>	15.6	15.9	13.9	12.4	<i>General/Flag/Senior</i>	5.9	6.1	5.2	7.7
<i>\$20,000 - \$29,999</i>	23.1	19.7	20.2	17.6	<i>Junior/Subordinate</i>	7.0	6.8	6.9	7.9
<i>\$30,000 - \$39,999</i>	24.3	28.8	28.4	26.3	<i>Non-Comissioned Officer</i>	87.1	87.2	88.0	84.4
<i>\$40,000 - \$49,999</i>	18.5	16.7	16.8	21.1					
<i>\$50,000 - \$59,999</i>	6.9	9.1	8.7	9.8	Mean Years in	16.20	15.63	15.75	16.22
<i>\$60,000 - \$69,999</i>	1.2	0.0	1.0	2.2	Regular Forces	<i>sd</i> (7.15)	(6.68)	(7.06)	(7.19)
<i>\$70,000 - \$79,999</i>	2.9	3.0	2.4	3.0	<i>Range</i>	1-33	1-30	1-33	0-33
<i>\$80,000 or More</i>	2.9	3.0	1.9	3.7					
<i>Military Career</i>									
Age on Date of Release^b	35.43	35.21	34.85	34.76	Mean Years in	4.86	4.97	4.83	5.87
<i>sd</i>	(9.44)	(7.32)	(7.49)	(7.75)	Reserve Forces	<i>sd</i> (4.95)	(5.73)	(4.98)	(6.87)
<i>Range</i>	18-59	18-48	18-50	17-50	<i>Range</i>	0-26	0-26	0-26	0-39
Number of Years Since Release^b	4.34***	4.56***	5.29**	6.22	Medical Release Status^c		*	***	
<i>sd</i>	(3.95)	(4.24)	(5.36)	(5.86)	<i>No</i>	43.9	41.8	39.6	50.3
<i>Range</i>	0-33	0-26	0-26	0-33	<i>Yes</i>	56.1	58.2	60.4	49.7

^a Level of significance: F-statistic for continuous variables (means); Pearson χ^2 for categorical variables (%). *** p<.001; ** p<.01; * p<.05

Note: Columns "B" (Re-experiencing), "C" (Avoidance & Numbing), and "D" (Hyperarousal) include information for clients who meet the DSM standard for the given symptom cluster. Significance is in relation to clients who do not meet the standard for each given criteria, but "total" statistics are presented for reference. Criterion B (n=188); Criterion C (n=150); Criterion D (n=234).

^b Only asked of clients no longer serving in the CF.

may be an important finding for the way in which marital support is structured for clients and their families, as the “less obvious” symptoms of PTSD may ultimately be more difficult to manage in relationships.

PTSD Symptoms and Military Service

The patterns of symptom criteria in relation to military experience produce meaningful patterns. In the full sample (Table 4.3a), all three criteria are significantly related to being released at younger ages (which does not hold true for the younger subsample); being deployed; and highest rank attained. Deployment is significantly associated with all symptom criteria in both samples, which is also a consistent marker of PTSD risk in general within the literature. Rank has been explained to be both indirectly (through limited combat exposure among higher ranks) and directly (personal resiliency characteristics) important to PTSD vulnerability. Although an explanation for this relationship is unclear from my research, the pattern does hold in the full sample, as non-commissioned officers are more likely to have clinically significant symptoms in all three criteria ($p < .001$). However, rank is not significantly related to PTSD symptoms in any way among the younger cohort (Table 4.3b). Again, as discussed in regard to the composite diagnosis, this may be because time served is more limited in the younger cohort, thus shortcutting eventual promotion to higher ranks – particularly among a group of VAC clients who are commonly released earlier than planned for medical reasons.

Similarly, time in service is significant among the full sample, such that those who present diagnostic symptomatology in each criteria have served shorter periods, on average ($p < .001$). Neither time in Regular or Reserve forces is significant in the younger cohort

(Table 4.3b). One additional caveat that appears in the data when considering the full sample versus the younger cohort is that of element of service. In particular, younger clients are, on average, more likely to serve in “land only” capacities (58.7% versus 53.4%), as well as “multiple elements” (24.3% versus 21.7%). This is likely a cohort effect, related to the type of military engagements the Canadian Forces have had in more recent years. If service members are more concentrated in land only or multiple elements, it may be an indicator of increased deployment and/or combat exposure risk in recent cohorts. This would contribute to the larger percentage of young clients with PTSD, and also suggest why there is no significant difference within symptom clusters (due to less variability in service type). This is not clearly established, but suffice it to say that the relationship between service element and symptom clusters *is* significant in the full cohort, such that those who are positive for symptom experiences are more likely to have served in land only capacities (Table 4.3a).

The final aspect of military service to consider is medical release status, which leads into the following discussion of health correlates. In both the full and cohort samples, clients are more likely to have been medically released if they report clinically significant symptom profiles for any criteria; and, this is significant for all criteria in the full sample ($p < .001$). However, in the cohort sample, where clients are generally more likely to have been released for medical reasons, the presentation of criteria C and D are significant, whereas criteria B is not (Table 4.3b). Specifically, among those who meet the criteria for re-experiencing, medical release status is not significantly more common. Similar to the discussion of marital status, my explanation would be that some level of military “intrusion” of thoughts is expected among clients – especially those more recently released who are also more likely to have been deployed than those of older cohorts.

PTSD and Health Comorbidities

The health correlates of PTSD symptoms are relatively consistent between the full sample (Table 4.4a) and the younger cohort (Table 4.4b). In general, all symptom criteria are significantly associated with poor general health, increased likelihood of reporting “severe” pain, lower functional ability (both ADLs and IADLs), and a number of comorbid diagnoses: depression, migraine headaches, back problems, and arthritis / rheumatism (not criteria B in the younger cohort). In regard to Alzheimer’s disease / dementia, those who are clinically symptomatic for Criteria C and D are also more likely to have the comorbid diagnosis, but this is not the case for re-experiencing symptoms (for both the full and cohort samples).

Arguably, it is difficult to untangle the unique health aspects of VAC clients – as they are generally unhealthy, or at least self-report as such. Rates of depression are higher than in the general or broader veteran population, and age-related conditions are often present in younger clients (such as urinary incontinence and Alzheimer’s disease). Perhaps an important cohort difference that appears is that hearing difficulties are significantly related to all symptom clusters in the younger cohort (but not the full sample). Again, without additional data, I cannot confirm this, but increased combat exposure would potentially threaten veteran hearing. (Similar to current research on traumatic brain injury, there is also an increased prevalence of migraine headaches in the younger cohorts.) It may well be that such conditions are being screened far more readily than in the past; but it could also be that conditions generally related to overseas deployment and combat exposure are simply becoming more prevalent in all military service members. PTSD is one such casualty.

Table 4.4a. Health Status Characteristics by PTSD Symptom Clusters^a

Table 4.4b. Health Status Characteristics of Cohort Sample by PTSD Symptom Clusters^a

	B	C	D	Total		B	C	D	Total
<i>General Health Status</i>					<i>Diagnosed (Serious) Health Problems</i>				
Global Health Status	***	***	***		Alzheimer's / Dementia		***	*	
<i>Good/Excellent</i>	29.3	18.8	25.8	45.5	<i>No</i>	98.9	97.2	98.3	99.3
<i>Fair/Poor</i>	70.7	81.2	74.2	54.5	<i>Yes</i>	1.1	2.8	1.7	0.7
Current Level of Pain	***	***	***		Arthritis / Rheumatism		**	**	
<i>Mild/None</i>	17.1	13.7	13.3	29.4	<i>No</i>	58.2	53.1	57.0	63.6
<i>Moderate</i>	53.0	51.4	53.8	51.7	<i>Yes</i>	33.9	46.9	43.0	36.4
<i>Severe</i>	29.8	34.9	32.9	18.9					
<i>Functional Health Status</i>					Back Problems	*	**	***	
ADL Score	4.39	4.61	4.56	3.49	<i>No</i>	37.8	34.2	36.1	45.4
<i>sd</i>	(2.33)	(2.29)	(2.25)	(2.34)	<i>Yes</i>	62.2	65.8	63.9	54.6
<i>Range</i>	0-10	0-10	0-12	0-12	High Blood Pressure		*	*	
IADL Score	2.14	2.51	2.17	1.37	<i>No</i>	86.6	83.6	85.2	88.6
<i>sd</i>	(2.29)	(2.40)	(2.31)	(1.98)	<i>Yes</i>	13.4	16.4	14.8	11.4
<i>Range</i>	0-7	0-7	0-7	0-7					
Hearing Difficulty	*	***	**		Migraine Headaches	***	***	***	
<i>No</i>	44.3	38.8	44.2	51.4	<i>No</i>	73.5	65.8	69.9	81.1
<i>Yes</i>	55.7	61.2	55.8	48.6	<i>Yes</i>	26.5	34.2	30.1	18.9
<i>Comorbid Mental Health Problems</i>					Urinary Incontinence	***	***	**	
Depression (CES-D)	***	***	***		<i>No</i>	93.0	91.8	93.9	96.6
<i>No</i>	29.3	18.0	22.6	60.3	<i>Yes</i>	7.0	8.2	6.1	3.4
<i>Yes</i>	70.7	82.0	77.4	39.7					

^a Level of significance: F-statistic for continuous variables (means); Pearson χ^2 for categorical variables (%). *** p<.001; ** p<.01; * p<.05

Note: Columns "B" (Re-experiencing), "C" (Avoidance & Numbing), and "D" (Hyperarousal) include information for clients who meet the DSM standard for the given symptom cluster. Significance is in relation to clients who do not meet the standard for each given criteria, but "total" statistics are presented for reference. Criterion B (n=188); Criterion C (n=150); Criterion D (n=234).

PTSD and Economic Well-being

Of particular interest in this chapter, is the role of PTSD *symptom clusters* as unique contributors to socioeconomic disadvantage. The previous sections indicate that in particular, re-experiences appears to be less critical in regard to understanding the negative association of PTSD with various outcomes, particularly in groups more recently released from service. This holds in both social (marital) contexts and in relation to health comorbidities. Whether re-experiencing is simply “more common,” “more expected,” or “more acceptable” among those who have served in the military is unable to be deciphered here, but it is certainly meaningful in relation to economic well-being.

Chapter 3 established the disadvantage experienced by clients with PTSD in relation to economic status. Compared to their peers, those ages 20-50 with probable PTSD are significantly: more likely to be currently unemployed (11.0% versus 7.6%, $p < .01$); more likely to report annual household incomes of less than \$29,999 (33.7% versus 16.5%, $p < .001$); and, financially insecure both currently (78.9% versus 47.2%, $p < .001$) and into the future (85.5% versus 44.1%, $p < .001$). In the full sample, where post-military experience has developed over longer periods of time for many clients, PTSD is also related to ever experiencing unemployment (63.0% versus 48.2%, $p < .001$). Yet, it is worth investigation to understand if clients who struggle with PTSD in a sub-clinical manner also face disadvantage in the workplace. In particular, to navigate a complex and ever-changing labor market (particularly in times when opportunities are more limited), any disadvantage can become an influence to cumulative disadvantage. Because Veterans Affairs Canada is focused on vocational rehabilitation, it is worth studying how those clients who are affected by, but not clinically diagnosed with PTSD may be helped.

Table 4.5a. Post-release Characteristics by PTSD Symptom Clusters^a

	B	C	D	Total		B	C	D	Total
<i>Employment Characteristics</i>					<i>Income / Investments Satisfaction</i>				
Current Employment Status	*		***		Satisfaction with Current Level	***	***	***	
<i>Employed in Canadian Forces</i>	17.5	19.5	17.5	17.0	<i>Yes</i>	30.8	24.3	32.3	53.7
<i>Employed in Civilian Labour Force</i>	37.6	40.0	35.8	42.4	<i>No / Don't Know</i>	69.2	75.7	67.7	46.3
<i>Unemployed but Looking for Job</i>	10.2	9.1	10.8	7.0	Current Level Will Continue to Satisfy Needs	***	***	***	
<i>Inactive</i>	34.7	31.4	35.8	33.6	<i>Yes</i>	15.6	11.3	16.5	36.3
					<i>No/Don't Know</i>	84.4	88.7	83.5	63.7
Ever Worked for Pay^b	*				Level of Future Satisfaction of Needs	***	***	***	
<i>Yes</i>	81.7	82.0	83.9	86.2	<i>Very Well / Adequate</i>	21.4	16.3	21.9	43.3
<i>No</i>	18.3	18.0	16.1	13.8	<i>Not Very Well / Totally Inadequately / Don't Know</i>	78.6	83.7	79.2	56.7
Mean # of Different Jobs^b	3.41	3.54	3.56	3.25					
<i>sd</i>	(3.18)	(3.31)	(3.36)	(2.99)					
<i>Range</i>	0-20	1-20	0-20	0-20					
Ever Unemployed^b	**	***	**		<i>Release Readiness / Preparation</i>				
<i>Yes</i>	60.5	64.7	59.0	51.7	Sufficient Time to^c Prepare for Release	***	***	***	
<i>No</i>	39.5	35.3	41.0	48.3	<i>No</i>	75.1	82.3	72.2	57.3
Mean # Unemployed Periods^c	1.82	2.21	1.96	1.62	<i>Yes</i>	24.9	17.7	27.8	42.7
<i>sd</i>	(2.06)	(2.42)	(2.29)	(2.08)					
<i>Range</i>	0-11	0-11	0-11	0-11	Timing of Release^c Preparations	***	***	***	
Further Education or Training Completed^b					<i>Did Not Prepare</i>	51.6	53.6	47.6	39.3
<i>Yes</i>	45.3	45.0	42.8	41.9	<i>At Least 1 Year Prior</i>	48.4	46.4	52.4	60.7
<i>No</i>	54.7	55.0	57.2	58.1					

^a Level of significance: F-statistic for continuous variables (means) and Pearson χ^2 for categorical variables. *** p<.001; ** p<.01; * p<.05

^b Question only asked of VAC clients who are no longer serving in the Canadian Forces.

^c Question only asked of VAC clients who are no longer serving in the Canadian Forces, and were released earlier than planned.

Note: Columns "B" (Re-experiencing), "C" (Avoidance & Numbing), and "D" (Hyperarousal) include information for clients who meet the DSM standard for the given symptom cluster. Significance is in relation to clients who do not meet the standard for each given criteria, but "total" statistics are presented for reference. Criterion B (n=340); Criterion C (n=240); Criterion D (n=457).

Table 4.5b. Post-release Characteristics of Cohort Sample by PTSD Symptom Clusters^a

	B	C	D	Total		B	C	D	Total
<i>Employment Characteristics</i>					<i>Income / Investments Satisfaction</i>				
Current Employment Status	**		***		Satisfaction with Current Level	***	***	***	
<i>Employed in Canadian Forces</i>	26.6	28.1	28.6	32.6	<i>Yes</i>	28.5	23.5	28.6	47.0
<i>Employed in Civilian Labour Force</i>	44.1	43.2	41.8	46.4	<i>No / Don't Know</i>	71.5	76.5	71.4	53.0
<i>Unemployed but Looking for Job</i>	11.9	10.1	12.3	8.2	Current Level Will Continue to Satisfy Needs	***	***	***	
<i>Inactive</i>	17.5	18.7	17.3	12.7	<i>Yes</i>	13.0	10.7	13.7	32.3
					<i>No/Don't Know</i>	87.0	89.3	86.3	67.7
Ever Worked for Pay^b	*	*	**		Level of Future Satisfaction of Needs	***	***	***	
<i>Yes</i>	79.4	78.5	79.6	85.1	<i>Very Well / Adequate</i>	18.9	15.4	19.7	38.5
<i>No</i>	20.6	21.5	20.4	14.9	<i>Not Very Well / Totally Inadequately / Don't Know</i>	81.1	84.6	80.3	61.5
Mean # of Different Jobs^b			**						
	3.60	3.82	4.09	3.50					
<i>sd</i>	(3.14)	(3.29)	3.65	(3.01)					
<i>Range</i>	1-15	1-15	1-29	1.20					
Ever Unemployed^b			*		<i>Release Readiness / Preparation</i>				
<i>Yes</i>	67.0	67.5	68.7	60.3	Sufficient Time to^c Prepare for Release	***	***	***	
<i>No</i>	33.0	32.5	31.3	39.7	<i>No</i>	76.9	83.3	76.2	64.6
Mean # Unemployed Periods^c		*	**		<i>Yes</i>	23.1	16.7	23.8	35.4
	2.04	2.38	2.29	1.88					
<i>sd</i>	(2.16)	(2.54)	(2.40)	(2.14)					
<i>Range</i>	0-11	0-11	0-11	0-11	Timing of Release^c Preparations	***	***	***	
Further Education or Training Completed^b					<i>Did Not Prepare</i>	57.8	57.9	54.6	49.4
<i>Yes</i>	50.4	49.5	48.8	49.7	<i>At Least 1 Year Prior</i>	42.2	42.1	45.4	50.6
<i>No</i>	49.6	50.5	51.3	50.3					

^a Level of significance: F-statistic for continuous variables (means) and Pearson χ^2 for categorical variables. *** p<.001; ** p<.01; * p<.05

^b Question only asked of VAC clients who are no longer serving in the Canadian Forces.

^c Question only asked of VAC clients who are no longer serving in the Canadian Forces, and were released earlier than planned.

Note: Columns "B" (Re-experiencing), "C" (Avoidance & Numbing), and "D" (Hyperarousal) include information for clients who meet the DSM standard for the given symptom cluster. Significance is in relation to clients who do not meet the standard for each given criteria, but "total" statistics are presented for reference. Criterion B (n=340); Criterion C (n=240); Criterion D (n=457).

Considering current employment status, results for the full sample (Table 4.5a) and the younger cohort (Table 4.5b) suggest that both re-experiencing and hyperarousal are particularly detrimental to civilian experience. In particular, clients are significantly more likely to be unemployed and less likely to be employed if experiencing qualifying levels of Criteria B or D symptoms. This is of great importance in the context of similar rates of continued service and “inactivity” among those with and without symptoms. So, re-experiencing and hyperarousal are significantly related to difficulties in the civilian labor market. The younger cohort (Table 4.5b) holds a similar pattern in regard to the importance of Criteria B and D, however in those ages 20-50, the disadvantage seems concentrated in current unemployment, because rates of civilian labor force participation are similar to the overall sample average. In this cohort, clients with high levels of re-experiencing and hyperarousal are less likely to remain in the Canadian Forces, and more likely to be “inactive,” perhaps indicating an overall greater severity of health problems.

There is consistency in this finding when we turn to the variable for having ever worked for pay (if released from the Canadian Forces) among the younger cohort (Table 4.5b). All three symptom clusters are associated with a decreased likelihood of ever working, which is again, potentially related to severe health challenges. But, hyperarousal, in particular, is indicative of significant job turnover, measured by an increased number of jobs since release (average of 4.09 versus 3.50 overall, $p < .01$). Hyperarousal also relates to increased likelihood of unemployment in the younger cohort. So, among a group of VAC clients who arguably experience a similar labor market, symptoms of intrusion (Criterion B) and hyperarousal (Criterion D) significantly relate to current unemployment and inactivity. In

regard to work history, hyperarousal is significantly associated with unemployment and job turnover.

Returning to the full sample (Table 4.5a), avoidance and numbing also deserve attention, particularly in relation to unemployment. Although Criterion C was not statistically related to ever being unemployed, it is for the larger sample. One explanation to consider, however, is that there is reciprocal causation between depressed affect and measures of work stability. My analysis cannot distinguish between cause and effect, and thus it is possible that general symptoms of “avoidance and numbing” may be reflective of a more general malaise in regard to negative work histories. Those in the full sample have had more time in the civilian labor force, and therefore may experience symptoms as a result of factors other than PTSD. On the other hand, the literature suggests that the Criterion C symptoms tend to be those that linger the longest, so it may be that regardless of clinical status, clients who have either progressed with PTSD beyond clinical indications or those who have persistent cases of PTSD may experience avoidance and numbing more profoundly than clients who are closer in time to onset of symptoms.

One additional point of difference within the full sample (Table 4.5a) is that re-experiencing is the only cluster significantly related to the likelihood of not working at all since release. Those who have clinically significant Criterion B symptoms are significantly more likely to have never been employed in the civilian labor force (18.3% versus 13.8% of full sample, $p < .05$). In the cohort sample, all three symptom clusters were important in determining entry into the labor force, but it appears that with a broader sample of clients, re-experiencing may be a marker of either more persistent PTSD or a reluctance to pursue employment outside of the military context.

One positive aspect of this research is that PTSD as a composite diagnosis or as unique symptom clusters does *not* hold a significant relationship with completing further education upon release from the Canadian Forces. This is certainly an issue worthy of further investigation, as veteran benefits aimed at educational opportunities have been shown to be advantageous in both Canada and the U.S., particularly among veterans of generally disadvantaged economic status. But, the final aspect of economic standing of my research is that of financial security. Chapter 3 highlights the lack of confidence VAC clients hold for their economic future; and PTSD proves to be a very important factor in that assessment, even when controlling for human capital and current socioeconomic status.

Perhaps not surprisingly, all three criteria of the PTSD diagnosis hold significant importance in relation to financial insecurity. This is a consistent and strong association, in both the full (Table 4.5a) and cohort (Table 4.5b) samples. It may be that being “in the midst” of an illness experience with PTSD is overwhelming in regard to perceptions of financial stability. Considering the context of compromised or lost service in the Canadian Forces, increased likelihood of divorce or separation, and unstable work histories if entering the civilian labor market, this is perhaps, not an unexpected finding. But, that does not mean that such “obvious” results should be disregarded. Quite the opposite is true. Because VAC clients – in particular those with PTSD, or clinically significant symptomology in any criterion – are overwhelmingly negative about their financial well-being, it is certainly critical that services be established to address this concern. This will be directly addressed in Chapter 5.

Reconfiguring Symptom Clusters

The importance of overall diagnosis versus individual symptom patterns is further highlighted in contemporary evaluations of symptom cluster analyses. Taylor et al. (1998) utilized exploratory factor analysis to assess whether the three-factor symptom classification (Criteria B -re-experiencing; C- avoidance and emotional numbing; and D – hyperarousal) accurately reflected the empirical factor loading of PTSD checklist instruments within diagnosed populations.⁸¹ This research focused upon Canadian samples of motor vehicle accident survivors referred to psychiatrists (N=103) and UN peacekeepers (also from Canada) returning from a Bosnian deployment (N=419).⁸² Across all samples, a four-factor scheme, characterized as the “numbing” model in the literature, emerged as best fitting the data: intrusion (re-experiencing), avoidance, hyperarousal, and emotional numbing. Buckley, Blanchard, and Hickling (1998) substantiated this investigation through confirmatory factor analysis. Namely, among 217 American motor vehicle accident survivors referred for psychiatric counseling, a hierarchical factor model of post-traumatic stress symptoms (including a four-factor subordinate grouping: intrusion/avoidance and hyperarousal / numbing) was the model of best fit. This analysis, however, was limited by its use of the same data originating from the previous analysis.

⁸¹ In exploratory factor analysis (EFA), the latent variables are not predetermined within the model structure; whereas, confirmatory factor analysis (CFA) is based upon hypotheses, if not theory, to create specified latent variables for test within a model structure. (See Bollen (1989) for a complete explanation.) Essentially, EFA is “a largely descriptive technique” aimed at minimizing covariances through latent variables; and, CFA “is an inferential technique” that “allows researchers to specify one or more hypothetical factor structures a priori and to determine which structure best fits the data” (Simms, Doebbeling, and Watson 2002:637-638).

⁸² In order to reassure that exposure to trauma did occur among the UN peacekeepers, Taylor et al. (1998) report that “[m]ost peacekeepers experienced many of [the 15 stressful deployment] events” asked of them upon return (156).

Although the primacy of a four-factor model (as opposed to the *DSM-IV* three-factor model), essentially bifurcating the avoidance and numbing dimensions, gained support in research studies, the exact nature of symptom loading remains controversial. Many studies support the aforementioned four-factor model, which was formally established by King et al. (1998).⁸³ The authors reasoned that four distinct and interrelated factors (previously mentioned “numbing” model) indeed best fit symptom experiences among combat-exposed veterans. Although King et al. (1998) did not support a higher order (hierarchical) model structure, there is sufficient goodness of fit in their models to suggest such a construction of the diagnosis. From this analysis, speculations about “possible subtypes of PTSD, with individuals displaying different patterns of symptom combinations” became a critical line of questioning (King et al. 1988:95).

Asmundson et al. (2000) presented a comparative analysis of the factor-load models most prevalent in the literature using confirmatory factor analysis.⁸⁴ The authors purposefully incorporated a community sample of Americans (N=349) in order to account for potential diversity due to root trauma experience (207). Essentially, this research became the standard for reconceptualizing the *DSM-IV* classification of Criterion C (avoidance and emotional numbing) into two separate factors. (Please refer to Table 4.6 below: Model 2 reflects the *DSM-IV* classification of symptoms; Model 3a reflects the codification presented by Asmundson et al. (2000).) This work essentially proved to “overrule” the *DSM-IV* classification of three symptom components of PTSD as operationally viable; and, a

⁸³ The King et al. (1998) study is particularly relevant in my research, as their work included a sample of 524 American military veterans, rather than a sample based upon more diverse sources of traumatic experience.

⁸⁴ Because of the detailed nature of model diversity, please see Asmundson et al. (2000) for a review of the major studies up to the point of their work. (Figure 1)

competing four-factor model emerged that better accounts for a unique role of general affect covariance within the PTSD diagnosis.

Subsequently, Simms, Doebbeling, and Watson (2002) approached a confirmatory factor analysis of PTSD symptoms from a slightly different perspective:

“According to [comorbidity] theories, anxiety and depressive disorders share a nonspecific component often referred to as a *general distress* or *negative affectivity*, which includes both anxious and depressed mood as well as symptoms such as insomnia, irritability, and impaired concentration. In addition, each disorder is characterized by a set of more specific symptoms that differentiate it from other disorders” (Simms et al.:637).

Thus, in a sufficiently large sample (N=3695) of US Gulf War veterans (active and reservists), an inclusive set of factor models were compared.⁸⁵ The authors further clarified the model developed from their comorbidity theoretical underpinnings: a four-factor model in which symptoms reflective of general mood were separated from active hyperarousal behaviors. Namely, the re-experiencing/intrusion factor and the avoidance factor elucidated by Asmundson et al. (2000) remained similar; but, some aspects of the *DSM-IV* (American Psychiatric Association 1994) classified hyperarousal category were merged within the more general “emotional numbing” factor to create what is labeled a “dysphoria” factor. (Please refer to Table 4.6 below: Model 3b clarifies this model relative to the others discussed previously.) Elhai et al. (2011) further recommend uniquely identifying dysphoria as a symptom factor as a means to better understanding the correlates between PTSD and depression.

With the recognition of an impending revision to *DSM-IV* and a growing media attention to post-traumatic stress disorder (as a result of global terrorism, war, and increasing

⁸⁵ Please see Table 1 of Simms et al. (2002) for a review. Essentially, the authors compared single-, dual-, and the *DSM-IV* three-factor models to four-factor model established by King et al. (1998). Thus, the analysis is largely repetitive to Asmunson et al. (2000), with the addition of the authors’ original “dysphoria” model.

natural disaster incidence), the literature proclaimed PTSD as arguably the most controversial measurement in the diagnostic manual. “Since its introduction into DSM-III in 1980, no other DSM diagnosis, with the exception of Dissociative Identity Disorder..., has generated so much controversy in the field as to the boundaries of the disorder, diagnostic criteria, central assumptions, clinical utility, and prevalence in various populations” (Spitzer, First, and Wakefield 2007:233). In regard to symptom factors, both reviews and empirical studies recognize the Simms et al. (2002) dysphoria model as the best fit to PTSD populations, regardless of trauma event (Elhai and Palmieri 2011). A recent meta-analysis by Yufik and Simms (2010) of 40 unique PTSD studies supports both four-factor models given priority in recent research⁸⁶: the King et al. (1998) “numbing” model, also supported by Asmundson et al. (2000); and the “dysphoria” model of Simms et al. (2002). This overview analysis also contends that it may be valuable, based upon original trauma type or treatment goals, to concentrate on a more reductionist classification in which the numbing and dysphoria models are combined (Yufik and Simms 2010). (Please see Table 4.6 below: Model 4 depicts the five-factor structure.)

Overall, research focused on understanding the “clustering” patterns of post-traumatic stress disorder symptoms aids in determining the most effective course of treatment. In particular, this work draws upon both the operationalization of the PTSD diagnosis (the aforementioned factor loading of PTSD symptoms) and an understanding of how such unique constructs relate to processes within the brain. For example, Foa, Zinbarg, and Rothbaum

⁸⁶ Naifeh et al. (2010) also support both models using factor mixture modeling on a sample of Canadian Forces veterans (N=408). This technique “combines factor analysis ... and latent-class analysis to model unobserved population heterogeneity within a factor analytic model” in order to address population heterogeneity (667). The results further introduce, and support, a five-factor model, specifically distinguishing the numbing and dysphoria clusters, as they present unique behavior sequelae in relation to post-traumatic stress disorder illness experiences.

(1992) used animal research to illustrate the importance of “unpredictable” and “uncontrollable” environmental stimuli as catalysts for stress reactions. This critical work substantiated the difference between the avoidance and numbing dimensions of trauma reactions as unique responses to threatening or overwhelming stress stimuli.

The details of this work are beyond the scope of sociological inquiry, but suffice it to say that the implications of this work suggest, at least in theory, that biological distinctions among the symptom structure of PTSD will produce unique thoughts and behaviors that translate to varied social experiences. “Thus, stressors that are uncontrollable and whose onset cannot be predicted are expected to result in more intense symptoms of increased arousal than stressors that are characterized by either variable alone” (Foa et al. 1992:233). Considering that veterans face the unique situation of experiencing a trauma in a combat zone, with subsequent re-experiencing occurring in civilian contexts (and generally void of a shared understanding of PTSD triggers by the broader public), former service members may be further disadvantaged by confounding effects of “invisible” (as well as uncontrollable and unpredictable) stimuli.

Building upon this theoretical work, Asmundson, Stapleton, and Taylor (2004) further contend that the unique contributions of avoidance and numbing dimensions of post-traumatic stress disorder largely influence the viability of various treatments: “Preliminary findings also indicate that patients with more significant pretreatment numbing have a poorer prognosis, that avoidance and numbing evidence differential responses to different treatment strategies, and that they have different correlates [or comorbidity patterns]” (474). Therefore, it is not unwarranted to question whether the disorder may present itself heterogeneously

within populations who are formally diagnosed, or the viability of a subsyndromal presentation of PTSD.⁸⁷

Auxiliary research by Breslau et al. (2005) suggests that symptom profiles, in general, cluster individuals into “clinically homogeneous groups” that would benefit from targeted treatment efforts. Using community samples from the United States, this study highlights severity distinctions within diagnoses of post-traumatic stress disorder, differentiated primarily by the experience of emotional numbing. “Members of the pervasive disturbance class were far more likely to report use of medical care and disruptions in life or activities The results suggest that the structure of PTSD is ordinal and configurational ...” (Breslau et al 2005:1343). Thus, analyses are beginning to uncover patterns that highlight a different means of categorizing persons experiencing severe trauma reactions; rather than focusing on thresholds of “mean number” of overall symptoms⁸⁸, the value of investigating the *type* of symptoms that lead to particular disruptions is of growing importance.

Confirmatory Factor Analysis

The current diagnosis of post-traumatic stress disorder is based upon symptom occurrence in three clusters: re-experiencing the traumatic event (or “intrusion”), avoidance and emotional numbing, and arousal (or hyperarousal). However, the literature now strongly recommends differentiating between active avoidance behaviors and more general emotional

⁸⁷ There is a newly emerging body of research to determine how different contexts of trauma may influence the etiology of post-traumatic stress disorder. One relevant example, specific to military experience, is a study by Maguen et al. (2011) that contends killing (as opposed to being captured, witnessing death, or other combat experiences) as the root trauma of PTSD is more predictive of alcohol use and abuse among veterans.

⁸⁸ A review of the importance of “subsyndromal” post-traumatic stress disorder in regard to socioeconomic status is discussed in Chapter 2. The research in this chapter focuses on type of symptoms experienced in regard to work, income, and educational outcomes. However, it is noted that both severity and type of PTSD symptom presentations are important. (Breslau, Lucia, and Davis 2004; Yarvis, Bordnick, and Spivey 2008).

numbing (the “numbing” model) or further incorporating the numbing factors with some original aspects of arousal (sleep disruption, irritability, or concentration problems) into a “dysphoria” model. (Please see Table 4.6 below for symptom criteria models.) Thus, recent research recognizes the importance for developing a new diagnosis conceptualization for best treatment of post-traumatic stress disorder in a clinical perspective. But, from the standpoint of my research, such differentiation also carries implications for understanding ways in

Table 4.6. *Item Mapping for Confirmatory Factor Analysis Models**

<i>PCL-M</i> Symptom Checklist		Model				
		1	2	3a	3b	4
B1	Intrusive thoughts of trauma	P	R	R	R	R
B2	Recurrent dreams of trauma	P	R	R	R	R
B3	Flashbacks	P	R	R	R	R
B4	Emotional reactivity to trauma cues	P	R	R	R	R
B5	Physiological reactivity to trauma cues	P	R	R	R	R
C1	Avoiding thoughts of trauma	P	A,N	A	A	A
C2	Avoiding reminders of trauma	P	A,N	A	A	A
C3	Inability to recall aspects of trauma	P	A,N	N	D	N
C4	Loss of interest	P	A,N	N	D	N
C5	Detachment	P	A,N	N	D	N
C6	Restricted affect	P	A,N	N	D	N
C7	Sense of foreshortened future	P	A,N	N	D	N
D1	Sleep disturbance	P	H	H	D	D
D2	Irritability	P	H	H	D	D
D3	Difficulty concentrating	P	H	H	D	D
D4	Hypervigilance	P	H	H	H	H
D5	Exaggerated startle response	P	H	H	H	H

Note. Factors for symptom loading: P = General PTSD; R = Re-experiencing; A = Avoidance; N = Numbing; D = Dysphoria; H = Hyperarousal

* This table was derived from Simms et al. (2002). See “Table 1: *Item Mapping for Proposed Confirmatory Factor Models*” (639).

which programs and services can be structured to reintegrate veterans into civilian life outside of the medical setting.⁸⁹ More specifically, if the different dimensions of post-traumatic stress symptoms influence reintegration in complex and unique ways, more targeted interventions are necessary to generate successful transitioning – particularly in relation to economic attainment. I assess the various symptom cluster models in the VAC Canadian Forces sample using confirmatory factor analysis.⁹⁰ I evaluate whether the four-factor models of PTSD symptoms proposed in the literature are, in fact, more accurate in their reflection of the post-traumatic stress experience of veterans than the current three-factor model used by *DSM-IV*.

The second part of the investigation of symptom clusters is less directly related to economic outcomes, largely due to a lack of ability to establish causation. However, based upon the current literature, it is certainly relevant to consider if the three-factor symptom model of the *DSM* used throughout this analysis does, in fact, best fit the data. This is not to suggest that an alternate finding would disregard the associations discussed above, in large part because the descriptive analysis establishes that symptom clusters do add to the understanding of illness experiences with PTSD beyond a single diagnostic category. But, prior to creating services to address the unique relationship between symptom clusters and economic (or social) outcomes, it is essential to establish the “best fitting” factor model of PTSD.

⁸⁹ As previously noted, the work of Asmundson et al. (2004) and others suggests a reconceptualization of the symptom structure of post-traumatic stress disorder. The proposed revisions for DSM-V would, in fact, follow the categorization of “avoidance” and “emotional numbing” in separate categories. This is certainly an area for future research inquiry.

⁹⁰ In regard to the current status of theory and empirical work, Elhai and Palmieri (2011) argue: “Using EFA, especially when a large literature supports the numbing and dysphoria models, essentially represents a fishing expedition and results may be too atheoretically driven to be trusted.” (3) Thus, the current study proceeds forgoing exploratory factor analysis (EFA).

Table 4.6 includes all models⁹¹ considered in the confirmatory factor analysis.⁹² *Model 1* is a single-factor model used to determine whether or not all 17 symptoms of the PCL-M are best subsumed under a single construct. This model is presented strictly as comparison for the more developed model structures, because for analytical purposes, it was utilized in the previous chapter (as a dichotomous variable noting whether or not a respondent met the criteria for PTSD diagnosis). *Model 2* reflects the symptom structure dictated by the *DSM-IV* diagnostic profile for PTSD (American Psychiatric Association 1994). The next two models are the competing four- factor structures supported by Asmundson et al. (2000), Asmundson et al. (2004), and King et al. (1998) in *Model 3a*, or Simms et al. (2002) in *Model 3b*. The “numbing” model (*Model 3a*) bifurcates avoidance from affect symptoms subsumed under Criterion C of the formal diagnostic classification; whereas, the use of “dysphoria” in *Model 3b* is argued to be reflective of a more general “nonspecific” component including symptoms present in both depression and anxiety (Simms et al. 2002:645).⁹³ Finally, *Model 4* reflects a five-factor model as recommended by Yufik and Simms (2010) that recognizes the unique value of both the “numbing” and “dysphoria” models through a merge of Models 3a and 3b.

⁹¹ Naifeh et al. (2010) and Elhai et al. (2011) recognize the possibility of five-factor symptom structures for PTSD (primarily separating factors D1-D3 into unique criteria, this analysis recognizes such models perhaps warranting EFA, but due to the lengthy theory in the psychometric literature, I proceed with CFA.

⁹² I performed tests of normality for all PCL-M items in the data, and only one re-experiencing variable – suddenly feeling as if military experiences were happening again – warranted concern: skew=3.27; kurtosis=10.09. Because these scores are essentially at the recommended threshold cut-offs of 3 and 10 respectively, I proceeded without adjustment (Kline 2005). This is typical within the literature on PTSD assessment, and seemingly indicates that general feelings of intrusion are common, on average, among VAC clients, regardless of the likelihood of PTSD diagnosis.

⁹³ A comparison of the PCL-M models in comparison to the proposed symptom profile for the *DSM-V* revised diagnosis of post-traumatic stress disorder can be found in Appendix B. (See Table B4-1.) Note that a model based upon the proposed revisions specifically is not possible due to the structure of the current PCL-M instrument. Namely, the proposed *DSM-V* diagnosis includes three additional symptoms that would require inclusion in a new version of checklist instruments. Therefore, the proposed symptom clustering for *DSM-V* cannot be assessed here.

Table 4.7 presents the descriptive information for all items of the PCL-M.⁹⁴ Tests for normality (skew and kurtosis) indicate that one item, B3 “flashbacks,” is potentially problematic due to a high skew and kurtosis. Standards suggest skew values ≥ 3 and kurtosis ≥ 10 reflect univariate non-normality. Item B3 is reflective of positive skew (distribution of scores concentrated below the mean) and leptokurtic (high peak); and the variable frequency shows that the majority of clients (88.5%) do not experience “sudden actions or feelings as if military experiences were happening again.” This may be an indication that flashbacks are generally reserved for persistent or severe cases of PTSD, or it may be an issue of timing. If clients have been managing PTSD for an extended period of time (rather than completing the PCL-M as an immediate assessment at time of onset), flashbacks may be a symptom that more quickly dissipate and therefore is not reported as commonly in reassessments. In either case, because I do not use ML estimation by limiting my analysis to clients with complete data for the PCL-M, this is not overly problematic. Standards suggest that kurtosis values over 20 are potentially serious (Harrington 2009).

Factor loadings for tested models are presented in Table 4.8. (The CFA diagrams are included – with standardized coefficients listed below – in Appendix B. See Figures B4-1 to B4-4.)⁹⁵ The standardized factor loadings for all models are high (range .61 - .87), with most in the range of “excellent” (.71 or higher) as established by Tabachnick and Fidell (2007). In all models, the factors load significantly ($p < .01$) on the appropriate latent construct, which is consistent with the literature.

⁹⁴ The covariance matrix for PCL-M variables is included in Appendix B. See Table B4-3.

⁹⁵ I also performed higher model ordering on Models 2, 3a, and 3b. Those diagrams (Figures B4-5. through B4-7) are included in Appendix B along with a brief discussion of the goodness-of-fit of these models (Table B4-4).

Table 4.7. PCL-M Items, Means, Skew, and Kurtosis (n=1469; no missing data)

<i>Items by DSM Subscale</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Skew (sd skew)</i>	<i>Kurtosis (sd kurt)</i>
Re-Experiencing				
B1 <i>Had repeated, disturbing memories of your military experiences?</i>	1.50	(1.052)	2.058 (.064)	3.074 (.128)
B2 <i>Had repeated, disturbing dreams of your military experiences?</i>	1.38	(.936)	2.527 (.064)	5.485 (.128)
B3 <i>Suddenly acted or felt as if your military experiences were happening again?</i>	1.25	(.770)	3.267 (.064)	10.095 (.128)
B4 <i>Felt very upset when something reminded you of your military experiences?</i>	1.52	(1.071)	1.942 (.064)	2.557 (.128)
B5 <i>Had physical reactions when something reminded you of your military experiences?</i>	1.30	(.864)	2.947 (.064)	7.737 (.128)
Avoidance & Numbing				
C1 <i>Avoided thinking about your military experiences, or avoided having feelings about them?</i>	1.42	(1.005)	2.344 (.064)	4.261 (.128)
C2 <i>Avoided activities or situations because they reminded you of your military experiences?</i>	1.32	(.899)	2.831 (.064)	6.931 (.128)
C3 <i>Had trouble remembering important parts of your military experiences?</i>	1.34	(.868)	2.629 (.064)	5.955 (.128)
C4 <i>Lost interest in activities you used to enjoy?</i>	1.83	(1.325)	1.281 (.064)	.109 (.128)
C5 <i>Felt distant or cut off from other people?</i>	1.55	(1.103)	1.884 (.064)	2.270 (.128)
C6 <i>Felt emotionally numb or unable to have loving feelings for those close to you?</i>	1.41	(.995)	2.401 (.064)	4.618 (.128)
C7 <i>Felt as if your future will somehow be cut short?</i>	1.56	(1.170)	1.918 (.064)	2.253 (.128)
Hyperarousal				
D1 <i>Had trouble falling or staying asleep?</i>	2.20	(1.474)	.705 (.064)	-1.085 (.128)
D2 <i>Been feeling irritable or had angry outbursts?</i>	1.79	(1.195)	1.305 (.064)	.449 (.128)
D3 <i>Had difficulty concentrating?</i>	1.72	(1.192)	1.447 (.064)	.740 (.128)
D4 <i>Been overly alert, watchful, or on guard?</i>	1.49	(1.085)	2.069 (.064)	2.956 (.128)
D5 <i>Been feeling jumpy or easily startled?</i>	1.55	(1.059)	1.930 (.064)	2.474 (.128)

To assess the goodness-of-fit comparisons among the various symptom dimension models of PTSD, I considered a number of fit indices. Note that the confirmatory factor analyses do not utilize data weights, due to restrictions with the statistical software. Unlike regression analyses, in which R^2 measures the fit of a model to individual datum; fit indices in CFA and SEM consider the relationship between estimated correlations and observed correlations. (See Table 4.9 below.) Chi-square statistics for each model are presented, which tests the extent to which a model fits exactly to the observed population. In a sample of sufficiently large size, which is the case in my analysis, the chi-square value will generally report significance; so, other indices are more meaningful in assessing model comparison. The root mean square error of approximation (RMSEA) is more lenient, in that it tests whether or not the data fit “reasonably” well in the sample, with the difference being a general insensitivity to sample size. RMSEA is a measure of parsimony correction, therefore more likely to be generalizable due to its sensitivity to number of parameters rather than sample size. It is recommended that values of RMSEA close to 0.06 or less are reflective of good model fit. Amos also provides two measures of comparative fit, the comparative fit index (CFI) and the Tucker-Lewis index (TLI) that are valuable in this analysis.⁹⁶ Both CFI and TFI measures are recommended at 0.95 or greater for model fit. (See Hu and Bentler (1999) and Brown (2006) for complete discussion of fit indices.)

⁹⁶ In some cases, the Tucker-Lewis index is also called the non-normative fit index (NNFI). Generally, comparative fit indices evaluate the model relative to a more restricted baseline. CFI is perhaps more useful in the case of small samples (assessing noncentrality), and TLI compares structured models against a null.

Table 4.8. Standardized (Unstandardized) Factor Loadings for CFA Models.^a

<i>PCL-M</i> <i>Item</i>	Model 2 <i>DSM-IV</i>		Model 3a <i>Numbing</i>			Model 3b <i>Dysphoria</i>					
	R	A, N	H	R	A	N	H	R	A	D	H
B1	.87 (1.00)			.87 (1.00)				.87 (1.00)			
B2	.85 (.86)			.85 (.86)				.85 (.86)			
B3	.81 (.68)			.81 (.68)				.81 (.68)			
B4	.84 (.98)			.84 (.98)				.84 (.98)			
B5	.82 (.77)			.82 (.78)				.82 (.78)			
C1		.73 (1.00)			.83 (1.00)				.83 (1.00)		
C2		.74 (.91)			.86 (.92)				.86 (.92)		
C3		.62 (.73)				.62 (1.00)				.61 (1.00)	
C4		.70 (1.25)				.72 (1.78)				.73 (1.81)	
C5		.79 (1.18)				.80 (1.64)				.79 (1.63)	
C6		.74 (1.00)				.75 (1.38)				.74 (1.38)	
C7		.70 (1.12)				.72 (1.57)				.72 (1.59)	
D1			.67 (1.00)				.67 (1.00)			.67 (1.85)	
D2			.75 (.91)				.75 (.91)			.75 (1.68)	
D3			.79 (.95)				.79 (.95)			.79 (1.77)	
D4			.78 (.85)				.77 (.84)				.82 (1.00)
D5			.75 (.80)				.74 (.79)				.78 (.92)

^a Table includes CFA factor loadings for models with complete item assessment. Model 4 is not fully represented because the proposed *DSM-V* diagnosis include items are unavailable in the PCL-M. **Note:** All factor loadings significant at $p < .001$.

Goodness-of-fit measures are presented in Table 4.9.⁹⁷ It is clear that the current *DSM-IV* three-factor classification of PTSD is not the best fitting model for the data. This coincides with the broader psychometric literature of the past decade. Amos also allows for the option of modification Indices (MI) in the output. If changes are made to a model as a result of MI evaluation, this would be reflective of exploration (EFA) because the suggestions are data, rather than theory, driven. Therefore, I considered these statistics for comprehensive purposes only.⁹⁸ In Model 2, only one MI estimate was suggested, between the error variances of the “repeated dreams” and “repeated memory” items of the re-experiencing criterion. This is not surprising, as the covariance between such symptoms are largely what defines “re-experiencing” traumatic events through triggers or stimuli. Models 3a (“numbing”), 3b (“dysphoria”), and 4 did not report any MI estimates, implying that the more complex models do not need factor changes or covariance to increase fit. This is not surprising, because as noted, each of these models meet the standards for good fit of the data.

Overall, the sequence of modeling improves the goodness-of-fit to the population in each instance. Theory-driven amendments to the diagnostic standard set by the *DSM-IV* prove valid in this sample and reliable in comparison to the literature which includes a number of different populations of interest. In particular, among clients of VAC, it holds that a full five-factor model (largely reflective of proposed changes to the diagnostic scheme of PTSD in the forthcoming *DSM-IV*) is the most appropriate to consider in structural models.

⁹⁷ I included a comparison of the goodness-of-fit indices in both the preferred (complete PCL-M) sample and the larger sample in which maximum likelihood estimates are used for respondents who did not complete the PCL-M fully (n=372). The results indicate very similar results further indicating the appropriateness of the way in which I addressed missing data. Please see the Appendix B, Table B4-2.

⁹⁸ The model including covariance between the recommended PCL-M items does lead to a slightly better fit of the data. The standardized estimate for this covariance is 0.19 at $p < .001$. Goodness-of-fit statistics for the model: chi-square = 994.9 ($p < .001$); RMSEA=.072; CFI=.948; TLI=.938. This improvement, however, does not compare favorably to the four- and five-factor models included in the analysis.

However, that both four-factor models also reach standards of acceptance for goodness-of-fit, with the “dysphoria” model prevailing in comparison between the two.

Table 4.9. *Goodness-of-fit Indices for PTSD Factor Models (n=1469)*

Model	Fit Indices				
	χ^2	df	RMSEA	CFI	TLI
Model 2: 3-factor, DSM-IV	1246.4	116	.081	.933	.921
Model 3a: 4-factor, Numbing	827.4	113	.066	.957	.949
Model 3b: 4-factor, Dysphoria	765.6	113	.063	.961	.953
Model 4: 5-factor, Full	661.0	109	.059	.967	.959

Note. RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index.

* This table was derived from Asmundson et al. (2002). See “Table 3: *Fit Indices for Direct and Indirect Models of Deployed and Nondeployed Military Personnel*” (811).

Higher order (or second factor) models were also tested, which present a general concept (in this case, PTSD composite diagnosis) as a latent variable that accounts for variance and covariance of the first-order (symptom cluster) concepts.⁹⁹ Consistent with previous research, in particular, that of King, et al (1998) and Yufik and Simms (2010), the higher order model of the dysphoria factored symptoms does fit the data better than all other models considered. Essentially, the re-experiencing, avoidance, dysphoria, and hyperarousal scheme is likely to be supported in structural studies because the high correlation of factors is consistent within second-order modeling, suggesting that “distinctions between lower order symptom clusters may be better determined by practical than by statistical considerations” (Yufik and Simms 2010:772). As is my research, where the specific characteristics of

⁹⁹ Both model diagrams and goodness-of-fit measures for the higher order models are presented in Appendix B.

symptom clusters are considered to be of unique value beyond categorical diagnosis classification, factor models are more useful than a general composite diagnosis variable. This is a promising avenue of future research.

The criticisms for the *DSM* diagnostic criteria for PTSD, as well as the proposed amendments for the appropriate clustering of symptoms in the literature, indicates the importance of identifying the latent concepts subsumed in the more general diagnosis. Whereas the previous chapter evaluated the role of post-traumatic stress disorder *in general* (recognizing different cutoff points, or sensitivity levels) on socioeconomic outcomes, the descriptive analysis of the *DSM* criteria as related to economic standing show that symptoms vary uniquely with outcomes as well as through the composite diagnosis. Furthermore, the confirmatory factor analysis suggests that the criticisms of the current *DSM* model in the literature are appropriate for my sample as well. The three-cluster model of re-experiencing, avoidance/numbing, and hyperarousal are not the best fit to the data. Because unique symptom clusters – as latent constructs – impact outcomes of interest in their own right, regardless of formal diagnosis criteria, it is imperative that work continue to better assess (clinically) the illness experience of PTSD.

Thus, a veteran may experience reintegration challenges (particularly in the workforce) due to particular symptom experiences that may be intense, yet not warranting of a clinical diagnosis. This is also reflective of the importance of subsyndromal PTSD awareness as a risk factor among veterans (Yarvis et al. 2008).

DISCUSSION

Post-traumatic stress disorder is a latent construct built upon the observation of diverse and intermittent symptom patterns. At a time when the disorder is growing in importance

globally, due to treatment cost or efficacy concerns, political attention, and public awareness, it is critical to understand the operationalization of diagnostic constructs to best suit the needs of individuals, families, medical professionals, and communities. The unique value of symptom clusters is important in regard to both risk of unemployment and perceptions of financial security. In particular, when considering the *DSM* classification scheme for PTSD, re-experiencing and hyperarousal clusters are significantly related to increased rates of current unemployment. Re-experiencing is also the only cluster that holds a significant relationship with “having ever worked” since release from the Canadian Forces.

Such findings imply that targeted services that address *symptom clusters* rather than a composite diagnosis of PTSD are warranted. Namely, if a client is experiencing high levels of intrusion (re-experiencing), employment status upon release may be compromised, regardless of the appropriateness of a full diagnosis of PTSD. Because re-experiencing symptoms are directly related to time since release from service (meaning, this cluster of symptoms is generally most prevalent and intense in the early stages of PTSD), longer transition periods or delayed entry into the civilian labor force may benefit clients in a way that both helps manage reintegration and protect civilian work histories by preventing potential unemployment or unwillingness to seek work. It may also be the case that clients are choosing to avoid employment if re-experiencing symptoms are high, in which case, it may be that this protective decision on the part of the client can be supplemented in a meaningful way with veteran resources, such as training or education on how to deal with disruptive memories of service.

The confirmatory factor analysis is also both supportive of recent literature and important in particular for VAC clients. “During the process of establishing construct

validity, the research tests specific hypotheses about how the measure [that is not operationally defined or measured directly] is related to other measures based on theory” (Harrington 2009:5). If it is valuable to consider PTSD in a non-clinical sense then the ability to understand the relationship between symptom clusters and outcomes of interest is certainly worth utilizing. CFA consistently challenges the *DSM* diagnostic categories of PTSD symptoms; and, in my sample, a four-factor “dysphoria” model (either with first-order, or including a second-order composite PTSD diagnosis) is best fit for the data. A next step for analysis would be consideration of this reconstructed diagnosis of PTSD symptom clusters for economic outcomes.

Pietrzak et al. (2010) utilize the four-factor dysphoria model originally proposed by Simms et al. (2002) to consider the unique relationship between re-experiencing, avoidance, dysphoria, and hyperarousal and a number of psychosocial outcomes. Major findings of significance include a positive relationship between re-experiencing symptoms and alcohol use; a negative relationship between avoidance symptoms and post-deployment social support; and several meaningful relationships between dysphoria and psychosocial variables (increased perception of stigma, increased utilization of health care services, and increased suicidal ideation, among others). (See Peitrzak et al. (2010) Table 5 for a complete profile of regression coefficients and significant effects among the outcome variables of interest.) Seemingly, “work difficulties” and “school difficulties” are measures included within the analysis; however, the significant relationship between each and the dysphoria symptom cluster (in regression analyses) is not a focal point of the discussion Peitrzak et al. (2010) present.

A previous structural equation analysis of the four-factor symptom model of PTSD considered those latent concepts as mediators between combat exposure and global functioning (including psychological, social, and occupational items).¹⁰⁰ In this work, Miller et al. (2008) find a direct link between combat exposure and PTSD symptom clusters, as well as subsequent effects of symptoms groups on global functioning. Implications of this research are upheld in my study, such that economic outcomes are also related to symptom clusters as well as the overall diagnosis of PTSD.

When governments (or Veterans Administrations more specifically) are invested in the successful and fluid transition of military service members into civilian roles, particularly as those released are on average, younger than previous times, ability to obtain gainful employment is imperative. “Because war syndromes have been recognised as pensionable disorders and proved difficult to treat, they have cost governments considerable sums in financial assistance If each new post-combat syndrome is not interpreted as a unique or novel illness but as a part of an understandable pattern of normal responses to the physical and psychological stress of war, then it may be managed in a more effective manner” (Jones et al. 2002:323-324). Specifically, if resources are allocated to symptom clusters that link veterans to resources (non-clinical) supportive of gainful employment outside of the military, cost-effectiveness is achieved for both individuals and health care systems (through both ability to self-support and use of services outside of health care settings).

The suggestion of non-clinical “treatments” and increased veteran outreach may seem unfeasible at first. But, because universal screening (for PTSD in particular) is already in

¹⁰⁰ Due to data limitations, my study does not include combat exposure. The Combat Exposure Survey (CES) used in the study by Miller et al. (2008) considers number of exposures to seven different types of combat events, including: combat patrol / dangerous duty; under enemy fire; surrounded by enemy; unit casualties; participation in firing at enemy; witnessing injury or death; personal danger of injury or death. (Keane et al. 1989) This would be a valuable scale to include in future surveys undertaken by Veterans Affairs Canada.

place, and collaboration between the Canadian Forces, DND, and VAC is established to utilize peer support (OSISS), this framework is already underway. My recommendation is more general in regard to outreach for clients who may be suffering with subsyndromal PTSD, or at a given time in the course of their treatment of diagnoses PTSD, experiencing one symptom dimension more prominently than others. As medical science continues to uncover the trajectory of PTSD over time, it is likely that symptom cluster patterns of fluctuation will contribute to generally predict the timing of symptom “peaks.”

Furthermore, recent longitudinal analyses illustrate that the emergence of stress reaction symptoms characteristic of post-traumatic stress disorder (namely, avoidance behaviors) soon after combat exposure is likely to lead to patterns of social withdrawal *throughout* the life course. Specifically, Solomon and Mikulincer (2007) found that social functioning (composed of elements of work performance, family functioning, sexual functioning, social and interpersonal relations, and social independence) are compromised for Israeli war veterans at 1, 2, 3 and 20 year periods after trauma. “It seems that one’s tendency to avoid emotionally-laden situations and to detach from one’s social surroundings ... prevents the individual from being more involved in a wide variety of activities in the professional, familial, and social fields. The avoidant behavior may become entrenched and may set off a vicious circle of problems in functioning that gradually broadens and spreads into various areas of daily life” (Solomon and Mikulincer 2007:322). Thus, as a chronic condition, post-traumatic stress disorder may not only continue to generate symptoms over years, if not a lifetime; but, the ripple effects of the consequences of distorted cognitive, behavioral, and social functioning influences the life chances of diagnosed veterans.

In addition to the long-term experience of post-traumatic stress symptomology, socioeconomic status is cumulative – in terms of advantage *or* disadvantage. Many aspects of economic well-being are dependent upon continued achievement and productivity, in both educational and work arenas. Military service has been shown to be both protective of and disadvantageous to lifetime socioeconomic status. However, as shown in this research, military participation can function to disrupt the socioeconomic growth of an individual over the life course in ways that are not captured when focused on a composite diagnosis of PTSD alone. Future research is certainly warranted in this regard.

Chapter 5

CONCLUSIONS AND POLICY IMPLICATIONS

“The thousands of years that span the existence of mankind have given us ample opportunity to repeat the mistakes of the past. That we have done so with such apparent cheerful regularity is discouraging. Failure to avoid past error can surely only be ascribed to ignorance, obstinacy or stupidity. Ignorance of the past is rectified by diligent recording and intelligent evaluation, the hallmark of the competent historian. But how we apply the lessons of the past is a measure of the competency of the rest of us.” ~General AJGD de Chastelain, [Former] Chief of the Defence Staff of Canada Message to the Colloquium of the International Commission of Military History “Peacekeeping 1815 to Today” August 20-26, 1996

INTRODUCTION

Some might argue that the contemporary media, political, and medical focus on post-traumatic stress disorder is generally characteristic of “history repeating itself.” Marlowe’s (2001) history of combat stress conditions illustrates that the attempts to understand psychological impacts of war clearly peak *during* periods of war. The troubling aspect of this pattern is that during times of peace, both the disorder and those who suffer are potentially marginalized, if not largely forgotten. A hopeful caveat in the current climate of military service is that in the context of rising PTSD prevalence both within and beyond the institution, recognition (and acceptance) of the damaging effects of traumatic events is growing, worldwide. The psychological harm of sexual assault, natural disasters, and other events, including major illness diagnoses (i.e. cancer, HIV, etc.) add momentum to the push

to address PTSD in meaningful ways. Veterans Affairs Canada continues to respond, and does so in conjunction with some already well-established structural supports for veterans, their families, or anyone touched by PTSD.

Before I proceed to my recommendations for ways to address the patterns uncovered in this research, I must recognize some critical points about caution necessary in the pages to follow. First, as alluded to above, there is a lot of support and energy toward continued development of institutional and community-based programs for those touched by PTSD, and funding priorities suggest this will continue into the future. Although I recognize many such resources in the context of veteran well-being, there are many other examples of treatment, care, and assistance organizations beyond the scope of my work. My lack of full recognition of these efforts is not to belittle or ignore their contribution. Rather, my focus on Veterans Affairs Canada in particular links theory, data, and practice in a way that can benefit the respondents of my study directly; but, I hope that this work also informs and challenges, if not inspires the many other programs and perspectives on PTSD care. VAC represents a progressive, targeted, and efficient infrastructure of support for clients (which formerly and directly includes families of members), all while maintaining a continued drive toward further improvement. So “change” does not in any way imply “failure” on the part of Veterans Affairs Canada.

Within biomedicine, great strides are currently happening in regard to understanding post-traumatic stress disorder, its relationship to (and distinction from) other health conditions (such as traumatic brain injury), and evidence-based treatment options. The American Psychiatric Association, alongside medical researchers, clinicians, and health technologists are changing the understanding of post-traumatic stress disorder and thus, the

ability to help those diagnosed. The connection to military interest and priority to do so is beneficial, without a doubt. The history of medicalized conditions shows that countervailing powers of questionable influence riddled the experience (if not facts) about other serious health conditions. Conrad (2007) cites homosexuality and a plethora of psychopharmacological “marketable” conditions to illustrate this point. PTSD, although not always uncontroversial or even relevant, has gained a critical ally in the military as an institution promoting the legitimacy and priority of PTSD.

The theoretical underpinnings of my investigation both stimulate questions and offer frameworks of understanding that were not directly testable due to data restrictions. This is an issue of timing, as Veterans Affairs Canada is currently collaborating with the Department of National Defence, the Canadian Forces, and Statistics Canada in the Life after Service Studies (LASS), an evaluation project for the New Veterans Charter (NVC) that includes longitudinal data collection.¹⁰¹ It is also important to keep in mind that the data in my dissertation are reflective of VAC clients, who do not directly represent CF veterans at large, but rather those already integrated into the care and support system primarily due to recognized health challenges. Although the findings lead me to recommend change in service delivery, it should be kept in mind that I refer specifically to Veterans Affairs Canada as a target. Both the current service profile and available resources differ in meaningful ways from the U.S. Veterans Affairs system.

¹⁰¹ Results from some of the original (baseline) studies are included in this chapter. Current projects as listed by VAC include: (1) Income Study which links CF veterans to historical income data; (2) Survey on Transition to Civilian Life that describes social, economic, and health status of CF veterans; and (2) Canadian Forces and Mortality Study to link national mortality / cancer data with CF personnel. (See VAC’s website for details: http://www.veterans.gc.ca/eng/sub.cfm?source=pro_research/publications/projects)

REVIEW OF FINDINGS

A discussion of the general “epidemiology” of post-traumatic stress disorder among veterans highlights a distinction is made between conservative and whole-person approaches to service delivery. For instance, in the United States, a more restrictive stance is taken as service allotment is calculated using science-based and data-oriented cost-benefit analyses. In comparison, the more inclusive “whole-person” approach of Canada stresses the importance of the broader context of integrative service delivery that directly incorporates social networks – namely the veteran’s family and community, through programs such as the OSISS Peer Network. True, the context of military engagement and the sheer size of membership varies between the two countries; and, service delivery is always dependent upon budgetary restrictions. However, the life course perspective offers support for the latter, more fluid focus taken by Veterans Affairs Canada.

The benefit of recognizing “cumulative advantage” – or the accumulation of resources over time – particularly in relation to health and economic well-being, is central to the use of a life course view. Both employment careers and health trajectories are products of inertia, in that early disadvantages (or disruptive life events) can lead to cycles, if not spirals, of decline. Both the U.S. and Canada recognize that military service very often develops life-long benefits of camaraderie, confidence, and skill development unique to its experience. However, the context of war also presents a likelihood of disruptive challenges – and a particular focus on mental health concerns illustrates that such transitions are not only directly related to risk unique to military service (i.e. deployment or combat exposure), but they can be life-altering, life-long, and cumulative in regard to social and economic well-being.

It is plausible to consider military service to be a wise career choice; but, “military benefits do not come without a cost or without risk, [although] they clearly provide an integrated web of institutions support for service members and their families” (Kelty et al.2010:199). Namely, if service members can minimize exposure to combat or humanitarian crimes, thus limiting the risk of physical and mental injury, the military experience often leads to successful socioeconomic well-being and personal growth. This does not discount the reality that many service members who do engage in overseas deployments continue in both military career and / or financial success upon release. However, “as time passes, military service may become less important as a signal to employers about skill level, and the demands of everyday civilian life may equalize the emotional and psychological resources available to veterans and nonveterans” (Whyman, Lemmon, and Teachman 2011:697).

In part because the structure of the military complex allows for detailed tracking of service members at the point of transition, but also because this institution best understands the experiences of service members, the military is in an important position to bridge the gap to civilian life.¹⁰² The gap that exists between (often) abrupt end to service and the transition to veteran services or civilian life is complicated when responsibility and accountability is not clearly assigned. Military service has the potential role of a successful springboard for soldiers to post-military careers and well-being. However, this opportunity is both fragile and time-sensitive, and further complicated in times of war (combat exposure) or more generally in relation to transitioning veterans with health deficiencies.

What seems to be most compelling from the literature review on the relationship between military service and socioeconomic well-being is the role of system structure.

¹⁰² It is noted, however, that although this may be true for Canada and the United States, both of whom recognize the military and veterans services to be unique entities, other countries place these organizations / institutions within the same umbrella structure.

“Officers typically face an ‘up or out’ policy with respect to job tenure If they have higher ability, therefore, they are more likely to be promoted, thus serving longer, and also may be more likely to have better health” (MacLean and Edwards 2007:780). Such a relationship is also meaningful in that members of varying rank experience military service differently; in particular, those of higher rank may be less directly engaged in combat exposure, further protecting health status. If the general trends in occupational hierarchy stand, lower-skill employees endure greater stress at work (House 1981). Therefore, officers may be protected (health-wise) in regard to their ability to avoid stress, or combat exposure, at least to some degree (MacLean and Edwards 2010); but this is also perhaps tempered in a time of military challenge, where those of higher rank are both politically and publicly scrutinized for decisions and the consequences of those choices.

Cross national research illustrates that political economy “matters” in terms of how service affects lifetime achievement. If considering post-WWII contexts, both Germany and Japan faced emotional and economic ruin coupled with mass casualties (Elder 2003). In contrast, the US was victorious emotionally, the physical geography was safe and intact, and the economy flourished. As current military conflicts and involvements begin to span decades, veterans of the same deployment venue will likely face unique civilian employment markets upon return. The moderate Canadian economic ebb-and-flow (which is characterized as dramatic in the United States) occurring since the global “War on Terror” began confirms such patterns.

Therefore, of relevance beyond the stress of military service, is that of reintegration into civilian life after release. Whether or not the experience of military career (of any period of time) is positive or negative, the transition out of this institution comes with unique

concerns. Coupled with health challenges, veterans face yet another “battle” – one which is arguably formidable in the context of unpreparedness or unexpected timing, as is the case with many clients of VAC. Just as entry into the military includes a significant period of training (or “boot camp”), release is now recognized as a transition that extends into a process of civilian resocialization. The OSISS peer network program is certainly a successful example of such possibilities, but my research indicates that some important relationships between PTSD and economic well-being are in need of further attention.

PTSD and Economic Status

My research considered PTSD as a risk to economic outcomes as both a composite diagnosis and as unique symptom clusters. A clinical diagnosis of PTSD indicates a level of veteran disadvantage in regard to health and economic status. However, veterans who are formally identified as suffering with PTSD are integrated into a health care system that provides treatment, and further resources, such as the OSISS program are clearly identified for such clients of VAC. It is of important note, however, that veteran perceptions of their ability to meet financial needs are compromised in meaningful ways that can impact successful reintegration into civilian employment.

Limiting the sample of VAC clients to a cohort sample (ages 20-50) uncovers relationships between PTSD and economic outcomes that are more informative than comparisons among the full age range of veterans. Namely, those of younger ages are more likely to report symptoms of PTSD at a clinical level, in part, due to a more recent release from the Canadian Forces. This may be reflective of a number of factors that were not available to consider in my research (increased combat exposure, etc.). However, it is

important to note that PTSD is also generally comorbid with both depression (as measured by the CES-D) and musculoskeletal pain, two health challenges that also impact economic well-being.

Although the current economic position of veterans with probable PTSD is mediated by a general health status that includes other comorbid conditions, perceptions about the ability to meet financial needs is uniquely compromised by post-traumatic stress disorder. When controlling for demographic factors, military service indicators, current employment status, and comorbid health conditions, PTSD remains significantly related to decreased perceptions of financial security, both currently and into the future. The fact that this association remains whereas other health challenges do not is important. It appears that PTSD is related to financial confidence among veterans in ways that transcends successful reintegration to some degree. Even among VAC clients who are currently employed in the civilian labor force, PTSD is associated with uncertainty about financial well-being.

My research, however, is most important in the findings on analyses of the symptom clusters of the PTSD diagnosis in Chapter 4. Essentially, it is clear that the *DSM* diagnosis criteria (re-experiencing, avoidance and numbing, and hyperarousal) are associated with economic vulnerabilities in unique ways that belie formal diagnosis. Although the contemporary literature does recognize “subsyndromal PTSD” as a marker of general risk for a number of health and social outcomes, my research is unique in that it looks at each cluster individually as it relates to economic outcomes. Of greatest significance is that among a cohort of VAC clients, risk for employment vulnerabilities are greatest among those who report high levels of hyperarousal and re-experiencing symptoms, regardless of clinical diagnosis likelihood.

At the outset, crosstabulations illustrate that veterans with high levels of avoidance and numbing (Criterion C) symptoms are also extremely likely to be diagnosed with PTSD. This may be in part due to the extremely high tendency for VAC clients with PTSD to have comorbid depression, as many of the PCL-M items for this cluster are reflective of emotional numbing” and lack of optimism for the future. However, what is of great importance for work reintegration efforts of VAC, is that clients who present with high levels of re-experiencing or hyperarousal are at great risk. Specifically, these symptom clusters are not limited to clients with probable PTSD (in the clinical sense), and they significantly predict important risks for civilian reintegration. Both Criteria B (re-experiencing) and D (hyperarousal) are significantly related to increased periods of unemployment, higher job turnover, and lower income. Thus, protecting the financial well-being of VAC clients requires efforts beyond clinical identification of a full PTSD diagnostic symptom profile.

Such a finding is also complicated by the results of the confirmatory factor analysis that supports the psychometric literature promoting a reconfiguration of the latent symptom structures of the PTSD diagnosis. Namely, CFA identifies two four-factor latent structure models of PTSD symptoms as best fitting of the Canadian Forces Survey data. In both models, re-experiencing remains the same as the current *DSM* classification; and, the avoidance symptoms are considered unique in and of themselves. The two models do, however, differ on the remaining factor loads. A “numbing” model simply suggests that separating the current *DSM* Criterion C into two unique (avoidance and numbing) clusters is appropriate. This is supported in my data as a better configuration than the current 3-factor model as classified in the *DSM*. However, the best fit is a model that reconfigures both Criterion C and D, such that a more general “dysphoria” cluster is identified.

The “dysphoria” model conjoins some of the symptoms of both numbing and hyperarousal into a latent structure, leaving behavioral “hypervigilance” items of the PCL-M in a separate criterion. Thus, the most appropriate factor model for the Canadian Forces Survey data is one that employs the following latent variables: re-experiencing, avoidance, dysphoria, and hypervigilance. Furthermore, higher-order models suggest that although a second-order model of the current *DSM* (three-factor model) is an improved fit to the data, this is not the case for the four-factor models. Including an overarching “PTSD” latent structure that associates to the unique clusters does account for covariation among constructs in the 3-factor model, but not in a meaningful way for the more developed 4-factor clustering. This supports the idea that a composite diagnosis, although useful in a clinical sense, may be less informative than investigations of unique symptom factors in analyses that theoretically warrant attention to symptoms as opposed to a full diagnosis.

Importance of PTSD Conceptualization

The trajectory of PTSD is itself unpredictable, often lengthy, and at times inconsistent, for each and every veteran. Both the United States and Canada are taking great strides to assess the mental health status of service members at critical points. For instance, although the history of U.S. mental health screening in regard to military service displays a “preventive” focus at the point of enlistment, new programmatic structures include post-deployment screens to identify active service members with mental distress.¹⁰³ Such efforts are supported by research literature as “policies designed to support personnel through the

¹⁰³ The U.S. military now incorporates a 2-phase assessment of “soldier health”: Post-Deployment Health Assessment (PDHA) within 2 weeks of return from deployment theatre; and Post-Deployment Health Reassessment (PDHRA) between 3-6 months upon return. These screens are required universally, as mandated by the Department of Defense in April 2001 (PDHA) and March 2003 (PDHRA).

early stages of a psychiatric condition and to facilitate access to appropriate treatment may increase retention” (Creamer et al. 2006:734). The need for clinical services – both in regard to identification of need and access to services upon diagnosis – are critical to veteran health. The ability to manage PTSD can be a point of strength for veterans and a means to experience reintegration with positivity and optimism if services facilitate successful coping.

According to House (1981), there are three primary ways in which work-related stressors could be addressed: (1) reducing/eliminating stress through changes in the employment setting; (2) “enhance[ing] the nonwork aspects of people’s lives;” or (3) mediating work stress “by doing something that necessarily neither reduces the level of stressors nor improves health, but prevents stressors from having a deleterious effect on health” (5). I content that the latter strategy is most relevant in the current context. The likelihood of altering civilian employment settings in large-scale ways to accommodate veteran needs is unrealistic. However, efforts to match VAC clients (or veterans in general) to work arrangements that minimize symptom exacerbation, *coupled with* veteran sensitivity training to symptom experience can mitigate negative outcomes in the workplace.

House (1981) also identifies four types of social support: (1) *Emotional Support* – empathy, esteem, trust; (2) *Appraisal Support* – affirmation or constructive criticism; (3) *Informational Support* – divulge information or advice; and (4) *Instrumental Support* - direct help, such as financial aid or providing transportation (22-26). Arguably, emotional support is the most commonly recognized benefit of social relationships; and, in the scenario of veteran reintegration, it may best be regarded as a dimension of support to be cultivated within the family and formal service provision (group therapy, etc.). In each of the other categories of support, the workplace can become a critical source for assistance. Instrumental

support can be provided through flexible scheduling to accommodate clinical appointments or more general needs, such as transportation or availability of personal development training (i.e. wellness initiatives). Informational support is possible at both the micro level (between veteran employees and their coworkers and/or supervisors) and macro level (structural arrangements).

Gaining confidence while in the military comes from intense training, which also promotes a sense of accountability and teamwork. The workplace can offer more relaxed yet effective means of building confidence through access to information (continued training opportunities or targeted apprenticeships) or developing teamwork through mentoring advice. In both instances, support is positive in focus although ultimately beneficial to the organization as well. Finally, appraisal support may be particularly important in the civilian work life of veterans, who are transitioning from an institution with very clear “up or out” hierarchy structures. Regardless of level of skill transfer from a veteran’s military experience to civilian job, the context in which those talents are used may be wildly different. Providing critical and clear, yet encouraging feedback will improve productivity for veteran employees both through efficiency and a sense of competency.¹⁰⁴

In order to capitalize on the positive aspects of military service, a few things are important to consider. “There is, ... evidence suggesting that veterans attribute to the military

¹⁰⁴ House (1981) presents an extensive review of research addressing location of social support as influential to the relationship between work stress and health among male factory workers. It is important to note that “stress at work” for veterans managing PTSD may be different from the conceptualization of “work stress” in more general studies. In regard to the current focus, it is worth noting a few key summary points from House (1981). To begin, research evaluates the unique role of support from numerous sources: spouse, friends and family, coworkers, and supervisors. It appears that cumulative effects of multiple support providers is less important than a significant single source of support. Also, perceived support from a supervisor consistently reduces stress at work, thus indirectly impacting health positively. Spouse and friend support follow the same pattern, but the effects are “small and isolated,” in particular, for unemployment (House 1981:74). Finally, coworker support does significantly reduce work stress, but not in a manner that improves health, unless considered in a more general work setting than factories, where workers may be independently performing tasks.

a positive influence on their sense of self that is of value to them in the civilian labor market” (Teachman and Call 5). So, it is first and foremost important to match veterans to jobs that recognize and value the unique context of military service, perhaps through characterizations of military veterans as committed, team-oriented, or strategically oriented. Secondly, the relationship between PTSD management and concurrent employment seems to require an environment of understanding, if not openness about mental health concerns. Veterans who are unlikely to disclose PTSD status exchange a fear (or experience) of stigma for misinterpretation of symptoms if they do appear. Or, veterans may avoid work settings specifically to prevent uncovering their underlying health status. This is not to suggest open disclosure is the best avenue, but sensitivity or flexibility on the part of employers could potentially alleviate some backlash from symptom experience in veterans. Learning to address and cope with PTSD symptoms *within* the military (which arguably requires structural and cultural changes to the institution) can aid veterans in managing transitions into civilian employment with confidence and previously acquired coping resources.

Penk et al. (2002) suggest the use of caseworkers as mediator within the labor force for persons diagnosed with PTSD. Although a general suggestion, veteran organizations may be more particularly equipped to navigate a program specific to civilian reintegration for soldiers. Employer networks identified as veteran supported are a valuable segway; but, such efforts may be enhanced with supportive training as well. Specifically, the goal is to allow veterans ultimate freedom in their choice of employment, so “veteran-friendly” work environments may prevent a place to develop coping skills and work confidence among those with PTSD. Currently, Penk et al. (2002) illustrate the role OSHA guidelines play in “disaster recovery” – or minimization of PTSD reactivation for workplace disaster events.

However, the “hidden” experience of PTSD among those with onset outside of the particular workplace environment is a sensitive, but critical aspect of successful reintegration services.

Removing stigma of PTSD, or more directly increasing the likelihood that service members who experience mental distress identify themselves can prove beneficial prior to release as well. Settersten and Patterson (2006) note that “the collective nature of wartime experiences may nonetheless expand the social resources available for coping, especially in providing a ready-made group of peers to serve as outlets for emotional expressions and the sharing of stories” (9). The New Veterans Charter (2006) of VAC, and OSISS specifically build upon the ideas of peer support and continued resource allocation / access for veterans with PTSD. Pavalko and Elder (1990) present this as a unique need within the military as ‘[w]artime stresses promote a comradeship that is not replicated by most stressful events of civilian life” (1230). Release from service can potentially threaten (or at least be presumed by veterans to threaten) their bond to peers who perhaps understand their struggle more so than civilians, even those whom soldiers love.

Beyond the type of help offered to VAC clients, I suggest who is targeted should be sensitive to social location. For instance, veterans who are reintegrating into retirement or “inactive” situations due to age or health status may suffice with treatment and support structures for PTSD as currently established. However, for those who by choice or necessity seek civilian employment, a different approach may be warranted. “[P]sychiatric disorders have adverse labour force consequences in terms of lost work productivity. A cost accounting of these ... consequences may well lead to the conclusion that it is not only humane but also rational to provide treatment for psychiatrically impaired workers” (Kessler and Frank 1997:871). I argue that based upon analysis of the symptom clusters (rather than the

composite diagnosis) of PTSD, veterans, employers, and the economy may benefit from a more general understanding of “psychological impairment.”

Specifically, because veterans are now subject to post-deployment screening, the capability of assessing risk of symptom experiences, even at sub-clinical levels, affords the ability to target services to those in need. Some of these rehabilitative efforts can take place outside of formal health care services. Different symptom clusters affect the illness experience of clients of VAC in unique ways. All diagnostic criteria impact perceptions of financial security, but in regard to navigating the labor market, type of symptoms matter in ways that perhaps override identification of PTSD at diagnosable levels. In particular, high levels of re-experiencing (at current time) are significantly related with unemployment (at current time), suggesting that success in the labor market may be tenuous for clients of VAC (or veterans in general) more recently released from service. As the intensity of re-experiencing declines over time, transition into civilian labor roles may be eased, which suggests a stop-gap, or more developed “work transition program” may be helpful.

This is perhaps even more important in the United States, where formal diagnosis is more stringently assessed in regard to veteran benefits and resources. “[T]he current diagnostic criteria [*DSM-IV*] do not have good specificity for ‘caseness’. In an era of managed care, when reimbursement for behavioral health care is often contingent upon a ‘diagnosable condition’ for which there is an empirically validated treatment, the current diagnostic criteria have the potential to leave patients who are in need of services, untreated” (Buckley et al.1998:1098). Considering the independent relationship between symptom clusters of PTSD and negative economic outcomes, the specificity of “caseness” underestimates the total need more than anticipated. Again, this is not to suggest that formal

health care should clinically treat subsyndromal PTSD veterans; but, as part of reintegration programs, attention to case-by-case symptom patterns may alleviate some long-term complications in terms of civilian employment.

Arguably, both experience with post-traumatic stress disorder and military-to-civilian transitions are lengthy, if not life-long processes. The life course perspective frames processes of change through concepts readily evaluated with appropriate data: trajectories, transitions, turning points, linked lives. Recent statements to veterans include recognition of this enduring process, as “the journey of readjusting after combat is one of learning to live with your experiences, and of integrating them into who you are without blaming yourself for what happened or what you did or didn’t do” (Hoge 2010:10). Furthermore, it is my view that the “transition” should begin prior to release, under the umbrella of military service benefits (rather than veterans services) in both the United States and Canada. Thus, whether considering a PTSD diagnosis comprehensively, or symptom cluster fluctuations more specifically, attention to patterns (or trajectories) and longitudinal studies are warranted.

Limitations

Although the Canadian Forces Survey data offer critical development in understanding the relationship between PTSD and economic well-being, there are some concerns about generalizability of my research. Specifically, this is a sample of Veterans Affairs Canada clients, and as Chapter 3 illustrates, untangling health profiles is complex due to high levels of comorbid health problems. Thus, the findings are not necessarily applicable to veterans “in general,” because VAC clients are unique in their health limitations and disabilities, at least in regard to the level of these anomalies.

Furthermore, clients of VAC are younger, on average than the general veteran population, which suggests that disrupted military careers may in and of themselves create stress and social support challenges. Specifically, because the relationship between stress and health (or stress and work) is causal in both directions, cross-sectional data do not allow me to fully understand the ways in which PTSD and health comorbidities or economic outcomes are predictable, or causally related. As mention previously, the LASS program developed by VAC (in collaboration with the Canadian Forces, the DND, and Statistics Canada) subsequent to the Canadian Forces Survey utilized here is a means to overcome some of these limitations. VAC clients, and veterans in general, will be studied longitudinally; thus, promising developments are likely in the near future.

FUTURE DIRECTIONS

This study identifies a number of important future directions for research. I consider three such avenues of development: (1) social support for veterans; (2) stigma reduction efforts for PTSD; and (3) reduction in the barriers to care for mental health conditions among veterans. All of these concentrations are important, but also interrelated as the ability to reduce barriers to care will benefit greatly from both enhanced social support and reduction in perceived and/or experienced stigma. Furthermore, aiding veterans in gaining understanding of their symptoms as well as learning to manage them effectively will likely enhance civilian employment transitions and perceptions of ability to maintain financial standing into the future.

Social Support

Much of the literature directly addresses social support as a key feature of veteran well-being. “[C]lose bonds helped individuals get through the hardships of war, especially for those who saw combat, and the loss of those friendships is connected to the emergence of emotional problems after the war” (Settersten, 18). My focus pertains to the extension of social support beyond the military and family settings, specifically into the workplace. Many of the recommendations offered above allude to this general need.

The enhanced “networks” of veterans benefit from the number of former service members, the context of social relationships (as extended by social media and technology), and the connection of military and family involvements. “It is important to note that recent years have brought a proliferation of veterans’ social groups ... to maintain relationships, track lost friends, and develop a community of peers veterans on the Internet ... reunions on veteran holidays and anniversaries, visit memorials, and travel to sites of service” (Settersten, 18). But, perhaps the more tenuous aspect of social connection is in vulnerability created by a diagnosis of PTSD. It is imperative that we, as a community, find ways for veterans to manage both reintegration and health challenges without hindering progress or creating dependency. This is a balance, and one which will be aided by research evaluating different types of social support and programmatic efforts to assist those in need.

Stigma Reduction

Historical accounts of combat stress, such as Lipton and Schaffer (1986) discuss a “John Wayne” syndrome in which veterans, particularly those of the World War II era, are sensitive to the negative stigma of weakness, and are therefore reluctant to report symptoms

of distress. Canada has greatly benefited from individual “heroes” in regard to post-traumatic stress disorder. Retired Lieutenant-General Roméo Dallaire, publicly recounted his witness of the Rwandan genocide as commander of UN soldiers tragically lost in service. Subsequently, LGen. Dallaire continues to work to bring awareness and understanding to post-traumatic stress disorder through speaking engagements, advocacy, and leadership commitments. Such bravery *despite* post-traumatic stress disorder developed LGen. Dallaire’s characterization as a figurehead; albeit one that generated enormous benefits in relation to combatting the stigma of PTSD in particular, or counteracting notions of veterans as “damaged” or “useless” during their struggle to reintegrate.

The United States takes a more general approach to stigma, through “Warrior in Transition” programs and the newly established “Resiliency” programs that span the duration of military service. The Warrior Brigade Handbook states that:

“[s]tress is part of day to day living.... The stress you experience is not necessarily harmful. Mild forms of stress can act as a motivator and energizer. However, if your stress is too high, medical and social problems can result. Although we tend to think of stress as being caused by external events, events in themselves are not stressful. Rather it is the way in which we interpret and react to the events that make them stressful” (1992).

Although a slightly different view of stress and coping of military trauma in comparison to Canada, the notion of acceptance of vulnerability and strength in recognition of distress acceptance is present in contemporary American military views. This work perhaps implies a cultural shift is needed, both within the military and among the general population.

Addressing Barriers to Care

Recent research (Fikretoglu, et. al., 2006; Fikretoglu, et. al., 2008) suggests that the most common reason service members who are diagnosed with a mental disorder do not seek

care is because they do not identify the problems faced with such conditions (either due to perceptions of perceived temporary nature or limited severity). More importantly, however, is that even if military service members recognize a need for service, they perceive barriers to receiving treatment, primarily due to a “lack of trust” in military health services:

“Lack of trust in military services may include various related concerns such as fear that one’s career might be jeopardized by the help-seeking process, that one might be treated differently by unit members / leadership, or that one would be blamed by leadership for one’s problems. Altogether, these findings suggest that despite recent efforts to de-stigmatize mental disorders and reassure military members that they will not be penalized for seeking help, military members may still fear that their help-seeking behavior will negatively impact their career and work relations” (Fikretoglu, et. al., 2008:11).

Currently, Veterans Affairs Canada has focused research efforts on meaningful and effective ways to overcome barriers to care, including: standardized briefing materials for former members and families available through the Veterans Affairs Canada website, *Salute* (monthly newsletter), the *Maple Leaf* (weekly national newspaper of the Department of National Defense and the Canadian Forces), the Legion magazine of the Royal Canadian Legion, as well as through direct contact with Veterans groups.

Furthermore, Veterans Affairs Canada is invested in addressing the specific concerns of clients through routine satisfaction surveys. Some of the more recent developments in veterans’ services based upon such reports include: increased use of caseworkers to aide clients and families in navigating the health system; an active “case finding” program to initiate contact with veterans to assess needs; and a continued commitment to “innovation” both within biomedicine and specific to service delivery and administration. The United States is also actively researching the barriers to mental health care among returning military service members, as both Operation Enduring Freedom (Afghanistan) and Operation Iraqi Freedom have led to increasing health casualties. Hoge and colleagues (2004, 2006) have

found that military personnel seek care for mental health conditions at rates similar to the civilian population. However, there is optimism in regard to post-deployment health screenings implemented by the United States military. Of those soldiers who received a mental health diagnosis at the time of post-deployment health assessment screening, three in five proceeded to clinical evaluation during the following two months – a rate significantly higher than among service members in the past (Hoge, et. al., 2006).

A recent report prepared by the Research Directorate of VAC specifically addressed issues of reintegration post-service among CF veterans. The conclusion reached is that “most agreed military experience, education and training helped in re-establishment;” and, a minority felt personal characteristics (such as authority and prestige) and income were considered to be lower upon release from the Canadian Forces (Thompson et al. 2011). From my research, education – at least in the sense of continued pursuit beyond service – is relatively unaffected by probable PTSD status. This is certainly a positive finding. But overall, Thompson et al. (2011) reported that most veterans (73%) were satisfied or very satisfied with their current income and investments. As illustrated in my evaluation of VAC clients, this is not the case for the subgroup of CF veterans integrated into Veterans Affairs Canada, or in particular among those for whom PTSD is a factor. Thus, the notion of “care” must be extended beyond the formal structure of health care, and perhaps more generally to risk of PTSD symptom clusters, rather than the diagnosis more generally.

What seems to be most protective in the lives of military personnel is the *structure* of participation. In regard to depression (rather than PTSD), Whyman, et.al. (2011) found that “it does not appear that there is a lasting impact of active duty service on depressive symptomatology; effects dissipate after about ten years following military service” (702).

Such findings do not suggest that military service is invaluable, however. It is seemingly the case, in regard to the staying of depressive or post-traumatic affective symptoms, that structural features of military service are critical. Whyman, et.al. (2011) present critical findings, because their study both controlled for selectivity bias and level of integration into military service (active duty versus reserve duty during a non-war period of investigation).¹⁰⁵ Thus as the general *structure* of military decreases stress, even if deployed, there is a need to understand if loss of that structure does amplify or activate negative effects of trauma exposure. In the interim, it seems pressing to ensure a system of organization and efficiency to not only benefit soldiers in their transition into civilian life, but that protocols need be implemented for major categories of concern (physical or mental disability), development (skills transfer, education, employment seeking), and sociability (family, community, etc.).

RECOMMENDATIONS FOR VETERANS AFFAIRS CANADA

In July 2011, Veterans Affairs Canada clients (and Canadian Forces veterans in general) received notification that they can look forward to more comprehensive benefits.

“[P]roposed enhancements to the New Veterans Charter will improve support for veterans and their families by ensuring a sufficient monthly income for veterans in receipt of earnings loss benefits, by providing additional monthly financial support to the most seriously injured Canadian Forces veterans, and by offering payment options for those receiving a disability award” (Canada Gazette 2011).

Part of the amendment includes program development, as the “Job Placement Program” is being reorganized into the “Career Transition Service” with specific focus on aiding veterans

¹⁰⁵ Both reservists and active duty personnel were subject to similar enrollment criteria and motivation during peacetime eras (due to contract periods), thus differentiating between service types is a proxy measure of level of integration into military structure: “Most important for our purposes, except during their short period of annual training, reserve duty service members were not subject to the daily standardization of military life that may affect mental health” (Whyman, et.al., 698).

in their reintegration to civilian labor force activities. Therefore, many of the large-scale infrastructure elements of veteran aid are either in place or in accordance with commitment to progressive change and long-term enhancement for veterans, if not citizens.

The one aspect of “change” or development that would be valuable, if not necessary for Veterans Affairs Canada is attention to unique reintegration risks of PTSD symptoms as opposed to probable diagnosis. VAC supports subsyndromal PTSD identification, largely due to the comorbidity of PTSD with depression and musculoskeletal pain. However, coupling this view with more advanced assessments of symptom cluster trajectories as a barrier to successful reintegration would benefit clients and the economy in meaningful ways. In regard to clients of recent release, two symptom clusters are important for successful civilian reintegration, regardless of formal PTSD diagnosis. Re-experiencing, although perhaps more logical among those of recent release is a risk for both unemployment and job turnover. Similar to research by Elder and Clipp (1989), however, re-experiencing is perhaps more “tolerated” in social arrangements, as indicated by a lack of significant association to marital dissolution. Hyperarousal, however, is damaging to a number of economic outcomes (income, unemployment, and job turnover), perhaps largely because the symptoms are both cumulative and perhaps considered “unrelated” to military service in the same way that re-experiencing may be.

It is clear that lack of sleep, limited ability to concentrate, restlessness, and other characteristics of the *DSM* hyperarousal symptom criterion are unique challenges to veteran reintegration. VAC must identify clients who present high levels of these symptoms, regardless of formal PTSD classification. Work reintegration efforts in general can help to address the shift to civilian employment by making resources and vocational programs more

widely available to veterans, which could also potentially reduce the stigma of suffering and enhance utilization of programs.

Arguably, the first step is to clearly identify the relative value of programs aimed at sub-clinical PTSD profiles; and, it is likely that such programs may best be housed outside of more clinically-based arrangements. This is a novel recommendation in the context of a very enlightened and informed veterans' support system. Specifically, the results of my analysis on PTSD symptom clusters suggests that for veterans of recent release, re-experiencing and hyperarousal are key focus points for rehabilitative services. Among veterans of longer periods of release, numbing and avoidance are perhaps a more important focus. Even if PTSD has been successfully treated (meaning, diagnostic label is removed), Criterion C symptoms can linger for extended periods at high levels without a formal diagnosis application. In addition, the confirmatory factor analysis clearly indicates that a reconfiguration of PTSD symptom structures is warranted. So, future studies must incorporate new epidemiological measures to capture the symptom experiences of veterans reflective of the upcoming *DSM* reclassification. Such refinements allow for the most targeted approach to vocational rehabilitation.

Overall, “[p]olicies designed to assist veterans cope with the stress and trauma of war will positively influence the labor market and may, in the long run, reduce the dependence of some veterans on government transfers” (Anderson and Mitchell 563). Ultimately, if the goal is self-sufficiency of veterans *for their own benefit*, as well as that of compensatory systems, sensitivity in needs assessment may be extended beyond formal diagnosis of PTSD to symptom clusters specifically. In order to better facilitate workplace reintegration, veterans need an understanding of how their unique symptom profiles (regardless of formal diagnosis)

influence abilities (and vulnerabilities) in the workplace. The potential to link VAC clients to employment settings that minimize risk for PTSD symptom reactivation while increasing likelihood of consistent productivity build both human capital and confidence. Furthermore, the high level of comorbidity between PTSD, depression, and musculoskeletal pain implies that at any point in time, fluctuations in symptom presentations in veterans may vary; so, awareness of self and flexibility in the workplace can enhance the individual's sense of mastery in both illness experience and workplace success.

Veterans Affairs Canada has been visibly committed to *integrative* and *comprehensive* service delivery for members and their families for more than a decade. The American military system has joined this effort through collaborative dialogue with VAC. In Canada, the recognition that civilians cannot understand the emotional toll of military experience has led to service development with a focus on the “linked lives” of family and an open sensitivity toward continued veteran roles as productive citizens post-service. There is acceptance of mental health challenges that linger as a “result of” military service, and such health impairments are not solely individual burdens. In the U.S., soldiers remain “warriors” for life, in large part as support of the notion that positive attributes are associated with military service.

Recent collaboration between Walter Reed Army Medical Center representatives and Veterans Affairs Canada (specifically, administrators of the OSISS program) have benefitted restructuring efforts for services to American veterans. A primary example of this is the shift from “Battlemind Training” to a broader “Resiliency Training” for deploying soldiers¹⁰⁶ –

¹⁰⁶ The United States military shifted from “Battlemind” training to a more holistic “Comprehensive Soldier Fitness” that includes physical, emotional, social, family, and spiritual components. Resilience is a vague concept, including “strength-based, positive psychology tools” in a number of dimensions (institutional,

which is no longer a single-point learning experience, but a *series* of training programs *throughout* military service, that continue through release from service. The noticeable difference of epidemiological focus discussed above remains, however. This is not to suggest that attention to epidemiology and financing is unimportant, but it may lead to a priority system which fails to address a life course perspective in veterans' services for Americans. As Canadian research illustrates, *access* to services is only one area of concern for veterans – even when dealing with mental health limitations. Furthermore, the recognition on the part of VAC that networks (particularly families) and community are a critical dimension of reintegration into civilian life, and healthy aging more generally, appears to coincide more readily with the “whole person” focus promoted by the World Health Organization.

A general sense that the cost of benefits and services for veterans is weighed against potential misuse of such compensations is a slippery-slope. “Tougher regulations are supported by evidence that pensions can inhibit the natural process of recovery and consolidate distressing symptoms. No clear solution presents itself to the war pensions dilemma of how to discourage invalidity and yet to compensate the truly deserving” (Jones, Palmer and Wessely 2002:378). I believe that Veterans Affairs Canada *is* creating a model of success – in particular through family-based programs, peer support networks, and commitment to veterans as citizens. Lay application of pensions or services is not the answer, as evidence clearly shows that the stigma of PTSD or the general unwillingness of service members to seek care for mental distress would perhaps overshadow comprehensive extension of benefits in meaningful ways. However, this is some middle-ground, and

operational, family, etc.). Please see the U.S. Army's Comprehensive Soldier Fitness website for more detailed information: <http://csf.army.mil/index.html>.

international collaboration is certainly a positive step, as is the direct collaboration between veteran services and the military institution itself.

REFERENCES

- Aldwin, Carolyn M., Michael R. Levenson, and Avron Spiro III. 1994. "Vulnerability and Resilience to Combat Exposure: Can Stress Have Lifelong Effects?" *Psychology and Aging* 9(1):34-44.
- American Psychiatric Association. 1980. *Diagnostic and Statistical Manual of Mental Disorders* (3rd Edition, Revised) Washington, DC: Author.
- _____. 1994. *Diagnostic and Statistical Manual of Mental Disorders* (4th Edition) Washington, DC: Author.
- _____. 2000 *Diagnostic and Statistical Manual of Mental Disorders* (4th Edition, Revised) Washington, DC: Author.
- _____. 2010. "G 05 Posttraumatic Stress Disorder." *DSM-5 Development* August, 20. Retrieved March 12, 2011. (<http://www.dsm5.org/ProposedRevision/Pages/proposedrevision.aspx?rid=165>).
- Andrews, Bernice, Chris R. Brewin, Rosanna, Philpott, and Lorna Stewart. 2007. "Delayed-onset Posttraumatic Stress Disorder: A Systematic Review of the Evidence." *American Journal of Psychiatry* 164:1319-1326.
- Anderson, Kathryn H., and Jean M. Mitchell. 1992. "Effects of Military Experience on Mental Health Problems and Work Behavior." *Medical Care* 30(6):554-563.
- Angrist, Joshua D. 1998. "Estimating the Labor Market Impact of Voluntary Military Service Using Social Security Data on Military Applicants." *Econometrica* 66(2):249-288.
- Angrist, Joshua D. 1990. "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records." *The American Economic Review* 80(3):313-336.
- Asmundson, Gordon, J. G., Inger Frombach, John McQuaid, Paolo Pedrelli, Rebecca Lenox, and Murray B. Stein. 2000. "Dimensionality of Posttraumatic Stress Symptoms: A Confirmatory Factor Analysis of DSM-IV Symptom Clusters and Other Symptom Models" *Behaviour Research and Therapy* 38:203-214.
- Asmundson, Gordon J.G., Murray B. Stein, and Donald R. McCreary. 2002. "Posttraumatic Stress Disorder Symptoms Influence Health Status of Deployed Peacekeepers and Nondeployed Military Personnel." *Journal of Nervous and Mental Disease* 190:807-815.
- Asmundson, Gordon J.G., Jennifer A. Stapleton, and Steven Taylor. 2004. "Are Avoidance And Numbing Distinct PTSD Symptom Clusters?" *Journal of Traumatic Stress* 17(6):467-475.

- Bailey, Duncan, and Thomas F. Cargill. 1969. "The Military Draft and Future Income." *Western Economic Journal* 7(4):365-370.
- Benton, G. H. 1921. "'War' Neuroses and Allied Conditions in Ex-service Men." *Journal of The American Medical Association* 77(5):360-365.
- Blanchard, Edward B., Todd C. Buckley, Jacqueline Jones-Alexander, Todd C. Buckley, and Catherine A. Forneris. 1996. . "Psychometric Properties of the PTSD Checklist (PCL)." *Behaviour Research and Therapy* 34(8):669-673.
- Bollen, Kenneth A. 1989. *Structural Equations with Latent Variables*. New York: John Wiley & Sons.
- Bowden, Mark. 1999. *Black Hawk Down: A Story of Modern War*. New York: Atlantic Monthly Press.
- Breslau, Naomi, Victoria C. Lucia, and Glenn C. Davis. 2004. "Partial PTSD Versus Full PTSD: An Empirical Examination of Associated Impairment." *Psychological Medicine* 34:1205-1214.
- Breslau, Naomi, Beth A. Reboassin, James C. Anthony, and Carla L. Storr. 2005. "The Structure of Posttraumatic Stress Disorder" *Archives of General Psychiatry* 62: 1343-1351.
- Breslau Naomi, and Ronald Kessler. 2001. "The Stressor Criterion in DSM-IV Posttraumatic Stress Disorder: An Empirical Investigation." *Biological Psychiatry*. 50:699–704.
- Brown, Phil. 1995. "Naming and Framing: The Social Construction of Diagnosis and Illness." *Journal of Health and Social Behavior* 35(Extra Issue: Forty Years of Medical Sociology: The State of the Art and Directions for the Future:34-52.
- Browning, Harley L., Saly C. Lopreato, and Dudley L. Poston, Jr. 1973. "Income and Veteran Status: Variations among Mexican Americans, Blacks and Whites." *American Sociological Review* 38:74-85.
- Bryant Richard, and Al Wilhite. 1990. "Military Experience and Training Effects on Civilian Wages." *Applied Economics* 22:69–81.
- Buckley, Todd C., Edward B. Blanchard, and Edward J. Hickling. 1998. "A Confirmatory Factor Analysis of Posttraumatic Stress Symptoms." *Behaviour Research and Therapy* 36(11):1091-1099.
- Canada Gazette. 2001. "Regulations Amending the Canadian Forces Members and Veterans Re-establishment and Compensation Regulations." 145(28). Retrieved June 3, 2011. (<http://www.gazette.gc.ca/rp-pr/p1/2011/2011-07-09/html/reg2-eng.html>).

- Charmaz, Kathy. 1991. *Good Days, Bad Days: The Self in Chronic Illness and Time*. New Brunswick, NJ: Rutgers University Press.
- Clipp, Elizabeth. C. and Glen H. Elder. 1996. "The Aging Veteran of World War II." Pp. 19-51 in *Aging and Posttraumatic Stress Disorder*, edited by P. E. Ruskin and J. A. Talbott..Washington DC: American Psychiatric Press, Inc.
- Coleman, Penny. 2006. *Flashback: Posttraumatic Stress Disorder, Suicide, and the Lessons of War*. Boston, MA: Beacon Press.
- Conrad, Peter. 2007. *The Medicalization of Society: On the Transformation of Human Conditions into Treatable Disorders*. Baltimore: Johns Hopkins University Press.
- Creamer, Mark, Isla Carboon, Andrew B. Forbes, Dean P. McKenzie, Alexander C. McFarlane, Helen L. Kelsall, and Malcolm R. Sim. 2006. "Psychiatric Disorder and Separation from Military Service: A 10-Year Retrospective Study." *American Journal of Psychiatry* 163:733-734.
- Cross, Philip. 2010. "Year End Review of 2009." *Canadian Economic Observer* 23(4). Retrieved July 2, 2011. (<http://www.statcan.gc.ca/pub/11-010-x/2010004/part-partie3-eng.htm>).
- Dohrenwend, Barbara S. and Bruce P. Dohrenwend. 1974. *Stressful Life Events: Their Nature and Effects*. New York: Wiley.
- Dowd, James J. 2001. "From Officers to Gentlemen: Army Generals and the Passage to Retirement." Pp. 233-257 in *Restructuring Work and the Lie Course*, edited by V.W. Marshall, W.R. Heinz, H. Krüger, and A. Verma. Toronto: University of Toronto Press.
- Duncan, Otis Dudley. 1961. "A Socioeconomic Index for All Occupations" Pp. 139-161 in *Occupations and Social Status*, edited by A.J. Reiss. New York, NY: Free Press.
- Elder, Glen H. Jr. 2003 "The Life Course in Time and Place." Pp.57-72 in *Social Dynamics of the Life Course: Transitions, Institutions, and Interrelations*, edited by W.R. Heinz and V.W. Marshall. New York: Aldine Transaction.
- Elder, Glen H., Jr., John Modell, and Ross D. Parke. 1993. *Children in Time and Place*. New York, NY: Cambridge University Press.
- Elder, Glen H., Jr., and Elizabeth C. Clipp. 1989. "Combat Experience and Emotional Health: Impairment and resilience in Later Life." *Journal of Personality* 57(2): 311-341.

- Elder, Glen H., Jr., and Michael J. Shanahan. 2006. "The Life Course and Human Development." Pp. 665-715 in *Theoretical Models of Human Development* (Vol. 1: The Handbook of Child Psychology, 6th Edition), edited by R.E. Lerner. New York: Wiley.
- Elhai, Jon D., Ateka A. Contractor, Patrick A. Palmieri, David Forves, and J. Don Richardson. 2011. "Exploring the Relationship between Underlying Dimensions of Posttraumatic Stress Disorder and Depression in a National, Trauma-exposed Military Sample." *Journal of Affective Disorders* 133:477-480. Retrieved June 12, 2011. doi:10.1016/j.jad.2011.04.035. (website).
- Elhai, Jon D., and Patrick A. Palmieri. 2011. "The Factor Structure of Posttraumatic Stress Disorder: A Literature Update, Critique of Methodology, and Agenda for Future Research." *Journal of Anxiety Disorders* 25:849-854. Retrieved June 12, 2011. doi:10.1016/j.janxdis.2011.04.007
- Ensel, Walter M., and Nan Lin. 1991. "The Life Stress Paradigm and Psychological Distress." *Journal of Health and Social Behavior* 32:321-341.
- Ettner, Susan L., Richard G. Frank, and Ronald C. Kessler. 1997. "The Impact of Psychiatric Disorders on Labor Market Outcomes." *Industrial and Labor Relations Review* 51(1): 64-81.
- Evans, Barry J. 2003. "Hypnosis of Post-traumatic Stress Disorder." *Australian Journal of Clinical and Experimental Hypnosis* 31:54-73.
- Fast, Janet, Alison Yacyshyn, and Norah Keating. 2008. "Wounded Veterans, Wounded Families: Hidden Costs, Invisible Contributions." HCIC Research Program, University of Alberta. Report to Veterans Affairs Canada. Retrieved April 10, 2010. (<http://www.ales2.ualberta.ca/hecol/hcic/>).
- Figley, Charles R. 1978. "Symptoms of Delayed Combat Stress among a College Sample of Vietnam Veterans." *Military Medicine* 143:107-110.
- Fikretoglu, Deniz. 2008. "The Impact of Operational Stress Injuries on Veterans' Families: A Review of the Existing Research." Report to Veterans Affairs Canada. Retrieved April 10, 2010. (http://dsp-psd.pwgsc.gc.ca/collection_2009/acc-vac/V32-205-2008E.pdf)
- Fikretoglu, Deniz, Alain Brunet, Norbert Schmitz, Stephane Guay, and David Pedlar. 2006. "Posttraumatic Stress Disorder and Treatment Seeking in a Nationally Representative Canadian Military Sample." *Journal of Traumatic Stress* 19(6):847-858.

- Fikretoglu, Deniz., Jon D. Elhai, Alhua Liu, Don J. Richardson, and David Pedlar. 2009. "Predictors of Likelihood and Intensity of Past-year Mental Health Service Use in an Active Canadian Military Sample." *Psychiatric Services*, 60: 358-366.
- Fikretoglu, Deniz, Alhua Liu, Dave Pedlar, and Alain Brunet. 2008. "Patterns and Predictors of Treatment Delay for Mental Disorders in a Nationally Representative, Active Canadian Military Sample." *Medical Care* 48(1): 10-17.
- Fischer, Hannah. 2010. "U.S. Military Casualty Statistics: Operation New Dawn, Operation Iraqi Freedom, and Operation Enduring Freedom." *CRS Report for Congress* (September 10, 2010). Retrieved March 2, 2011. (www.fas.org/sgp/crs/natsec/RS22452.pdf).
- Fitzgerald, Kelly G. 2006. "The Effects of Military Service on Wealth Accumulation." *Research on Aging* 28.1:56-83.
- Foa, Edna B., Richard Zinbarg, and Barbara Olasov Rothbaum. 1992. "Uncontrollability and Unpredictability in Post-traumatic Stress Disorder: An Animal Model" *Psychological Bulletin* 112(2): 218-238.
- Forbes, David, Mark Creamer, and Dirk Biddle. 2001. "The Validity of the PTSD Checklist as a Measure of Symptomatic Change in Combat-Related PTSD" *Behaviour Research and Therapy* 39(3):977-986.
- Fox, Renée C. 1968. "Illness." Pp. 90-96 in *International Encyclopaedia of the Social Sciences*, edited by D.L. Sills. New York: Free Press.
- Freidson, Eliot. [1970] 1988. *Profession of Medicine: A Study of the Sociology of Applied Medicine* Chicago, IL: University of Chicago Press.
- Friedman, Matthew J., and Robert A. Rosenheck. 1996. "PTSD as a Persistent Mental Illness." Pp. 369-389 in *Handbook for the Treatment of the Seriously Mentally Ill*, edited by S.M. Soreff, Seattle: Hogrefe & Huber.
- Gade, Paul A., Hyder Lakhani, and Melvin Kimmel. 1991. "Military Service: A Good Place to Start?" *Military Psychology* 3(4):251-267.
- George, Linda K. 1999. "Life Course Perspectives in Mental Health." Pp. 565-584 in *Handbook of the Sociology of Mental Health*, edited by C.S. Aneshensel and J.C. Phelan. San Diego: Academic Press.
- Gersons, Berthold P. R., and Ingrid V. E. Carlier. 1992. "Post-traumatic Stress Disorder: The History of a Recent Concept." *British Journal of Psychiatry* 161:742-748.
- Goffman, Erving. 1961. *Asylums: Essays on the Social Situation of Mental Patients and Other Inmates* New York: Anchor Books, Random House, Inc.

- Greiger, Thomas A., Stephen J. Cozza, Robert J. Ursano, Charles Hoge, Patricia E. Martinez, Charles C. Engel, and Jarold J. Wain. 2006. "Posttraumatic Stress Disorder and Depression in Battle-Injured Soldiers." *American Journal of Psychiatry* 163:1777-1783.
- Grenier, Stephane, Kathy Darte, Alexandra Heber, and Don Richardson. 2007. "The Operational Stress Injury Social Support Program: A Peer Support Program in Collaboration Between the Canadian Forces and Veterans Affairs Canada." Pp. 261-293 in *Combat Stress Injury: Theory, Research, and Management*, edited by C.F. Figley and W.P. Nash. New York: Routledge.
- Harrell, Margaret C., Laura Werber, Marisa Adelseon, Sarah J. Gaillot, Charlotte Lunch, and Amanda Pomeroy. 2009. "A Compendium of Sexual Assault Research." City, ST: RAND.
- Harrington, Donna. 2009. *Confirmatory Factor Analysis*. Oxford: Oxford University Press.
- Hastings, Thomas J. 1991. "The Stanford-Terman Study Revisited: Postwar Emotional Health of World War II Veterans.." *Military Psychology* 3: 201-214.
- Hoge, Charles W. 2010. *Once a Warrior Always a Warrior: Navigating the Transition from Combat to Home*. Guilford, CT: Globe Pequot Press.
- Hoge, Charles W., Carl A. Castro, Stephen C. Messer, Dennis McGurk, Dave I. Cotting, and Robert L. Koffman. 2004. "Combat Duty in Iraq and Afghanistan, Mental Health Problems, and Barriers to Care." *The New England Journal of Medicine* 351:13.22.
- House, James S. 1981. *Work Stress and Social Support*. Reading, Massachusetts: Addison-Wesley Publishing Company.
- Hu, Li-tze, and Peter M. Bentler. 1999. "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives." *Structural Equation Modeling* 6(1):1-55.
- Jayakody, Rukmalie, Sheldon Danziger, and Ronald C. Kessler. 1998. "Early-Onset Psychiatric Disorders and Male Socioeconomic Status." *Social Science Research* 27: 371-387.
- Jones, Edgar, Robert Hodgins-Vermaas, Helen McCartney, Brian Everitt, Charlotte Beech, Denise Poytner, Ian Palmer, Kenneth Hyams, and Simon Wessely. 2002. "Post-Combat Syndromes from the Boer War to the Gulf War: A Cluster Analysis of Their Nature and Attribution." *British Medical Journal* 324(7333): 321-324.)
- Jones, Edgar, Ian Palmer, and Simon Wessely. 2002. "War Pensions (1900-1945): Changing Models of Psychological Understanding." *British Journal of Psychiatry* 180:374-379.

- Jones, Edgar, and Simon Wessely. 2005. *Shell Shock to PTSD: Military Psychiatry from 1900 to the Gulf War*. New York, NY: Psychology Press.
- Katz, Sidney, Thomas D. Downs, Helen R. Cash, and Robert C. Grotz. 1970. "Progress in Development of the Index of ADL." *The Gerontologist* 10(1):20-30.
- Keane, Terrence M., John A. Fairbank, Juesta M. Caddell, Rose T. Zimering, Kathryn L. Taylor, and Catherine A. Mora. 1989. "Clinical Evaluation of a Measure to Assess Combat Exposure." *Psychological Assessment* 1:53-55.
- Kelty, Ryan, Meredith Kleykamp, and David R. Segal. 2010. "The Military and the Transition to Adulthood." *The Future of Children* 20(1):181-207.
- Kessler, Ronald C., Cindy L. Foster, William B. Suanders, and Paul E. Strang. 1995. "Social Consequences of Psychiatric Disorders, I: Educational Attainment." *The American Journal of Psychiatry* 152(7):1026-1032.
- Kessler, Ronald C. and Richard G. Frank. 1997. "The Impact of Psychiatric Disorders on Work Loss Days." *Psychological Medicine* 27:861-873.
- King, Daniel W., Lynda A. King, Gregory A. Leskin, and Frank W. Weathers. 1998. "Confirmatory Factor Analysis of the Clinician-Administered PTSD Scale: Evidence for the Dimensionality of Posttraumatic Stress Disorder." *Psychological Assessment* 10(2):90-96.
- Kleinman, Arthur. 1988. *The Illness Narratives: Suffering, Healing, & the Human Condition*. New York: Basic Books.
- Kleinman, Arthur, Leon Eisenberg, and Byron Good. 1978. "Culture, Illness and Care: Clinical Lessons from Anthropologic and Cross-cultural Research." *Annals of Internal Medicine* 88:251-258.
- Lasiuk, G. C., and K. M. Hegadoren. 2006a. "Posttraumatic Stress Disorder Part I: Historical Development of the Concept." *Perspectives in Psychiatric Care* 42(1):13-20.
- Lasiuk, G. C., and K. M. Hegadoren. 2006b. "Posttraumatic Stress Disorder Part II: Development of the Construct Within the North American Psychiatric Taxonomy." *Perspectives in Psychiatric Care* 42(2):72-81.
- Lawton, M. Powell, and Elaine M. Brody. 1969. "Assessment of Older People: Self-Maintaining and Instrumental Activities of Daily Living." *The Gerontologist* 9(3): 179-186.
- Leese, Peter. 2002. *Shell Shock: Traumatic Neurosis and the British Soldiers of the First World War*. New York: Palgrave Macmillan.

- Levy, Yagil. 2007. "Soldiers as Laborers" *Theoretical Sociology* 36:187-208.
- Lin, Zhengxi, and Wendy Pyper. 1997. "Job Turnover and Labour Market Adjustment in Ontario from 1978 to 1993." Report prepared for the Ministry of Finance, Government Of Ontario. *Statistics Canada* 11(106): 1-30.
- Link, Bruce. 2008. "Epidemiological Sociology and the Social Shaping of Population Health." *Journal of Health and Social Behavior* 49(4):367-384.
- Link, Bruce, and Jo C. Phelan 2001. "Conceptualizing Stigma." *Annual Review of Sociology* 27:363-385.
- _____. 1995. "Social Conditions as Fundamental Causes of Disease." *Journal of Health and Social Behavior*. 35(Extra Issue: Forty Years of Medical Sociology: The State of the Art and Directions for the Future: 80-94.
- Lipton, Merrill I., and William R. Schaffer. 1986. "Post-traumatic Stress Disorder in the Older Veteran." *Military Medicine* 151(10):522-524.
- Losardo, M.L. 1999. *Veterans in need of services: The history and development of the Edith Nourse Rogers Memorial VA Hospital Compensated Work Therapy Program*. Boston: University of Massachusetts at Boston.
- Lyons, Michael J., William Kremen, Carol Franz, Michael D. Grant, Heather T. Brenner, Corwin Boake, and Seth Eisen. 2006. "Vietnam Service, Combat, and Lifetime Educational Attainment: Preliminary Results from the Twin Study of Aging." *Research on Aging* 28(1):37-55.
- Maas, Ineke, and Richard A. Settersten, Jr. 1999. "Military Service During Wartime: Effect on Men's Occupational Trajectories and Later Economic Well-Being." *European Sociological Review* 15(2):213-232.
- MacLean, Alair. 2005. "Lessons from the Cold War: Military Service and College Education." *Sociology of Education* 78:250-266.
- MacLean, Alair, and Ryan D. Edwards. 2010. "The Pervasive Role of Rank in the Health of US Veterans." *Armed Forces & Society* 36(5):765-785.
- MacLean, Alair, and Glen H. Elder, Jr. 2007. "Military Service in the Life Course." *Annual Review of Sociology* 33(x): 175-196.
- Maclean, Jim M. Thompson, and Alain Poirier. 2010. "Rehabilitation Needs of VAC Clients Post Eligibility for the SISIP Vocational Rehabilitation Program." Executive Summary prepared for Veterans Affairs Canada. February, 23. Retrieved March 2, 2010. (http://publications.gc.ca/collections/collection_2011/.../V32-222-2-2010-eng.pdf).

- Mangum, Stephen L., and David E. Ball. 1989. "The Transferability of Military-Provided Occupational Training in the Post-Draft Era." *Industrial and Labor Relations Review* 42(2):230-245.
- Maguen, Shira, Dawne S. Vogt, Lynda A. King, Daniel W. King, Brett T. Litz, Sara J. Knight, and Charles R. Marmar. 2011. "The Impact of Killing on Mental Health Symptoms in Gulf War Veterans" *Psychological Trauma: Theory, Research, Practice, and Policy* 3(1):21-26.
- Marlowe, David H. 2001. *Psychological and Psychosocial Consequences of Combat and Deployment: With Special Emphasis on the Gulf War*, Santa Monica, CA: RAND.
- Marshall, Victor W. 1996. "The State of Theory in Aging and the Social Sciences." Pp. 12-30 in *Handbook of Aging and the Social Sciences* (Fourth Edition), edited by R.H. Binstock and L.K. George (Eds.), San Diego: Academic Press, Pp. 12-30.
- _____. 2005. "Economic Effects of PTSD: A Review." Report prepared for Veterans Affairs Canada. (January, 2005). (http://www.veterans.gc.ca/eng/sub.cfm?source=pro_research/publications/reports#a2004)
- Marshall, Victor W., and Philippa J. Clarke. 2007. "Theories of Aging: Social." Pp. 621-630 in *Encyclopedia of Gerontology, 2nd Edition*, edited by J. Birren. London: Elsevier, Academic Press.
- Marshall, Victor W., and Rebecca Matteo. 2004. "Canadian Forces Clients of Veterans Affairs Canada: 'Risk Factors' for Post-Release Socioeconomic Well-Being." Report prepared for Veterans Services Branch, Veterans Affairs Canada, May, 5. (http://www.veterans.gc.ca/eng/sub.cfm?source=pro_research/publications/reports#a2004)
- Marshall, Victor W., Rebecca Matteo, and David Pedlar. 2005. "Post Military Experience of VAC Clients: The Need for Military Release Readiness." Report prepared for Veterans Services Branch, Veterans Affairs Canada, January, 24. (http://www.veterans.gc.ca/eng/sub.cfm?source=pro_research/publications/reports#a2004)
- McMichael, William H. 2009. "No Purple Hearts for PTSD, Pentagon Rules." *Army Times* (January, 5) Retrieved on March 2, 2010. (http://www.armytimes.com/news/2009/01/military_purpleheart_ptsd_010609w/)
- Miller, Mark W., Erika J. Wolf, Elaine Martin, Danny G. Kaloupek, and Terence M. Keane. 2008. "Structural Equation Modeling of Associations among Combat Exposure, PTSD Symptom Factors, and Global Assessment of Functioning." *Journal of Rehabilitation Research & Development* 45(3):359-370.
- Mills, C. Wright. 1959. *The Sociological Imagination* London: Oxford University Press.

- Mirowsky, John, and Catherine E. Ross. 2003. *Social Causes of Psychological Distress*, 2nd Edition. New York: Aldine de Gruyter.
- Moskos, Charles C., Jr. 1976. "The Military." *Annual Review of Sociology* 2:55-78.
- Musick, Mark 1996. "Religion and Subjective Health among Black and White Elders." *Journal of Health and Social Behavior* 37(3):221-37.
- Naifeh, James A., J. Don Richardson, Kevin S. Del Ben, and Jon D. Elhai. 2010. "Heterogeneity in the Latent Structure of PTSD Symptoms Among Canadian Veterans." *Psychological Assessment* 22(3):666-674.
- National Center for PTSD. 2009. "History of the National Center for PTSD." Retrieved on March 2, 2010. (http://www.ptsd.va.gov/about/mission/history_of_the_national_center_for_ptsd.asp)
- National Defence..2011a. "National Defence and the Canadian Forces." *Canada News Centre* August 9, 2011 (<http://www.forces.gc.ca/site/home-accueil-eng.asp>)
- _____. 2011b. "Canadian Forces' Casualty Statistics (Afghanistan)" *Canada News Centre* January 12, 2011 (<http://news.gc.ca/web/articleeng.do?m=/index&nid=583079>).
- _____. 2011c. "Canada Restores Historic Identities of the Royal Canadian Navy, the Canadian Army, and the Royal Canadian Air Force." (<http://www.forces.gc.ca/site/gal/photos-eng.asp?id=370>)
- New Veterans Charter. 2009. "Services and Benefits: The New Veterans Charter." *Veterans Affairs Canada*. Retrieved on June 3, 2009. (<http://www.veterans.gc.ca/eng/sub.cfm?source=services/benefits/nvc>)
- Norris, Fran H. 1992. "Epidemiology of Trauma: Frequency and Impact of Different Potentially Traumatic Events on Different Demographic Groups." *Journal of Consulting and Clinical Psychology* 60(3):409-418.
- Oi, Walter Y. 1967. "The Economic Cost of the Draft." *American Economic Review* 57(2): 39-62.
- Parsons, Talcott. 1951. *The Social System*. Glencoe, IL: The Free Press.
- Pavalko, Eliza K., and Glen H. Elder, Jr. 1993. "Women Behind the Men: Variations in Wives' Support of Husbands' Careers." *Gender and Society* 7(4):548-567.
- _____. 1990. "World War II and Divorce: A Life-Course Perspective." *American Journal of Sociology* 95(5):1213-1234.

- Pearlin, Leonard I. 1999. "The Stress Process Revisited: Reflections on Concepts and Their Interrelationships." Pp. 395-415 in *Handbook of the Sociology of Mental Health*, edited by C.S. Aneshensel and J.C. Phelan. New York: Kluwer Academic, Plenum Press.
- _____. 1989. "The Sociological Study of Stress." *Journal of Health and Social Behavior* 30:241-56.
- Penk, Walter, Charles Drebing, and Russell Schutt. 2002. "PTSD in the Workplace" Pp. 215-247 in *Handbook of Mental Health in the Workplace*, edited by J. C. Thomas and J. Hite. Thousand Oaks, California: Sage Publications, Inc.
- Pietrzak, Robert H., Marc B. Goldstein, James C. Malley, Allison J. Rivers, and Steven M. Southwick. 2010. "Structure of Posttraumatic Stress Disorder Symptoms and Psychosocial Functioning in Veterans of Operations Enduring Freedom and Iraqi Freedom." *Psychiatry Research* 178:323-329.
- Prigerson, Holly G., Paul K. Maciejewski, and Robert A. Rosenheck. 2002. "Population Attributable Fractions of Psychiatric Disorders and Behavioral Outcomes Associated with Combat Exposure among US Men" *American Journal of Public Health* 92(1): 59-63.
- Radloff, L.S. 1977. "The CES-D Scale: A Self-report Depression Scale for Research in the General Population. *Applied Psychological Measurement* 1:385-401.
- Resnick, Sandra G. and Robert A. Rosenheck. 2008. "Posttraumatic Stress Disorder and Employment in Veterans Participating in Veterans Health Administration Compensated Work Therapy." *Journal of Rehabilitation Research & Development* 45(3): 427-436.
- Richardson, Don J., Kathy Darte, Stephane Grenier, Allan English, and Joe Sharpe. 2009. "Operational Stress Injury Social Support: A Canadian Innovation in Professional Peer Support." *Canadian Military Journal* 9(1):57-64.
- Roberts, A.L., S. E. Gilman, N. Breslau, and K. C. Koenen. 2010. "Race/Ethnic Differences in Exposure to Traumatic Events, Development of Post-Traumatic Stress Disorder, and Treatment-Seeking for Post-Traumatic Stress Disorder in the United States." *Psychological Medicine* 32(2):1824-1837.
- Rosenheck, Robert, and Alan Fontana. 1994. "Long-term Sequelae of Combat in World War II, Korea, and Vietnam: A Comparative Study." Pp. 330-357 in *Individual and Community Responses to Trauma and Disaster: The Structure of Human Chaos*, edited by R.J. Ursano, B.G. McCaughey, & C.S. Fullerton. Cambridge: Cambridge University Press.

- Rosenheck, Robert, Linda Frisman, and Jody Sindelar. 1995. "Disability Compensation and Work among Veterans with Psychiatric and Nonpsychiatric Impairments." *Psychiatric Services* 46(4):359-365.
- Ruggiero, K. J., K. Del Ben, J.R. Scotti, and A.E. Rabalais. 2003. "Psychometric Properties of the PTSD Checklist--Civilian Version." *Journal of Traumatic Stress*, 16: 495-502.
- Sampson, Robert J., and John H. Laub. 1996. "Socioeconomic Achievement in the Life Course of Disadvantaged Men: Military Service as a Turning Point, Circa 1940-1965." *American Sociological Review* 61(2):347-367.
- Sareen, Jitender, S.L. Belik, T.O. Afifi, Gordon J. Asmundson, B.J. Cox, and M.B. Stein. 2008. "Canadian Military Personnel's Population Attributable Fractions of Mental Disorders and Mental Health Service Use Associated with Combat and Peacekeeping Operations." *American Journal of Public Health* 98(12):2191-2198.
- Savoca, Elizabeth, and Robert Rosenheck. 2000. "The Civilian Labor Market Experiences of Vietnam-Era Veterans: The Influence of Psychiatric Disorders." *The Journal of Mental Health Policy and Economics* 3:199-207.
- Scheff, Thomas J. 1966. *Being Mentally Ill: A Sociological Theory*. Chicago: ALDINE Publishing Company.
- Selye, Hans. 1956. *The Stress of Life*. New York: McGraw-Hill.
- Settersten, Richard A., Jr. 2006. "When Nations Call: How Wartime Military Service Matters for the Life Course and Aging." *Research on Aging* 28(1):12-36.
- _____. 2001. *Invitation to the Life Course: Toward New Understandings of Later Life*. New York: Baywood.
- Shay, Jonathan. 2002. *Odysseus in America: Combat Trauma and the Trials of Homecoming*. New York, New York: Scribner.
- Simms, Leonard J., Bradley N. Doebbeling, and David Watson. 2002. "Confirmatory Factor Analyses of Posttraumatic Stress Symptoms in Deployed and Nondeployed Veterans of the Gulf War." *Journal of Abnormal Psychology* 111(4):637-647.
- Smith, Irving III, Kris Marsh, and David Segal. 2010. "The World War II Veteran Advantage? A Lifetime Cross-Sectional Study of Social Status Attainment." *Armed Forces & Society* (December 1, 2010): 1-22. Retrieved on March 2, 2010. doi:10.1177/0095327X10390463
- Solomon, Zahava, and Mario Mikulincer. 2006. "Trajectories of PTSD: A 20-Year Longitudinal Study." *American Journal of Psychiatry* 163:659-666.

- Sontag, Susan. 2001. *Illness as Metaphor and AIDS and Its Metaphors*. New York, NY: Picador.
- Statistics Canada. 2001. "Highlights: The Labor Market: Year-End Review" *Perspectives on Labour and Income* 13(1):5-8.
- Stone, M. 1985. "Shellshock and the Psychologists." Pp. xx-xx in *The Anatomy of Madness: Essays in the History of Psychiatry*. Vol. II, *Institutions and Society*, edited by W. Bynum, R. Porter and M. Shepherd. London: Tavistock.
- Stouffer, Samuel A. 1949. *The American Soldier: Adjustment During Army Life* (Vol. 2). Princeton, NJ: Princeton University Press.
- Taylor, Steven, Klaus Cuch, William J. Koch, David J. Crockett, and Greg Passey. 1998. "The Structure of Posttraumatic Stress Symptoms." *Journal of Abnormal Psychology* 107(1):154-160.
- Teachman, Jay D., and Vaughn R. A. Call. 1996. "The Effect of Military Service on Educational, Occupational, and Income Attainment." *Social Science Research* 25(1): 1-31.
- Teachman, Jay D., Vaughn R.A. Call, and M. Segal. 1993. "The Selectivity of Military Enlistment." *Journal of Political and Military Sociology* 21:287-309.
- Thoits, Peggy A. 2010. "Stress and Health: Major Findings and Policy Implications." *Journal Of Health and Social Behavior* 51(S):S41-S53.
- _____. 1995. "Stress, Coping, and Social Support Processes: Where Are We? What Next?" *Journal of Health and Social Behavior* 35:53-79.
- Thompson, Jim, Mary Beth MacLean, Linda Van Til, Jill Sweet, Alain Poirier, and David Pedlar. 2011. "Survey on Transition to Civilian Life: Report on Regular Force Veterans." Report prepared for Veterans Affairs Canada: January 4, 2011. (http://www.veterans.gc.ca/eng/sub.cfm?source=pro_research/publications/reports/survey-trans-plain)
- Turner, R. Jay, Blair Wheaton, and Donald A. Lloyd. 1995. "The Epidemiology of Social Stress." *American Sociological Review* 60:104-125.
- United States Department of Veterans Affairs. 2010. "History – VA History" Retrieved on July 2, 2011. (http://www.va.gov/about_va/vahistory.asp)
- _____. 2009. "Born of Controversy: The GI Bill of Rights." Retrieved on September 20, 2010. (http://www.gibill.va.gov/gi_bill_info/history.htm) Retrieved on

- Vagrancy Act of 1824: An Act for the Punishment of Idle and Disorderly Persons, Rogues And Vagabonds*, Statute Code 5 Geo. IV c. 83, England and Wales, June 21, 1824. Retrieved May 22, 2009. (<http://www.legislation.gov.uk/ukpga/Geo4/5/83//contents>)
- Van Ameringen, Michael, Catherine Mancini, Beth Patterson, and Michael H. Boyle. 2008. "Post-Traumatic Stress Disorder in Canada" *CNS Neuroscience & Therapeutics* 14: 171-181.
- Veterans Affairs Canada. 2010. "Five-Year Strategic Plan 2009-2014." *Department Report for Veterans Affairs Canada*. January 20, 2010 (<http://www.veterans.gc.ca/eng/sub.cfm?source=department/reports/strategic-plan-2009-2014>).
- Veterans Affairs Canada. 2009. "New Veterans Charter Evaluation – Phase I: 4.4 Comparison to Other Countries." Retrieved on September 2, 2010. (<http://www.veterans.gc.ca/eng/sub.cfm?source=department/reports/deptaudrep/2009-dec-nvc/4-4>)
- Vogt, Sawne, Rachel Vaughn, Mark E. Glickman, Mark Schultz, Mari-Lynn Drainoni, Rani Elwy, and Susan Eisen. 2011. "Gender Differences in Combat-related Stressors and Their Association with Postdeployment Mental Health in an Nationally Representative Sample of U.S. OEF/OIF Veterans." *Journal of Abnormal Psychology*. Retrieved on August 2, 2011. (Advance online publication. doi:10.1037/a0023452).
- Warrior Brigade Handbook. 1998. (<http://www.wramc.amedd.army.mil/WarriorsInTransition/handbooks/WarriorTransitionBrigadeWarriorHandbook.pdf>)
- Weathers, Frank W., Brett T. Litz, Debra S. Herman, Jennifer A. Huska, and Terence M. Keane. 1993. "The PTSD Checklist (PCL): Reliability, Validity, and Diagnostic Utility." Paper presented at the Ninth Annual Conference of the ISTSS, San Antonio, TX.
- Westat. 2010. "National Survey of Veterans, Active Duty Service Members, Demobilized National Guard and Reserve Members, Family Members, and Surviving Spouses." Report prepared for Department of Veterans Affairs: October 18, 2010 www.va.gov/vetdata/docs/.../NVSSurveyFinalWeightedReport.pdf
- Wheaton, Blair. 1999. "The Nature of Stressors." Pp. 176-197 in *A Handbook for the Study of Mental Health*, edited by A.V. Horwitz and T.L. Scheid. Cambridge, England: Cambridge University Press.
- Whyman, Mira, Megan Lemmon, and Jay Teachman. 2011. "Non-combat Military Service in the United States and Its Effects on Depressive Symptoms among Men." *Social Science Research* 40:695-703.

- Yarvis, Jeffery S., Patrick S. Bordnick, and Christina A. Spivey. 2008. "Subthreshold PTSD: A Comparison of Alcohol, Depression, and Health Problems in Canadian Peacekeepers with Different Levels of Traumatic Stress." Pp. 117-135 in *Stress, Trauma, and Substance Use*, edited by B.E. Briade and S.A. MacMaster. New York, NY: Routledge.
- Yufik, Tom, and Leonard J. Simms. 2010. "A Meta-Analytic Investigation of the Structure of Posttraumatic Stress Disorder Symptoms" *Journal of Abnormal Psychology* 119(4): 764-776.

APPENDIX A

PTSD CheckList – Military Version (PCL-M)

Patient's Name: _____

Instruction to patient: Below is a list of problems and complaints that veterans sometimes have in response to stressful military experiences. Please read each one carefully, put an "X" in the box to indicate how much you have been bothered by that problem in *the last month*.

No.	Response:	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
1.	Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful military experience?					
2.	Repeated, disturbing <i>dreams</i> of a stressful military experience?					
3.	Suddenly <i>acting or feeling</i> as if a stressful military experience were happening again (as if you were reliving it)?					
4.	Feeling <i>very upset</i> when <i>something</i> reminded you of a stressful military experience?					
5.	Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, or sweating) when <i>something</i> reminded you of a stressful military experience?					
6.	Avoid <i>thinking about or talking about</i> a stressful military experience or avoid <i>having feelings</i> related to it?					
7.	Avoid <i>activities or situations</i> because <i>they</i> remind you of a stressful military experience?					
8.	Trouble <i>remembering important parts</i> of a stressful military experience?					
9.	Loss of <i>interest in things that you used to enjoy</i> ?					
10.	Feeling <i>distant or cut off</i> from other people?					
11.	Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?					
12.	Feeling as if your <i>future</i> will somehow be <i>cut short</i> ?					
13.	Trouble <i>falling or staying asleep</i> ?					
14.	Feeling <i>irritable</i> or having <i>angry outbursts</i> ?					
15.	Having <i>difficulty concentrating</i> ?					
16.	Being " <i>super alert</i> " or watchful on guard?					
17.	Feeling <i>jumpy</i> or easily startled?					

Weathers, F.W., Huska, J.A., Keane, T.M. PCL-M for DSM-IV. Boston: National Center for PTSD – Behavioral Science Division, 1991
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Table A3-1. Demographic, Health, & Military Characteristics of Full VAC Client Sample by PTSD Status^a

	No PTSD	PTSD	Total		No PTSD	PTSD	Total
<i>Demographics</i>				<i>Military Career</i>			
Mean Age	51.91	45.71	51.19 ***	Medical Release			***
<i>sd</i>	(10.38)	(10.81)	(10.62)	<i>No</i>	73.3	50.3	70.5
<i>Range</i>	20 - 65	20 - 65	20-65	<i>Yes</i>	26.7	49.7	29.5
Marital Status			***	Mean Years in	21.28	17.62	20.85 ***
<i>Single, Never Married</i>	4.4	6.5	4.6	Regular Forces^b	(9.78)	(8.86)	(9.75)
<i>Married / Common Law</i>	87.7	75.7	86.3	<i>Range</i>	0 - 39	1 - 37	0 - 39
<i>Divorced / Separated</i>	6.8	16.0	7.9				
<i>Widowed</i>	1.1	1.8	1.2				
Education				Elements of Service			**
<i>Secondary Incomplete</i>	21.5	16.9	21	<i>Land Only</i>	51.6	67.1	53.4
<i>Secondary Complete</i>	24.7	27.5	25.0	<i>Sea Only</i>	9.4	5.9	9.0
<i>Post-Secondary (Some)</i>	45.0	50.1	45.6	<i>Air Only</i>	16.7	9.4	15.9
<i>Post-Secondary Degree</i>	8.8	5.6	8.5	<i>Multiple Elements</i>	22.2	17.6	21.7
Individual Income			***	Overseas Deployment			
<i>Less Than \$10,000</i>	1.4	6.6	2	<i>Never</i>	41.5	17.6	38.8
<i>\$10,000 - \$19,999</i>	5.6	13.2	6.5	<i>At Least Once</i>	58.5	82.4	61.2
<i>\$20,000 - \$29,999</i>	15.5	20.6	16.1	Mean # of Overseas	1.02	1.52	1.08 ***
<i>\$30,000 - \$39,999</i>	19.3	17.6	19.1	Deployments	<i>sd</i> (1.14)	(1.14)	(1.15)
<i>\$40,000 - \$49,999</i>	17.9	15.4	17.6	<i>Range</i>	0 - 5	0 - 5	0 - 5
<i>\$50,000 - \$59,999</i>	13.7	12.5	13.6				
<i>\$60,000 - \$69,999</i>	8.4	5.1	8.0	Highest Rank			***
<i>\$70,000 - \$79,999</i>	7.0	2.9	6.6	<i>General/Flag/Senior</i>	12.8	7.7	12.2
<i>\$80,000 or More</i>	11.2	5.9	10.6	<i>Junior/Subordinate</i>	13.1	5.3	12.2
<i>Health</i>				<i>Non-Comissioned Officer</i>	74.1	87	75.6
General Health Status			***	Age on Date of	40.35	36.74	39.92 ***
<i>Good/Excellent</i>	55.2	17.8	50.9	Release	<i>sd</i> (10.35)	(9.20)	(10.28)
<i>Fair/Poor</i>	44.8	82.2	49.1	<i>Range</i>	17 - 63	18-59	17 - 63
Current Level of Pain			***	Time Since Release			***
<i>Mild/None</i>	37.1	11.4	34.1	<i>≤ 3 Years</i>	16.4	35.2	18.6
<i>Moderate</i>	48.1	54.8	48.9	<i>4-6 Years</i>	16.7	22.5	17.4
<i>Severe</i>	14.8	33.7	17.0	<i>7-10 Years</i>	19.1	13.4	18.4
Depression - CES-D			***	<i>11-20 Years</i>	24.9	11.3	23.3
<i>No</i>	79.8	15.3	72.4	<i>21 or More Years</i>	23.0	17.6	22.3
<i>Yes</i>	20.2	84.7	27.6				

^a Level of significance: F-statistic for continuous variables (means); Pearson χ^2 for categorical variables (%). *** p<.001; ** p<.01; * p<.05

^b Mean years in reserve forces is not significantly different based upon PTSD status: No PTSD (5.99; sd 7.07) Probable PTSD (4.86; sd 4.88)

Table A3-2. Post-Release Characteristics of Full VAC Client Sample by PTSD Status^a

	No PTSD	PTSD	Total		No PTSD	PTSD	Total
<i>Employment Characteristics</i>				<i>Income / Investments Satisfaction</i>			
Current Employment Status				Satisfaction with Current Level			***
<i>Employed in Canadian Forces</i>	17.0	16.9	17.0	<i>Yes</i>	57.8	22.5	53.7
<i>Employed in Civilian Labour Force</i>	43.0	37.7	42.4	<i>No / Don't Know</i>	42.2	77.5	46.3
<i>Unemployed but Looking for Job</i>	6.6	10.4	7.0	Current Level Will Continue to Satisfy Needs			***
<i>Inactive</i>	33.4	35.1	33.6	<i>Yes</i>	39.8	10.1	36.3
Ever Worked for Pay^b				<i>No/Don't Know</i>	60.2	89.9	63.7
<i>Yes</i>	87.4	84.9	87.1	Level of Future Satisfaction of Needs			***
<i>No</i>	12.6	15.1	12.9	<i>Very Well / Adequate</i>	47.1	14.2	43.3
Mean # of Different Jobs^b	3.23	3.37	3.24	<i>Not Very Well / Totally Inadequately / Don't Know</i>	52.9	85.8	56.7
<i>sd</i>	(2.96)	(3.23)	(2.99)				
<i>Range</i>	0 - 20	1-20	0 - 20				
Ever Unemployed^b			**	<i>Release Readiness / Preparation</i>			
<i>Yes</i>	48.2	63.0	49.9	Sufficient Time to Prepare for Release^c			***
<i>No</i>	51.8	37.0	50.1	<i>No</i>	51.2	85.0	57.2
Mean # Unemployed Periods^b	1.55	2.15	1.62	<i>Yes</i>	48.8	15.0	42.8
<i>sd</i>	(2.04)	(2.30)	(2.08)				
<i>Range</i>	0-11	0-11	0-11	Timing of Release Preparations^c			***
Further Education or Training Completed^b				<i>Did Not Prepare</i>	37.0	56.5	39.2
<i>Yes</i>	41.2	47.1	41.9	<i>At Least 1 Year Prior</i>	63.0	43.5	60.8
<i>No</i>	58.8	52.9	58.1				

^a Level of significance: F-statistic for continuous variables (means); Pearson χ^2 for categorical variables (%). *** p<.001; ** p<.01; * p<.05

^b Question only asked of VAC clients who are no longer serving in the Canadian Forces.

^c Question only asked of VAC clients who are no longer serving in the Canadian Forces, and were released earlier than planned.

Table A3-3. List of Preparations for Retirement Made Prior to Release by PTSD Status^a
(Full Sample)

	No PTSD	PTSD	<i>Total</i>			No PTSD	PTSD	<i>Total</i>
Contribute to RRSP ***	60.8% 623	44.7% 59	58.9% 682		Gather * Information	50.0% 510	39.8% 53	48.9% 563
Build Up Savings ***	40.6% 413	22.7% 30	38.6% 443		Change Work Pattern	18.3% 188	19.4% 26	18.4% 214
Make *** Investments (i.e. Property)	38.3% 391	20.5% 27	36.3% 418		Develop Physical Activities	15.8% 161	12.7% 17	15.5% 178
Pay Off or Avoid Debt	57.3% 584	51.1% 67	56.6% 651		Develop *** Leisure Activities	32.3% 328	18.9% 25	30.7% 354
Make Major Purchase	24.8% 252	24.8% 33	24.8% 285		Made Any * Adaptations (Summary)	87.6% 633	79.6% 74	86.6% 707

^a Cells include percentage followed by n.

Note: Significance is based upon chi-square value for each individual adaptation and F-statistic for average number of adaptations. *** p<.001; ** p<.01; * p<.05

Table A3-4. Ordinary Least Squares Regression of Annual Household Income on PTSD Status, Demographics, Health, Military Career, and Current Employment Status of VAC Client Sample (N=1047)^a

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
Probable PTSD (1=yes)	-.663*** (.206)	-.606** (.194)	-.151 (.214)	-.191 (.207)	-.115 (.198)
<i>Demographics</i>					
Age		-.017** (.006)	-.020*** (.006)	-.028*** (.006)	.001 (.006)
Marital (1=married/common law)		1.680*** (.195)	1.628*** (.193)	1.547*** (.185)	1.445*** (.177)
<i>Current Education (Secondary Incomplete)</i>					
Completed Secondary Diploma		.546** (.180)	.456* (.177)	.278 (.171)	.208 (.163)
Some Post-Secondary		.391* (.179)	.315 (.176)	.131 (.171)	.096 (.163)
Completed Post-Secondary (i.e. Trade, Business, etc.)		.690*** (.187)	.581** (.184)	.476** (.178)	.481** (.170)
Completed Bachelor / Graduate Diploma		2.395*** (.241)	2.195*** (.238)	1.265*** (.251)	1.197*** (.240)
<i>Health</i>					
Current Health (1=good/excellent)			.724 (.124)	.633*** (.120)	.501*** (.115)
Probable Depression (1=yes)			-.296 (.152)	-.234 (.147)	-.146 (.140)
<i>Military Service</i>					
Highest Rank (1=non-commissioned officer)					
Junior / Subordinate Officer				.828*** (.173)	.778*** (.165)
General / Flag / Senior Officer				1.735*** (.190)	1.584*** (.183)
Number of Deployments				.064 (.050)	.022 (.048)
<i>Current Employment</i>					
Work Status (1=in Canadian Forces)					
In Civilian Labor Force					-.415* (.162)
Unemployed					-1.538*** (.251)
Inactive					-1.545*** (.190)
Constant	5.191 (.068)	3.940 (.363)	3.865 (.370)	4.199 (.375)	3.766 (.367)
R²	.010	.161	.195	.264	.332

^a Sample data are weighted and limited to male respondents who are age 65 or less.

Note: Coefficients are unstandardized regression weights (their standard errors are in parentheses).

APPENDIX B:
SUPPLEMENTAL MATERIALS FOR PTSD SYMPTOM CLUSTER ANALYSIS

Table B4-1. Comparison of Posttraumatic Stress Disorder Symptom Categories in DSM-IV and Proposed Revisions to DSM-V (as of August 20, 2010)

PCL Item	Symptom List	Diagnostic Version	
		DSM-IV	DSM-V
B1	Intrusive thoughts of trauma	R	I
B2	Recurrent dreams of trauma	R	I
B3	Flashbacks	R	I
B4	Emotional reactivity to trauma cues	R	I
B5	Physiological reactivity to trauma cues	R	I
C1	Avoiding thoughts of trauma	A/N	A* Must experience
C2	Avoiding reminders of trauma	A/N	A* 1 or more of A.
C3	Inability to recall aspects of trauma	A/N	CM
C4	Loss of interest	A/N	CM
C5	Detachment	A/N	CM
C6	Restricted affect	A/N	CM\$ Must experience
-	Pervasive negative emotional state	-	CM\$ 3 or more of CM. (Children require 2 or more.)
C7	Sense of foreshortened future	A/N	CM ⁺
-	Negative expectations (self or others)	-	CM
D1	Sleep disturbance	H	A/R
D2	Irritability	H	A/R
D3	Difficulty concentrating	H	A/R
D4	Hypervigilance	H	A/R
D5	Exaggerated startle response	H	A/R
-	Reckless or self-destructive behavior	-	A/R

Note. Symptom Categories; R = Re-experiencing; I= Intrusion; A/N = Avoidance and Numbing; A = Avoidance; CM = Negative Cognitions and Mood; H = Hyperarousal; A/R = Arousal and Reactivity

* In *DSM-V*, wording of symptoms change slightly: C1 becomes “internal reminders (thoughts, feelings or physical sensations)”; and, C2 becomes “external reminders (people, places, conversations, activities, objects, situations)”.

\$ In *DSM-V*, the symptom of “restricted affect” becomes bifurcated into the following: “persistent inability to experience positive emotions” and a new component of “pervasive negative emotional state”.

⁺ In *DSM-V*, wording of symptom changes slightly: “foreshortened future” becomes “persistent and exaggerated negative expectations about one’s self, others, or the world”.

Table B4-2. *Comparison of Goodness-of-fit Indices for the PTSD Factor Models in Full Sample with MLE (n=1841) and Preferred Sample with Complete Data on PCL-M (n=1469).*

Model	df	Preferred Sample (n=1469)				Fit Indices		Full Sample (n=1841)			
		χ^2	RMSEA	CFI	TLI			χ^2	RMSEA	CFI	TLI
Model 2: 3-factor, DSM-IV	116	1246.4	.081	.933	.921			1450.3	.079	.931	.909
Model 3a: 4-factor, Numbing	113	827.4	.066	.957	.949			899.7	.062	.959	.945
Model 3b: 4-factor, Dysphoria	113	765.6	.063	.961	.953			801.2	.058	.964	.952
Model 4: 5-factor, Full	109	661.0	.059	.967	.959			722.1	.055	.968	.955

Note. RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index.

* This table was derived from Asmundon et al. (2002). See “Table 3: *Fit Indices for Direct and Indirect Models of Deployed and Nondeployed Military Personnel*” (811).

Table B4-3. Covariance matrix of PCL-M items.

	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	C7	D1	D2	D3	D4	D5
B1	1.00																
B2	.78	1.00															
B3	.67	.71	1.00														
B4	.75	.68	.65	1.00													
B5	.67	.68	.70	.69	1.00												
C1	.58	.55	.52	.60	.61	1.00											
C2	.59	.57	.59	.61	.65	.71	1.00										
C3	.45	.43	.48	.44	.44	.46	.49	1.00									
C4	.49	.42	.42	.49	.43	.45	.47	.44	1.00								
C5	.58	.52	.52	.56	.56	.55	.56	.46	.59	1.00							
C6	.54	.50	.52	.54	.54	.51	.51	.47	.52	.62	1.00						
C7	.52	.46	.50	.52	.48	.47	.46	.42	.55	.57	.51	1.00					
D1	.45	.44	.41	.42	.42	.40	.38	.38	.53	.46	.46	.48	1.00				
D2	.50	.47	.44	.53	.50	.49	.45	.41	.53	.60	.54	.51	.55	1.00			
D3	.54	.47	.48	.52	.49	.47	.46	.52	.58	.59	.54	.60	.58	.60	1.00		
D4	.58	.57	.57	.57	.59	.51	.53	.44	.49	.56	.57	.52	.48	.57	.57	1.00	
D5	.52	.50	.52	.51	.56	.48	.49	.39	.49	.54	.50	.49	.48	.53	.58	.64	1.00

** All Pearson correlations are significant at $p < .01$ (2-tailed).

Figure B4-1. PCL-M Confirmatory Factor Analysis Model 2 (*DSM*) with Standardized Estimates and Squared Multiple Correlations (Observed Variables).

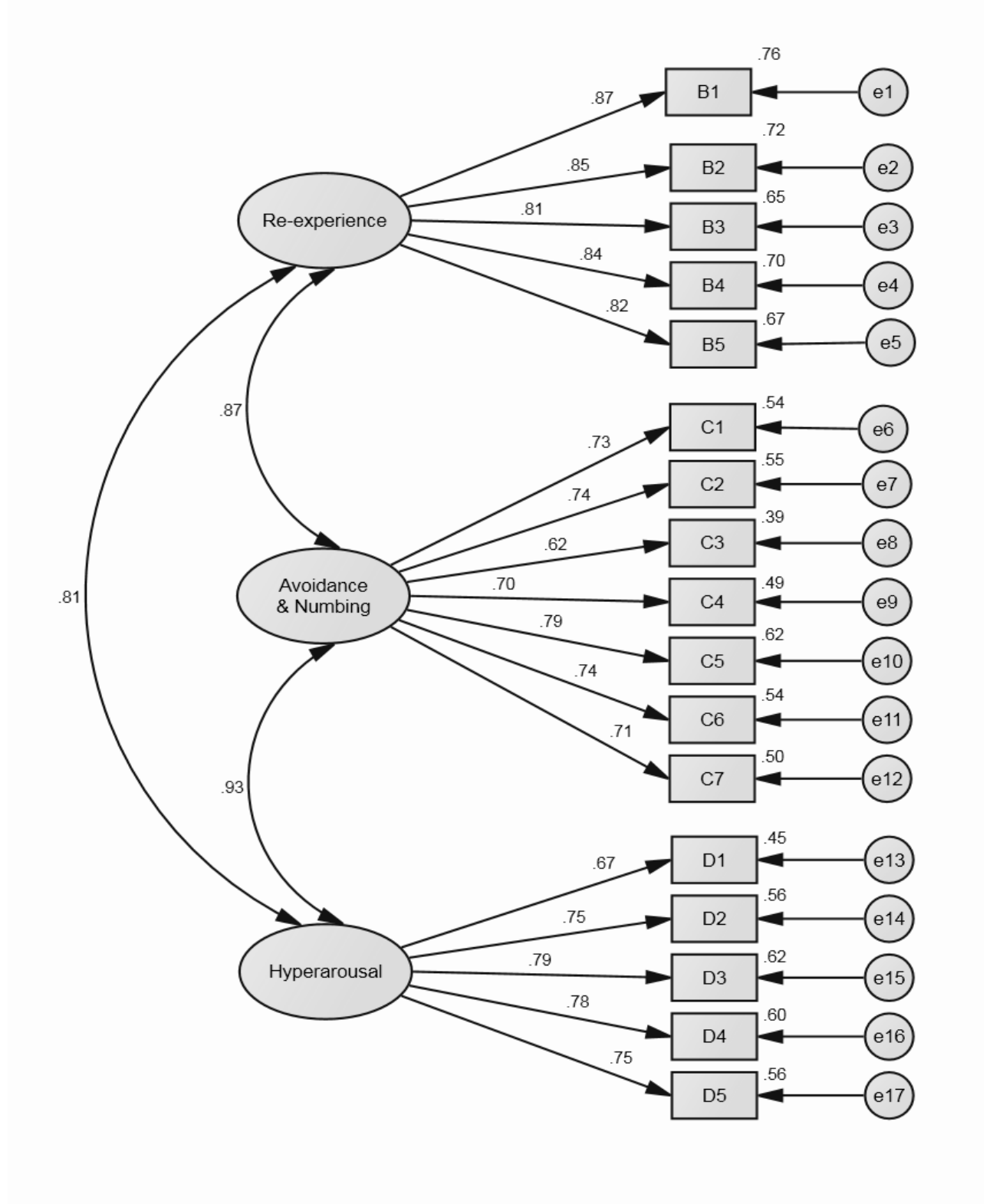


Figure B4-2 PCL-M Confirmatory Factor Analysis Model 3a (“Numbing”) with Standardized Estimates and Squared Multiple Correlations (Observed Variables).

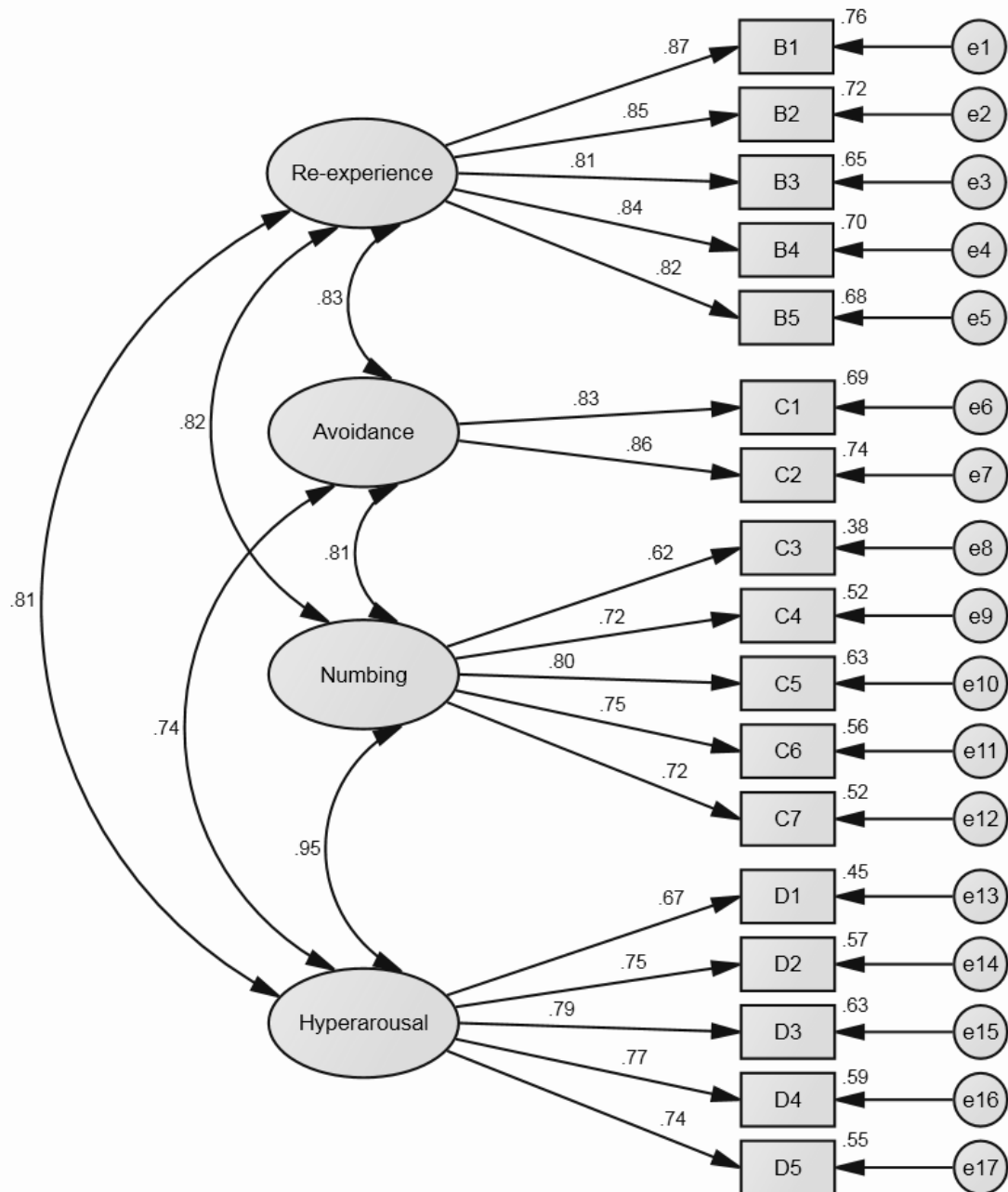


Figure B4-3. PCL-M Confirmatory Factor Analysis Model 3b (“Dysphoria”) with Standardized Estimates and Squared Multiple Correlations (Observed Variables).

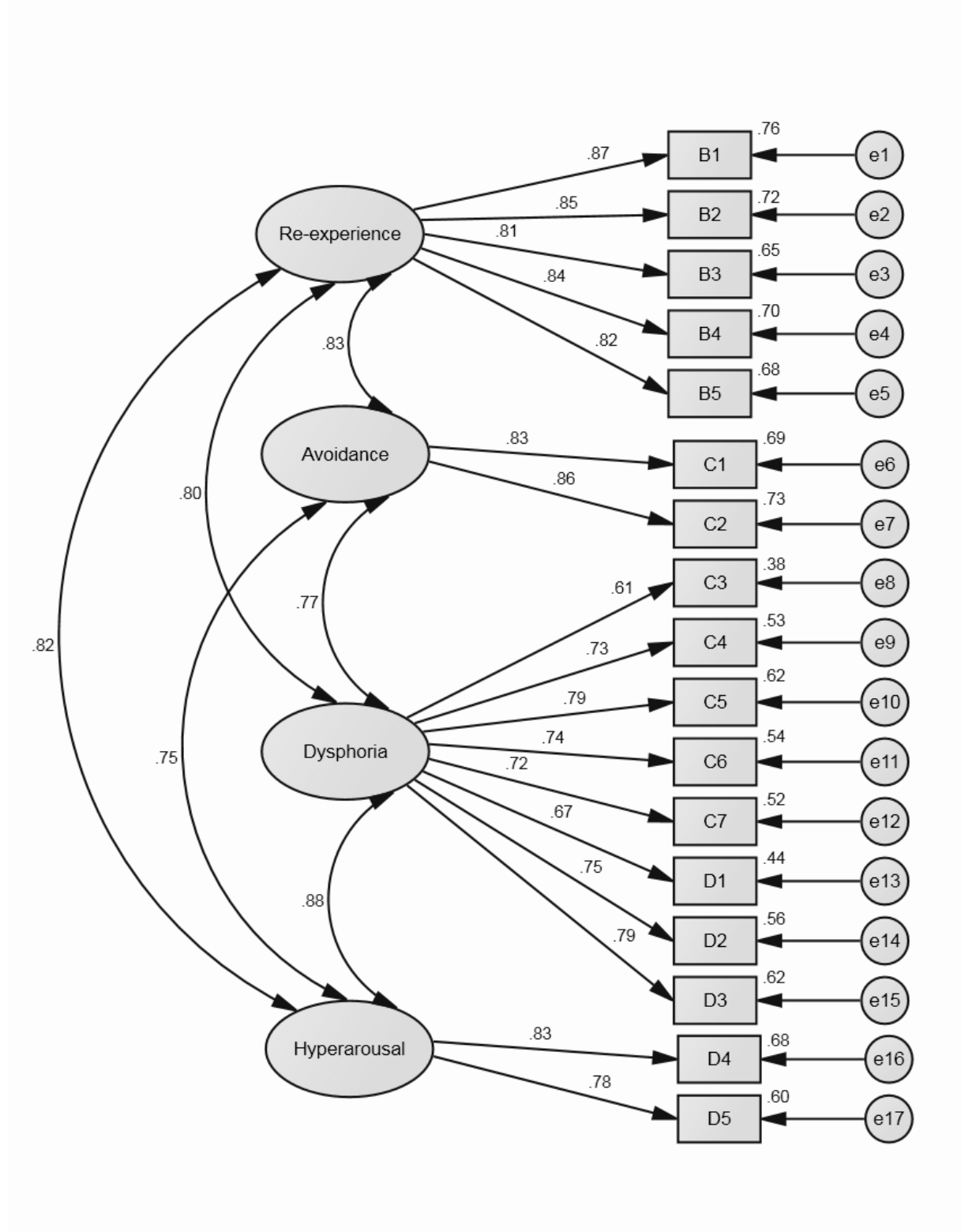


Figure B4-4. PCL-M Confirmatory Factor Analysis Model 4(Proposed *DSM-V*) with Standardized Estimates and Squared Multiple Correlations (Observed Variables).

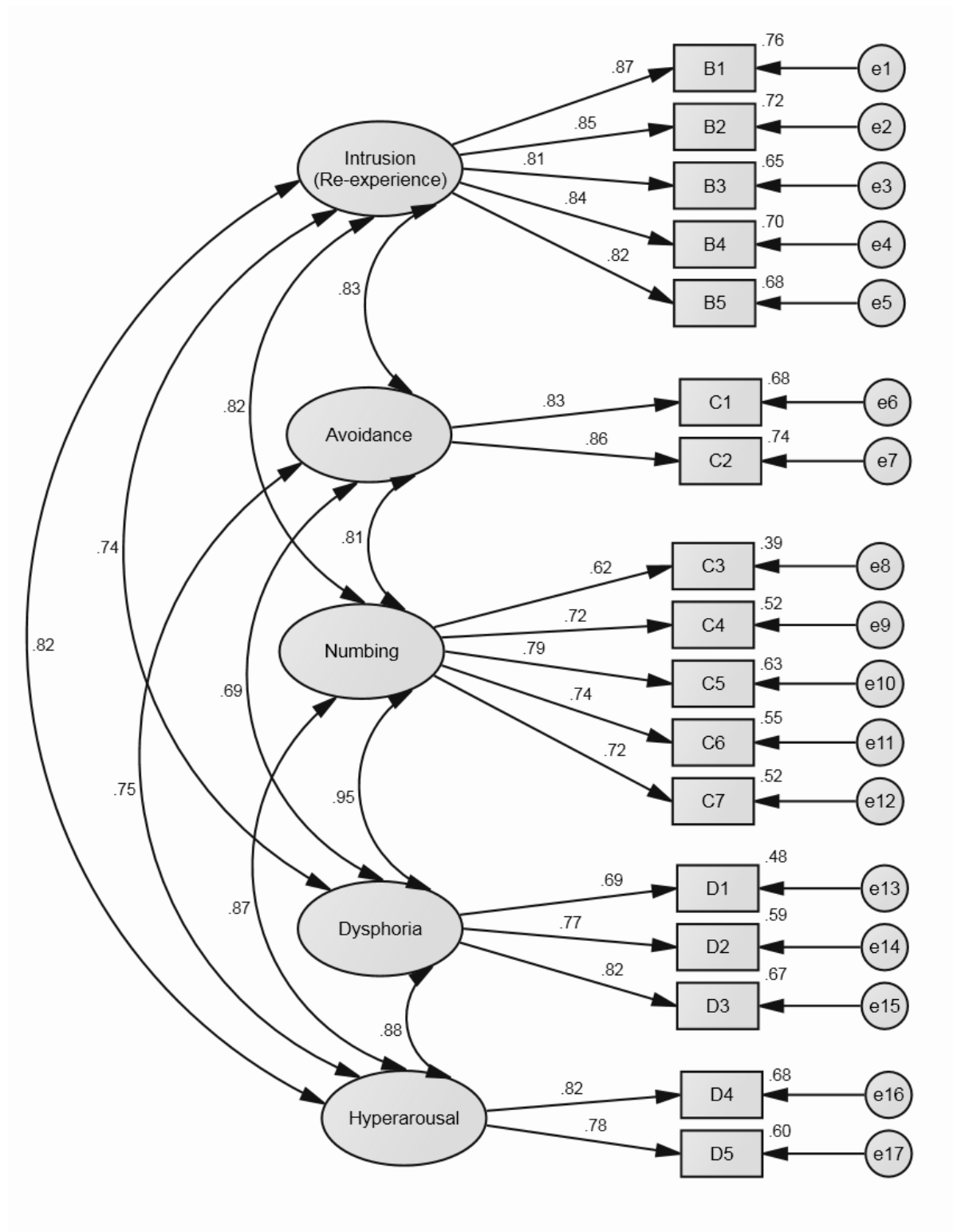


Figure B4-5. PCL-M Higher Order Confirmatory Factor Analysis Model 2 (*DSM*) with Standardized Estimates and Squared Multiple Correlations (Observed Variables).

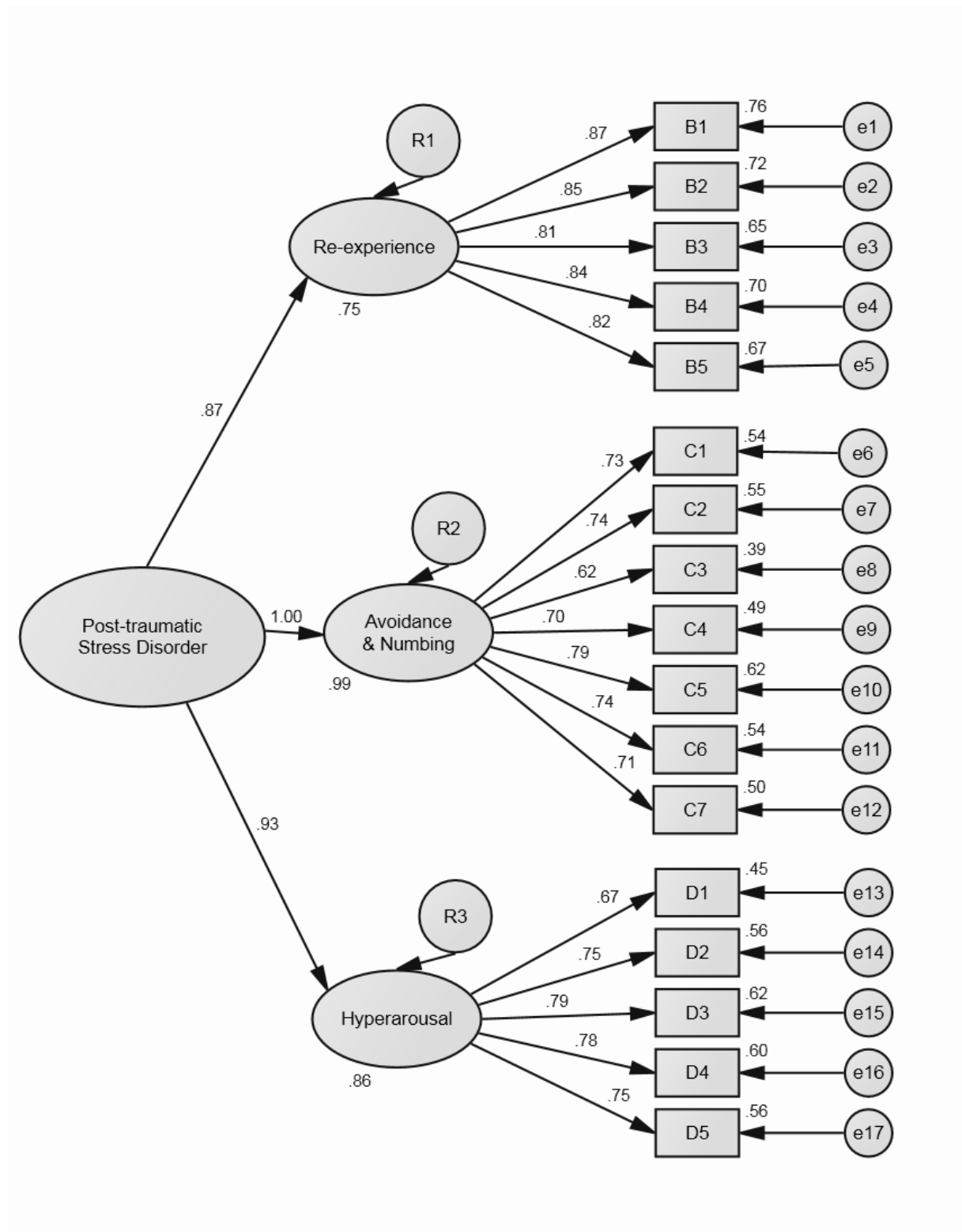


Figure B4-6. PCL-M Higher Order Confirmatory Factor Analysis Model 3a (“Numbing”) with Standardized Estimates and Squared Multiple Correlations (Observed Variables).

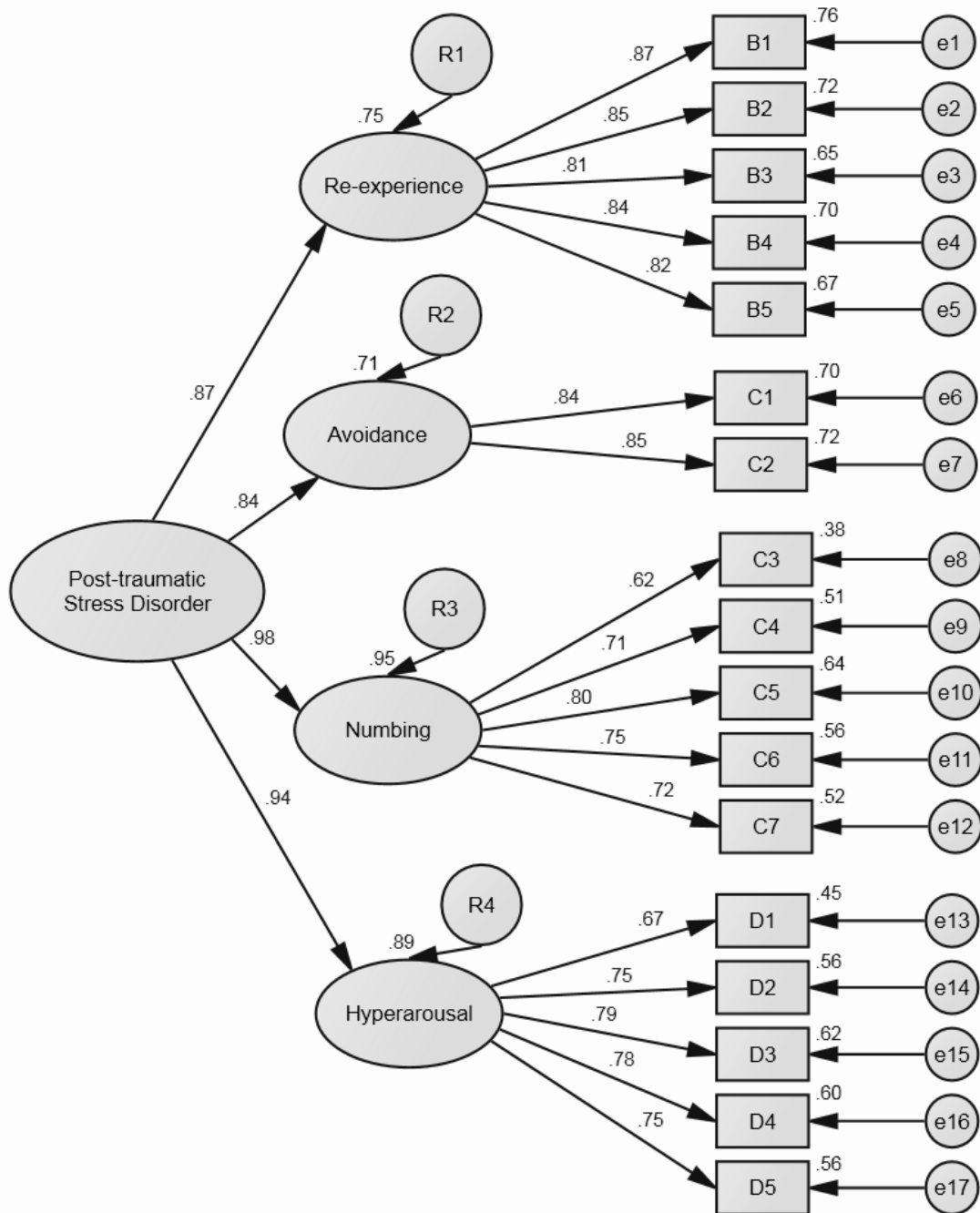


Figure B4-7. PCL-M Higher Order Confirmatory Factor Analysis Model 3b (“Dysphoria”) with Standardized Estimates and Squared Multiple Correlations (Observed Variables).

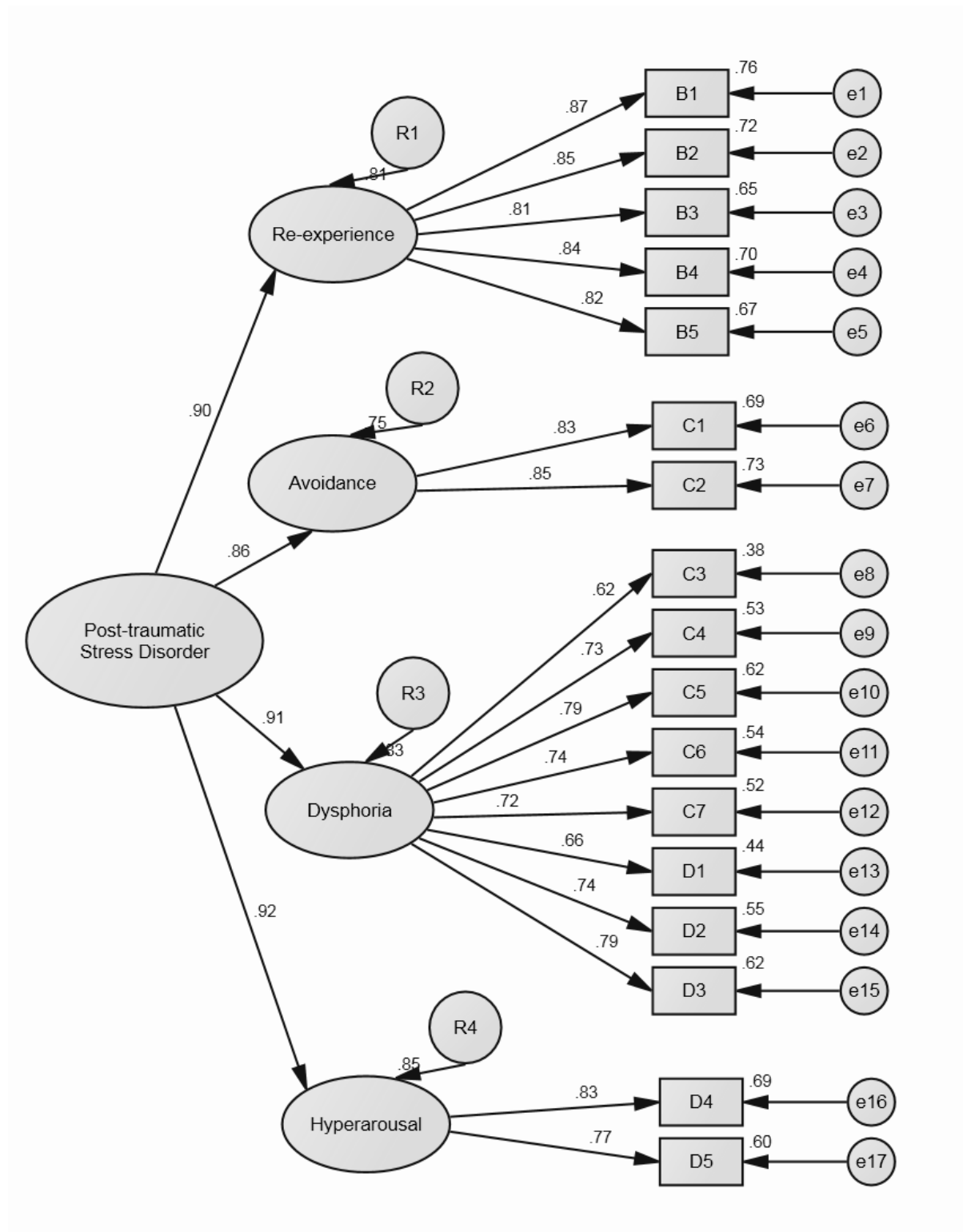


Table B4-4. *Goodness-of-fit Indices for the PTSD Higher Order Factor Models*
(n=1469)

Model	Fit Indices				
	χ^2	df	RMSEA	CFI	TLI
Model 2: 3-factor, DSM-IV	1246.4	116	.081	.933	.921
Model 2: Higher Order	1246.3	116	.081	.933	.921
Model 3a: 4-factor, Numbing	827.4	113	.066	.957	.949
Model 3a: Higher Order	982.3	115	.072	.948	.939
Model 3b: 4-factor, Dysphoria	765.6	113	.063	.961	.953
Model 3b: Higher Order	847.2	115	.066	.956	.948

Note. RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index.

* This table was derived from Asmundon et al. (2002). See “Table 3: *Fit Indices for Direct and Indirect Models of Deployed and Nondeployed Military Personnel*” (811).