Exploring On-Campus Peer Social Support as a Mediator between Attachment and Posttraumatic Stress in Military and Veteran Students

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Dedication

To my family, who taught me the value of education and service—and to Al and Sam,

who make it all worth it.

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Abstract of Dissertation

Exploring On-Campus Peer Social Support as a Mediator between Attachment and Posttraumatic Stress in Military and Veteran Students

Following the passage of the Post-9/11 G.I. Bill in 2008, U.S. military service members and veterans have been enrolling at institutions of higher education at rapidly increasing rates (U.S. Department of Veterans Affairs, 2014). As a result, campus administrators and mental health professionals are seeking new and better ways to support this growing population (Coll & Weiss, 2015). The few existing studies on the mental health of military-affiliated students suggest they feel isolated on campus (DiRamio, Ackerman, & Mitchell, 2008) and are more likely than civilian peers to experience depression, posttraumatic stress (PTS), and suicidal ideation (Barry, Whiteman, McDermid Wadsworth, & Hitt, 2012; Rudd, Goulding, & Bryan, 2011). The current study explored the role of two different types of on-campus peer social support—military and civilian—in mediating the relationship between adult attachment orientation and posttraumatic stress, as well as its correlate, hazardous alcohol use. Data was collected via Web-based, self-report survey from 221 military and veteran students across the United States. Latent variable path analyses indicated that civilian peer social support mediated the relationship between attachment anxiety and PTS, but only partially, underscoring the enduring role of adult attachment orientation in the response to trauma. Psychometric issues limited the testing of models that included military peer social support. Results are discussed in the context of potential on-campus counseling interventions and resources.

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Chapter 1: Introduction

United States military service members returning from Iraq and Afghanistan are faced with the challenge of reintegrating into civilian society and finding "what's next" in their lives. Increasingly, the "what's next" for many of those veterans will include some form of higher education. In 2009, the Post 9/11 GI Bill substantially improved the education benefits available to U.S. military personnel who served on active duty starting on or after September 11, 2001 (Steele, Salcedo, & Coley, 2011). As a result, the number of student veterans receiving education benefits at U.S. colleges and universities doubled from 500,000 in 2008 to more than 1 million in 2013, with another 20% increase expected as troops exit Afghanistan (U.S. Department of Veterans Affairs, 2014). In response to this rapid increase, researchers, campus administrators, and policymakers are exploring how student veterans are faring in higher education settings, including their state of wellbeing and mental health. According to the American Council on Education, increasing numbers of colleges and universities across the country are offering specialized programming for military and veteran students, including counseling services for posttraumatic stress (PTS) and depression (Cook & Kim, 2009; McBain et al., 2012).

Some early inquiries into the experiences of those students have, however, caused some alarm (Coll & Weiss, 2015). Veterans interviewed in qualitative studies have identified the transition to campus as one of the most difficult adjustments post-deployment, describing feelings of isolation from their peers (DiRamio et al., 2008), detachment from faculty and academic endeavors (Strickley, 2009), and difficulty accessing academic, financial, and career support (Coll & Weiss, 2015). Furthermore, recent data indicates that student veterans are completing four-year degree programs at a

lower rate (51.7%; Cate, 2014) than their non-veteran peers (59%; Radford & Wun, 2009). Researchers caution, however, that such comparisons are misleading, as the path to graduation for student veterans differs significantly from their non-veteran peers and depends on their specific military experiences (Cate, 2014). Student veterans are more likely to be first-generation college students, older, married, and have children than their civilian peers (Cate, 2014; Radford & Wun, 2009). Therefore, comparisons between student veterans and civilian students—though perhaps necessary at times to ensure equal access to education—may be complex and rife with confounding variables.

Instead, there is a need for further exploration of specific factors affecting the success of military-affiliated and veteran students in higher education, particularly as many campus administrators and mental health professionals are working to make their institutions more "veteran-friendly" (American Council on Education, 2015). In 2013, in response to concerning reports about the struggles of student veterans, the Obama Administration outlined "Eight Keys to Success" for colleges and universities aiming to better support this growing population (Obama, 2013). The first "key" is for schools to "create a culture of trust and connectedness across the campus community to promote well-being and success among student veterans" (Obama, 2013). There remains, however, a fundamental lack of information about *how* such a culture of trust and connectedness can be most effectively fostered for this population (Coll & Weiss, 2015).

Researchers in counseling and related fields can play a significant role in informing those efforts. In order to provide supportive services to student veterans, professionals on campus need to have a better understanding of the unique mental health challenges faced by this population. Through the course of their military service, these

students face a variety of risk factors for psychological distress—including perhaps multiple deployments to combat zones—not faced by their civilian peers (Cate, 2014). Indeed, early findings suggest that, as compared to non-military students, student veterans may be at increased risk for serious mental health difficulties such as posttraumatic stress (PTS; Barry, Whiteman, & McDermid Wadsworth, 2012; Barry, Whiteman, McDermid Wadsworth, & Hitt, 2012; Rudd, Goulding, & Bryan, 2011), depression (Rudd, Goulding, & Bryan, 2011; Whiteman, Barry, Mroczek, & McDermid Wadsworth, 2013), and suicidal thoughts and behaviors (Rudd, Goulding, & Bryan, 2011). Male student veterans may be more reluctant than their civilian peers to report negative coping behaviors such as problem drinking (Barry, Whiteman, & McDermid Wadsworth, 2012; Barry, Whiteman, McDermid Wadsworth, & Hitt, 2012; Bryan, Bryan, Hinkson, Bichrest, & Ahern, 2014). At the same time, there is evidence to suggest that though student veterans experience mental health difficulties such as PTS at higher rates than their civilian peers, those difficulties are actually *less* likely to impact their academic outcomes (Barry, Whiteman, & McDermid Wadsworth, 2012). Further inquiry into the mental health of student veterans is needed in order to clarify this picture.

Statement of the Problem

Though the literature base surrounding the wellbeing of student veterans is growing, few studies to date have investigated psychosocial and developmental factors affecting mental health outcomes in this population. Instead, the majority of academic research in this area has been epidemiological or descriptive in nature, exploring the prevalence rates, relationships between, and consequences of common mental health challenges such as PTS and depression among student veterans (e.g., Pease, Monteith,

Hostetter, Forster, & Bahraini, 2015; Rudd, Goulding, & Bryan, 2011). Few studies have used advanced analytical methods such as hierarchical linear modeling or structural equation modeling. Furthermore, there is a dearth of research focusing specifically on PTS, even though it is one of the most common mental health difficulties reported in this population (Barry, Whiteman, & McDermid Wadsworth, 2012; Barry, Whiteman, McDermid Wadsworth, & Hitt, 2012; Rudd, Goulding, & Bryan, 2011) as well as the general veteran population (Tanielian & Jaycox, 2008). There is a substantial body of research investigating risk and resilience factors for PTS among trauma survivors more broadly (see Brewin, Andrews, & Valentine, 2000, for a review), but not for military and veteran students. Findings from a small number of existing studies suggest, however, that PTS may be particularly concerning in this population, perhaps increasing the likelihood of suicidal thoughts and behaviors (Rudd & Goulding, 2011) and problematic alcohol use (Barry, Whiteman, & McDermid Wadsworth, 2012; Barry, Whiteman, McDermid Wadsworth, & Hitt, 2012). Therefore, it is critical for mental health and higher education researchers to gain a better understanding of psychosocial pathways to PTS in the fast-growing student veteran population.

Purpose and Potential Significance of the Current Study

The purpose of the current study was to explore the effects of adult attachment orientation and peer social support on PTS symptom severity and, indirectly, the related outcome of problem alcohol use among university students who are veterans or otherwise affiliated with the military. More specifically, the researcher tested two different sources of on-campus social support—civilian university peer and military peer—as mediators in the relationship between adult attachment orientation and PTS (Figure 1). Adult

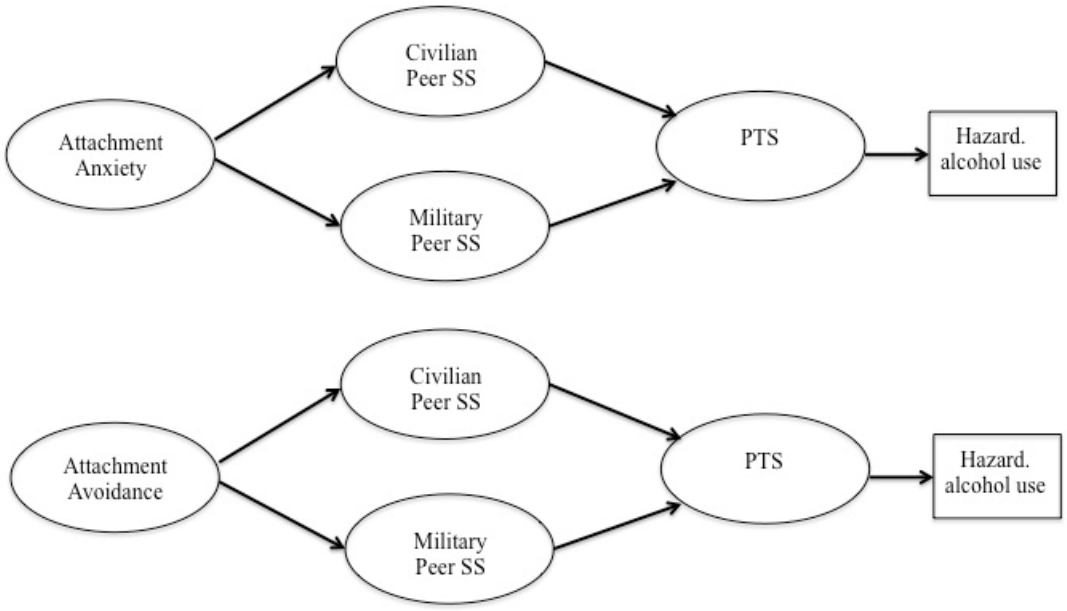
attachment and social support were chosen for this model because they have been consistently linked to PTS in broader samples of trauma survivors (Brewin, Andrews, & Valentine, 2000; Mikulincer & Shaver, 2007). In fact, poor social support has been identified as one of the strongest risk factors for developing PTSD (Brewin, Andrews, & Valentine, 2000). It also is inherently related to attachment throughout the lifespan, as one's internal working models of relationships with others (attachment style or orientation) naturally shape the ability to access social resources (Sroufe, 2005). Yet there is very little research in the extant trauma literature exploring the potential mediating effects of social support on the pathway between attachment and PTS (Besser & Neria, 2012; Shallcross, Frazier, & Anders, 2014), and there are no studies to date exploring such a model in the military and veteran population. Similarly, though a few studies have considered the differential impact of various sources of social support for student veterans (Romero, Riggs, & Ruggero, 2015) and veterans more broadly (Wilcox, 2010), there is no existing research on how these different sources may moderate or mediate the relationship between attachment and PTS in this population.

It was important to test such a model for both theoretical and practical reasons. The results of the current study add to the existing research on the role of social support in the process of coping with trauma—and more specifically, how social support may interact with attachment in adulthood. In addition to building on the broader trauma literature in this way, the current study also adds to the small but growing research base surrounding the mental health of student veterans. This has significant practical implications, as higher education administrators and mental health professionals alike are working to improve the experiences of military and veteran students on and off campus.

By testing peer social support as a potential mediator between attachment orientation and PTS, the researcher hoped to inform more effective interventions for student veterans. On-campus mental health providers treating students with symptoms of PTS may be able to intervene by attempting to bolster immediate, on-campus social support, in addition to reworking maladaptive attachment patterns. Furthermore, by maximizing peer social support as a potential resource in protecting against the development of full-blown PTSD, university professionals would add to the "culture of trust and connectedness across the campus community", as called for by President Obama (2013).

Figure 1

Proposed theoretical model of university and military peer social support as mediators between dimensions of attachment insecurity and PTS/problem drinking



Theoretical Framework

The theoretical model to be tested in the current study was derived from attachment theory and social support theory—and the overlap between the two in relational understandings of responses to trauma. Descriptions of how individuals cope with stress are a fundamental part of attachment theory (Ainsworth, 1972; Bowlby, 1988; Bartholomew & Horowitz, 1991). Bowlby (1969, 1973, 1980) argued that humans develop templates—or "internal working models"—of interpersonal relationships based on their experiences with caregivers early in life. Those internal working models go on to

shape how an individual behaves toward others in times of stress (Ainsworth, 1972; Bowlby, 1988). When in distress, securely attached infants seek "safe haven" from their primary caregiver(s), attempting to "maintain proximity", or physical closeness, with that figure (Bowlby, 1988). Insecurely attached infants, on the other hand, behave less predictably in times of stress and, depending on the specific pattern of insecure attachment, may avoid, anxiously cling to, or act in a disorganized manner toward their caregivers (Ainsworth, Blehar, Waters, & Wall, 1978; Main & Solomon, 1990).

Attachment scholars believe early patterns of behavior in response to stress are maintained later in childhood (Groh et al., 2014) and into adulthood (Bartholomew & Horowitz, 1991; Hazan & Shaver, 1987; Sroufe et al., 2005). The current study will use the framework of adult attachment orientation as originally conceptualized by Bartholomew and Horowitz (1991). According to this theoretical model, attachment in adulthood is represented by one's relative position on two orthogonal dimensions: anxiety and avoidance. Each of these dimensions represents a separate continuum of behavior in response to stress. Individuals high on the anxiety dimension tend to cling to others when distressed, often fearing abandonment, whereas individuals high in avoidance are more likely to eschew social contact in times of stress (Brennan, Clark, & Shaver, 1998). Those who are low on both dimensions are considered securely attached, and those who score highly on one or both dimensions are classified with one of three types of insecure attachment (fearful, preoccupied, or dismissive; Bartholomew & Horowitz, 1991; Brennan et al., 1998).

As discussed in detail in Chapter 2, there is a well-established connection between adult attachment and PTS, such that individuals with insecure attachment orientations are

more likely to experience high levels of PTS and PTSD (see Mikulincer & Shaver, 2007, for a review). Researchers are beginning to explore whether this connection may be partially or fully explained by the dramatic impact of social support on one's ability to cope with trauma (Besser & Neria, 2011; Shallcross et al., 2014). This conceptualization may be particularly relevant for complex and/or interpersonal traumas, such as combat trauma and sexual assault (Green & Kaltman, 2003; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). People who endure interpersonal traumas often experience profound alterations in their view of themselves in relation to others (Herman, 1992). The attachment system is activated in times of stress, driving the individual to seek comfort from others—but when the source of the trauma is, in fact, another person or group of people, one often develops a deep sense of mistrust in others (Courtois & Ford, 2012). Therefore, survivors of interpersonal trauma are often left in the dissonant state of what scholars of early attachment originally called "fear without solution" (Main & Hesse, 1990); in other words, feeling they have nowhere to turn while coping with posttraumatic stress (Courtois, 2010).

This conceptualization is consistent with recent attachment research suggesting that attachment orientation, though carried over from childhood, continues to be shaped by one's interpersonal experiences throughout the lifespan (Mikulincer & Shaver, 2007; Mikulincer, Solomon, Shaver, & Ein-Dor, 2014; Muller & Rosenkranz, 2009; Sroufe, 2005). It is logical then that social support would play a significant role in the relationship between adult attachment orientation and PTS. Individuals with insecure attachment patterns—developed in childhood and/or following complex traumatic experiences such as combat exposure or sexual assault—may have difficulty accessing

social resources for coping with trauma. Given that social support is such a robust predictor of PTSD (Brewin et al., 2000), it may actually be this lack of connection that explains the relationship between attachment and PTS (Besser & Neria, 2011). Researchers must continue to explore this theoretical model, as it holds significant implications not only for the clinical treatment of trauma, but also for supportive interventions at the community level, such as on a university campus.

Summary of Methodology

The current study was conducted using a non-experimental quantitative research design, specifically a survey methodology. The survey consisted of 22 brief demographic items, as well as 83 items from established psychometric instruments assessing the following variables: 1) level of exposure to traumatic events (Life Events Checklist for the DSM-5; LEC-5, Weathers et al., 2013), 2) severity of symptoms of PTS (PTSD Checklist for DSM-5; PCL-5, Weathers et al., 2013), 3) alcohol use behaviors (Alcohol Use Disorders Identification Test; AUDIT, Babor, de la Fuente, Saunders, & Grant, 1992), 4) adult attachment orientation (Experiences in Close Relationships Scale-Revised-Short Form; ECR-R-GSF, Wilkinson, 2011), and 5) perceived social support (Multidimensional Scale of Perceived Social Support; MSPSS, Zimet, Dahlem, Zimet, & Farley, 1988). Symptoms of PTS, alcohol use behaviors, adult attachment orientation, and perceived peer social support were included in testing the model presented in Figure 1. Each of those variables can be considered latent, or vulnerable to measurement error; therefore, the model was tested using latent variable path analysis, a form of structural equation modeling, which is described in detail in Chapter 3.

Operational definitions. The constructs examined in this study were posttraumatic stress, problem alcohol use, adult attachment orientation, and two forms of on-campus peer social support: civilian and military.

Posttraumatic stress (PTS) was defined as symptoms consistent with a diagnosis of posttraumatic stress disorder (PTSD) according to the most recent edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013). Specifically, these symptoms involve experiences of intrusion; avoidance; alterations in cognition and affect; and changes in arousal and reactivity following direct (i.e., directly experiencing) or indirect (i.e., witnessing or learning about) exposure to a serious traumatic event. A serious traumatic event must involve actual or threatened death, serious physical injury, or sexual violence to meet the criteria for PTSD (American Psychiatric Association, 2013). Most individuals experience symptoms of PTS to some degree for a period of up to three weeks following trauma exposure; PTS progresses to disorder, however, if severe symptoms persist for more than one month and result in significant functional impairment (American Psychiatric Association, 2013).

Problem alcohol use as measured by the AUDIT includes items measuring hazardous alcohol use (frequency and consumption), alcohol dependence, and harmful alcohol use (negative life consequences related to drinking), and reflects the participant's overall level of risk for alcohol-related problems (Babor et al., 1992). Total scores greater than 8 on the AUDIT are considered indicative of "hazardous and harmful alcohol use" (Babor et al., 1992, p. 19).

Adult attachment orientation was defined by an individual's position on two orthogonal dimensions—anxiety and avoidance—representing her style of relating to

close others (Bartholomew & Horowitz, 1991). Individuals high in attachment anxiety tend to fear abandonment and cling to others in times of stress, while individuals high in avoidance tend to shy away from the company of others when distressed (Bartholomew & Horowitz, 1991; Brennan et al., 1998). Though adult attachment orientation was originally conceptualized for romantic relationships, researchers have broadened its scope to apply to close relationships in general, as measured by the ECR-R-GSF in the current study (Wilkinson, 2011).

Perceived peer social support as measured by the MSPSS was defined as the participant's "subjective assessment of social support adequacy" (Zimet et al., 1988) both quantitatively (i.e., do I have *enough* social resources?) and qualitatively (i.e., are the resources that I have helpful and effective?). The current study focused specifically on perceived social support from peers/friends from two different arenas of the student's life: civilian friends on campus and military friends on campus.

Research questions and hypotheses. The researcher followed Baron and Kenny's (1986) guidelines for establishing mediation: 1) there is a significant correlation between the causal variable and the outcome variable; 2) there is a significant correlation between the mediator and the causal variable; 3) there is a direct effect of the mediator on the outcome variable; and 4) the direct effect of the causal variable on the outcome variable when controlling for the mediator becomes zero. Therefore, the researcher addressed the following research questions with corresponding hypotheses:

1) Does perceived social support from university peers and/or military peers mediate the relationship between adult attachment orientation and posttraumatic stress among student veterans?

a. Is there a direct relationship between attachment anxiety and posttraumatic stress among student veterans?

   H1a: *There will be a direct positive relationship between attachment anxiety and posttraumatic stress among student veterans.*

b. Is there a direct relationship between attachment avoidance and posttraumatic stress among student veterans?

   H1b: *There will be a direct positive relationship between attachment avoidance and posttraumatic stress among student veterans.*

c. Is there a direct relationship between attachment anxiety and perceived social support from university and/or military peers (mediator) among student veterans?

   H1c: *There will be a direct negative relationship between attachment anxiety and perceived social support from university and military peers among student veterans.*

d. Is there a direct relationship between attachment avoidance and perceived social support from university and/or military peers (mediator) among student veterans?

   H1d: *There will be a direct negative relationship between attachment avoidance and perceived social support from university and military peers among student veterans.*

e. Is there a direct relationship between perceived social support from university and/or military peers and posttraumatic stress among student veterans?

H1e: *There will be a direct negative relationship between perceived social support from university and military peers and posttraumatic stress among student veterans.*

f. Does perceived social support from university and/or military peers mediate the relationship between attachment anxiety and posttraumatic stress among student veterans, such that this path is significantly diminished (partial mediation) or becomes zero (full mediation)?

H1f: *Perceived social support from university AND military peers will either partially or fully mediate the relationship between attachment anxiety and posttraumatic stress among student veterans.*

g. Does perceived social support from university and/or military peers mediate the relationship between attachment avoidance and posttraumatic stress, such that this path is significantly diminished (partial mediation) or becomes zero (full mediation)?

H1g: *Perceived social support from university AND military peers will either partially or fully mediate the relationship between attachment avoidance and posttraumatic stress among student veterans.*

2) Is there a direct relationship between posttraumatic stress and problem alcohol use among student veterans?

H2a. *There will be a direct positive relationship between posttraumatic stress and problem alcohol use among student veterans.*

Participants. Participants were recruited using a convenience sampling method via email listserv of individual chapters of a national student veterans' association

(Student Veterans of America). In order to be included in the study, participants had to be enrolled at a non-military affiliated college or university in the United States, and had to have served in one of the five branches of the United States military after September 11, 2001. They also had to have either experienced or witnessed at least one traumatic event on the Life Events Checklist for the DSM-5 (LEC-5). Participants who completed the survey were given the option to be entered into a drawing for one of 10 gift cards for $50 to Amazon.com.

Limitations. The current study was limited by the inherent weaknesses of cross-sectional survey designs, including limited generalizability, self-report bias, and interpretation bias, all discussed further in Chapter 3. Additionally, given the content of the survey, students who were feeling more mentally stable may have been either more or less likely to respond to potentially triggering material regarding their traumatic experiences. Moreover, as demonstrated by their ability to pursue an academic degree, military and veteran students may be more functional on a daily basis than other veterans who are survivors of trauma. Therefore, it is important to remember that the results of the current study are only generalizable to veterans within the university context, and not necessarily to military veterans more broadly.

Chapter 2: Review of the Literature

The current study investigated the effects of attachment and peer social support on posttraumatic stress (PTS) and, indirectly, the outcome of problem drinking among student service members/veterans. More specifically, the researcher aimed to test two different types of on-campus peer social support—military and civilian—as mediators in the relationship between attachment and PTS. In turn, the hypothesized mediators also indirectly affected problem drinking through PTS.

The purpose of this chapter is to review, critique, and synthesize the extant literature relevant to the research questions in this study. The review will include a detailed description of the limited number of studies that have examined the relationship between PTS, psychosocial variables, and alcohol use in the specific population of interest: military and veteran students. It will be expanded, where appropriate, to include both military and university student populations more broadly, covering each of the following relationships in the model described above: posttraumatic stress and alcohol use; attachment and posttraumatic stress; attachment and social support; and social support and posttraumatic stress. The theoretical frameworks of attachment theory and social support theory are also described as they relate to this investigation.

The researcher used the PsycInfo, Academic Search Complete, and ERIC electronic databases to conduct the literature search. Given the interdisciplinary nature of the research questions, relevant studies came from the fields of counseling and counseling psychology; military medicine and psychology; rehabilitation counseling; traumatology; social work; human development; higher education and student affairs; and addictions/substance use.

Understanding the Mental Health Needs of Student Veterans

Despite the increasing size of the student veteran population in the United States (U.S. Department of Veterans Affairs, 2014), very little research to date has targeted this special population. Student veterans and service members are often lumped in with other survivors of trauma in university or military samples—yet the limited research available suggests they may have different needs. Qualitative inquiry has identified the transition to university life as one the most difficult post-military adjustments for student veterans, highlighting a theme of feeling detached academically (Strickley, 2009) and isolated from civilian peers (DiRamio et al., 2008). Results from national surveys suggest that many U.S. colleges and universities have been working since 2008 to better address the needs of military and veteran students entering higher education. The American Council on Education conducted a pair of reports in 2009 and 2012 assessing campus programs specifically targeted at military and veteran students at 723 (2009) and 690 (2012) public and private universities across the country. They found that 62% of responding institutions in 2012, as compared to 57% in 2009, were providing specialized programming for military and veteran students—and 84% of those institutions offering specialized programming in 2012 also reported that they provide on-campus counseling services for students struggling with PTSD (Cook & Kim, 2009; McBain, et al., 2012).

Findings from quantitative studies investigating the mental health status of student veterans, however, have been somewhat mixed. A large-scale survey study (n=628) conducted in partnership with Student Veterans of America indicated that the mental health profile of student veterans may be more concerning than that of both the active duty military population and the civilian university population, with 35% reporting

"severe anxiety", 24% reporting "severe depression", 46% reporting symptoms consistent with PTSD, and 46% experiencing suicidal ideation in some form (Rudd et al., 2011, p. 354). Furthermore, based on their findings, the authors suggested that PTSD symptom severity could act as a moderator between other mental health difficulties in this population, specifically by increasing the risk of suicidal ideation among student veterans who are depressed. Yet in a larger (n=3,290) and more recent survey of undergraduates both with and without a history of military service, student veterans reported similar rates of depression and suicidal thoughts and behaviors as compared to their civilian peers (Pease et al., 2015). It should be noted, however, that the group of students with a history of military service comprised only 2% of the total sample, and the survey did not inquire specifically about posttraumatic stress.

These studies highlight the necessary role of social context and PTS on the adjustment of student veterans to university life, yet they shed little light on the relationship between those two factors or other psychosocial constructs that may be affecting them. Like any group of trauma survivors, some student veterans who have been exposed to trauma will go on to develop PTSD, while others will not (Rudd et al., 2011); researchers and clinicians need to gain a better understanding of risk and resilience factors specific to this growing population.

There is an extensive body of research examining the factors contributing to the expression of PTS and PTSD in military veterans in general (see Wagner & Jacupcak, 2012, for a review), but this line of investigation is very new for the student veteran population specifically. Only a handful of studies to date have explored variables related to PTS in military-affiliated students. Logically, this research has focused primarily on

variables linked to student wellbeing and academic success, such as depression and anxiety (Romero et al., 2015; Whiteman et al., 2013; Whiteman et al., 2012), coping style (Romero et al., 2015), social support (Romero et al., 2015; Whiteman et al., 2013), and alcohol use (Barry et al., 2011; Barry et al., 2012; Bryan et al., 2014). Only two of those studies examined psychosocial predictors of PTSD as an outcome variable (Nyaronga & Toma, 2015; Romero et al., 2015).

Given the limited exploration of PTS in student veterans thus far, background for the model proposed in the current study must be drawn from broader studies of PTS and its potential psychosocial determinants in related populations. A large number of studies in the broader trauma literature have focused on risk and resilience factors in the development of PTSD, highlighting the significant role of constructs related to social support and interpersonal relationships (e.g., Brewin et al., 2000; Ozer, Best, Lipsey, & Weiss, 2008). The remainder of this chapter will further discuss the existing literature on psychosocial variables, including PTS, alcohol use, social support, and attachment in the military and veteran student population specifically, as well as the military and university populations more broadly.

Posttraumatic stress in military and university populations

Posttraumatic stress disorder (PTSD) is a common diagnosis among veterans of Operations Iraqi/Enduring Freedom (OEF/OIF), with prevalence rates estimated at 29% for veterans utilizing VA Healthcare (U.S. Department of Veterans Affairs, 2013) and 13.8% overall (Tanielian & Jaycox, 2008), as compared to approximately 8% of the general U.S. population (Kessler et al., 1995; Kilpatrick et al., 2013). Consumers of research are reminded to interpret those prevalence rates with caution, however, as they

can vary widely based on the exact sample and definition of PTSD used (Ramchand et al., 2010); furthermore, many veterans may not disclose or seek treatment for PTSD symptoms due to perceived stigma (Greene-Shortridge, Britt, & Castro, 2007). Estimates of PTSD prevalence among college students are also varied, ranging from 6-17% (e.g., Lauterbach & Vrana, 2001; Read, Ouimette, White, Colder, & Farrow, 2011; Smyth, Hockemeyer, Heron, Wonderlich, & Pennebaker, 2008), and the number of student veterans coping with PTSD remains largely unknown. As noted above, a recent large-scale study suggested that a large number (46%) of student veterans may be coping with *symptoms* of PTSD but did not report a prevalence rate of actual diagnosis. Taken together with existing data on the separate veteran and university populations, however, it seems likely that many military and veteran students are struggling with PTS and perhaps PTSD.

Risk factors for PTSD. Of course, not all veterans who have experienced trauma go on to develop PTSD (Schell & Marshall, 2008). A number of risk factors have been identified for the development of PTSD among military veterans and service members, including longer deployment time (Rona, Fear, Hull, Greenberg, & Hotopf, 2007; Schell & Marshall, 2008), more severe combat trauma (Iversen et al., 2009; Schell & Marshall, 2008), lower rank (Iversen et al., 2009), female gender (Schell & Marshall, 2008), prior trauma exposure (Smyth et al., 2008), family problems (Browne et al., 2007), being unmarried or divorced (Iversen, 2009; Nyaronga & Toma, 2015), being a reservist or a member of the National Guard (Milliken et al., 2007; Schell & Marshall, 2008; Smyth et al., 2008) and low morale and poor support within the unit (Iversen et al., 2009). Among military and veteran students specifically, researchers are beginning to tease out

particular demographic factors associated with higher rates of PTS; a recent study by Nyaronga and Toma (2015) found that gender and age were not significant predictors, but that students who were African American, divorced/separated, or affiliated with the Marines or Army were more likely to experience symptoms of PTS.

Research also has shown that the nature of the traumatic event affects the severity of psychological symptoms including PTS. More specifically, the severity of the traumatic stressor and the individual's personal proximity to the event are predictive of symptom severity (Kessler et al., 1995). Intense, long-lasting events that pose a significant threat to life—which is characteristic of warzone traumas—are particularly likely to result in PTSD diagnosis (Kessler et al., 1995). Furthermore, "complex" or cumulative trauma, in which the individual is exposed to multiple forms and/or repeated incidents of trauma over time, is more likely to result in PTSD than single-incident trauma (Herman, 1992). Complex traumas in which the individual is intentionally and repeatedly attacked or violated by another person are associated with the highest rates of PTSD as compared to other types of events (Kessler et al., 1995). Traumatic events commonly experienced by veterans, including combat exposure and military sexual trauma, certainly fit this description, perhaps explaining in part why rates of PTSD are particularly high in this population (Hiley-Young, Blake, Abueg, Rozynko, & Gusman, 1995; Tanielian & Jaycox, 2008).

Furthermore, studies have shown that veterans with a history of adverse childhood experiences (ACEs), such as physical or sexual abuse, are more likely to develop PTSD in response to warzone or other traumas later in life (Bremner, Southwick, Johnson, Yehuda, & Charney, 1993; Engel et al., 1993; Zaidi & Foy, 1994). These findings are

particularly distressing given the increasing evidence that female veterans in particular may be more likely to experience ACEs than the general population (Schultz, Bell, Naugle, & Polusny, 2006; Zinzow et al., 2007).

Sequelae of PTSD. Posttraumatic stress disorder is associated with a wide range of functional and relational difficulties among military veterans, including unemployment (Kimerling et al., 2009; Possemato, McKenzie, McDevitt-Murphy, Williams, & Ouimette, 2014), memory problems (Schuitevoerder et al., 2013), lack of self-regulation (Jason et al., 2011; Klemanski, Mennin, Borelli, Morrisey, & Aikins, 2012), interpersonal difficulties and poor social support (Possemato et al., 2014), and marital problems and divorce (Rowan et al., 2015). Furthermore, PTSD is frequently comorbid with other psychiatric disorders; the vast majority (80%) of individuals diagnosed with PTSD meet the criteria for at least one other mental health diagnosis, most commonly depressive disorders, substance use disorders, and anxiety disorders (Keane & Wolfe, 1990; Kessler et al., 1995). Evidence from recent studies also indicates that veterans whose symptoms meet the criteria for PTSD also are at increased risk for both suicidal ideation and suicide attempt (Legarretta et al., 2015).

Rudd, Goulding, and Bryan (2011) found similar patterns in the survey of student veterans discussed above. The authors not only found a significant relationship between symptoms of depression and symptoms of PTSD, they also identified PTSD symptom severity as a significant moderator between depression and suicidality, stating that 82% of student veterans who reported a past suicide attempt were also experiencing "significant" symptoms of PTSD (Rudd et al., 2011, p. 358). This study indicates that

PTSD symptom severity plays a critical role for student veterans struggling with depression, as it may increase their risk of suicide attempt.

Posttraumatic stress and alcohol use. Excessive alcohol use is highly prevalent both among military personnel/veterans (Ames & Cunradi, 2004-2005; Ames, Cunradi, & Moore, 2007; Stahre, Brewer, Fonseca, & Naimi, 2009) and on college campuses (Barry et al., 2012; SAMSHA, 2013). Rates of binge drinking (four or more drinks on one occasion for females; five or more drinks on one occasion for males) in both groups have been estimated at around 40% (SAMSHA, 2013; Stahre et al., 2009). Moreover, experts contend that excessive drinking has become an entrenched part of both military culture and campus culture in the United States (Ames, Cunradi, & Moore, 2007; NIAAA, 2015). Problem drinking is linked to similar negative outcomes in both populations, including alcohol-related injuries and deaths (Hingson, Zha, & Weitzman, 2009; Jacobson et al., 2008; Perkins, 2002), physical and sexual assaults (Hingson et al., 2009; Jacobson et al., 2008; Schuckit et al., 2001), drunk driving (Hingson et al., 2009; Stahre et al., 2009), and academic and occupational problems (Barry, Whiteman, & McDermid Wadsworth, 2012; Bray et al., 2003; Perkins, 2002; Stahre et al., 2009; Wechsler, Lee, & Kuo, 2002).

There is a well-established positive relationship between PTS and alcohol use in both military veterans (e.g., Stewart, 1996) and university students (e.g., Dvorak et al., 2013; Kaysen et al., 2014; Read et al., 2012, 2014). Comorbidity rates of PTSD and alcohol use disorders among trauma survivors vary widely but fall between 41 and 79% (Pietrzak, Goldstein, Southwick, & Grant, 2012). Longitudinal studies have shown that the onset of PTSD symptoms typically precedes the onset of alcohol or other substance

use disorders (Haller & Chassin, 2013; Jakupcak et al., 2010; Ouimette, Read, Wade, & Tirone, 2010). Furthermore, there is evidence to suggest that alcohol-related life consequences may change as a function of PTS symptom severity, such that individuals with more severe cases of PTSD are more negatively impacted by their excessive alcohol use (Dvorak, et al. 2013).

The dominant explanation for the predictive relationship between PTSD symptom severity and excessive alcohol use is the self-medication model (e.g., Leeies, Pagura, Sareen, & Bolton, 2010; Stewart, 1996). The physiological effects of alcohol may offer relief from common symptoms of PTSD, for example by dulling hyperarousal (Jacobson, Southwick, & Kosten, 2001; Jakupcak et al., 2010) and reducing the frequency of intrusive thoughts or memories (Reynolds, Nayak, & Kouimtsidis, 2012). Other studies indicate a cyclical relationship between PTSD and alcohol use disorders; though alcohol may provide temporary relief from acute symptoms, it also may exacerbate symptoms of PTSD and interfere with its treatment in the longer term (Jacobsen et al., 2001; Ouimette et al., 2010). These findings seem particularly relevant to student veterans, who may experience temporary relief and improvement in functioning by using alcohol to self-medicate and cope with symptoms of PTS; but this may in fact by impeding their ability to face the rigors of higher education in the long run (Barry, Whiteman, and McDermid Wadsworth, 2012).

Posttraumatic stress and alcohol use in student veterans. Given the similarities between military and university populations in the prevalence rates, cultural themes, and negative outcomes of problem drinking, several researchers have honed in on alcohol use as a logical starting point for studies on the mental health of student veterans. Looking at

406 students at the University of Minnesota, Widome et al. (2011) found a weak-to-moderate link between PTS and high-risk or binge drinking (having more than five drinks on one occasion in the past two weeks). In another analysis of University of Minnesota survey data in 2014, Grossbard et al. found that rates of high-risk drinking and alcohol-related consequences were higher for military-affiliated students who had been deployed versus those who had no prior deployments. In a web-based survey of students from 16 different universities in the Midwestern United States, Barry, Whiteman, and McDermid Wadsworth (2012) compared combat-exposed student service members/veterans to non-combat exposed student service members/veterans, ROTC students, and civilian students, investigating possible associations between posttraumatic stress (PTS) and a range of alcohol-related and academic outcomes. They found that combat-exposed student service members/veterans reported higher levels of PTS than any other group, and that higher rates of PTS significantly predicted lower GPA, higher rates of problem drinking behaviors, and more alcohol-related consequences for all groups regardless of service history. Interestingly, however, the authors found that though combat-exposed student service members reported higher levels of PTS—and though their alcohol-related outcomes and GPAs were negatively impacted by PTS just like the other groups—their educational self-efficacy and academic motivations appeared the *least* related to trauma symptoms among the four student groups. Student service members/veterans were the only participants to report a *positive* association between PTS and those academic outcomes; the authors suggested that perhaps that this group's experience with combat and/or other types of trauma somehow fosters academic drive. Based on their findings, the authors concluded that, as compared to civilian students, service members/veterans

use alcohol similarly to cope with PTS but may exhibit other responses to trauma (e.g., positive academic outcomes) that are different.

In a related study, Barry and colleagues (2012) compared the drinking behaviors of student service members/veterans and civilian students, with the goal of investigating whether potential links between drinking behaviors and other mental health outcomes including PTSD differed between those groups. They found, generally, that student service members/veterans reported drinking behaviors similar to their civilian peers. All groups reported similar frequency of drinking in general over the past year, but female students—and female service members in particular—consumed significantly fewer drinks at a sitting than male students, and male students were found to engage in binge drinking significantly more frequently than female students, regardless of military status.

In looking at the relationships between drinking behaviors and problem drinking as well as other mental health outcomes, however, Barry and colleagues (2012) found differences between student service members/veterans and their civilian peers as well as differences by gender. Though they exhibited similar drinking behaviors, male service members/veterans were less likely than their male civilian peers to report problematic drinking, suggesting that they do not view the same amount of alcohol consumption as problematic. Female student service members, on the other hand, were more likely to report problematic drinking behaviors than their female civilian counterparts. Examination of mental health outcomes potentially related to binge drinking revealed significant positive relationships between binge drinking and both depression and anxiety among student service members/veterans, but no relationship among civilian students, and a significant positive relationship between binge drinking and PTS for student service

members/veterans, but a negative relationship among civilian students. As the authors note, the results suggest that even though student service members/veterans may display drinking behaviors similar to their civilian peers, the mental health correlates of binge drinking may be more severe for student service members/veterans, particularly those who are male.

Barry and colleagues (2011, 2012) took an important step forward by examining how student service members/veterans are coping with trauma as compared to their civilian and ROTC counterparts. There are, however, several limitations to the two studies described above. First and foremost, it may be difficult to directly compare military-affiliated students to civilian students for several reasons. Student veterans and service members tend to be non-traditional students demographically. The authors acknowledge that both combat-exposed and non-combat exposed student veterans were significantly older on average than ROTC and civilian students, but they do not address family characteristics or identify any of those demographic factors as a potential limitation. Additionally, the nature of the traumatic experiences endured by participants in each group may have been quite different; this is not clearly addressed by the authors. Military-affiliated participants were asked about their history of eight different "traumatic situations associated with warzone experience" (p. 564), consistent with the definition of "combat-related trauma" used by U.S. military researchers (Gray et al., 2002). Experiences such as "physical abuse" and "rape" were contextualized specifically as "warzone" experiences, and other types of traumatic experiences were not assessed. Therefore, a military or veteran student who had experienced sexual or physical assault, for example, may not have indicated a history of "physical abuse" or "rape" as they may

not consider this part of their "warzone" experience. Civilian students were not asked to delineate their traumatic experiences in any way. Therefore, it seems possible that both within and between group differences in the type of trauma experienced could have affected the results of the studies. Lastly, neither study specifically addressed social, developmental, or environmental factors potentially affecting posttraumatic stress, alcohol use, and other variables related to student wellbeing. In fact, Barry and colleagues (2012) specifically noted that future research should examine the role social support may play in the relationships between trauma exposure, drinking behaviors and other mental health outcomes among student service members/veterans.

The current study seeks to expand upon this research by considering psychosocial factors that may influence posttraumatic stress—and therefore problem alcohol use—among student veterans and service members. Because there is so little research focusing only on this population, and because demographic differences between military-affiliated students and civilian students are numerous and difficult to control for (DiRamio & Jarvis, 2011), the researcher will include only student veterans/service members in the current study (with the eventual goal of comparing the tested model across student types in future research studies). Furthermore, the researcher will assess for a wide range of traumatic experiences using the Life Events Checklist for DSM-5 (LEC-5), rather than asking only about "warzone" traumatic experiences. This approach is consistent with evidence that veterans of recent wars may have a more complex trauma history (Hassija et al., 2012; Landes, Garovoy, & Burkman, 2013). Though the information from the LEC-5 will not be included directly in the structural equation model, it will be used to ensure all participants have either witnessed or experienced at least one traumatic event,

and to provide more detail about the nature of those events.

Existing literature on developmental and psychosocial contributors to posttraumatic stress suggests that adult attachment orientation (see Mikulincer & Shaver, 2007, for a review) and social and emotional support (Brewin et al., 2000; Ozer et al., 2003) may play a significant role in the expression of PTSD symptoms. The following section will explore the theoretical connections between attachment, social support, and trauma, and review the relevant literature in further detail, detailing the limited number of studies on the military and veteran student population as well as broader studies of university and military populations.

Adult Attachment, Social Support, and Posttraumatic Stress

Attachment theory

The foundational concept of attachment theory is that individuals form "working models" for future interpersonal relationships based on the quality of their early caregiving experiences (Bowlby, 1969). Through their relationships with primary caregivers or "attachment figures", children begin to internalize representations of the self and others and develop a template that shapes behavioral, cognitive, and affective responses in subsequent relationships. Consistent, responsive caregiving in early childhood—in which the child's basic needs for food and comfort are regularly met—establishes the framework for "secure" attachment. Securely attached individuals not only expect sensitive responses from others, they view themselves as worthy of such responses in relationships. On the other hand, inconsistent and/or unresponsive caregiving provides a model for "insecure" attachment, in which the child essentially

learns that others will not or cannot meet her needs in relationships (Bowlby, 1973, 1980).

Internal working models of attachment affect a variety of emotional and behavioral processes, including how individuals respond to stress in the external environment (Bowlby, 1998). According to Bowlby (1988), securely attached children seek physical closeness (proximity maintenance) and comfort (safe haven) from their caregivers when afraid or distressed. Responsive caregivers provide consistent comfort in those early times of stress, thus acting as a "secure base" from which the child can experiment and explore the world. A lack of responsiveness, on the other hand, teaches the child that others cannot be counted on in times of stress, fostering a sense of mistrust and hesitation as he ventures out into the world. These representations of self and others are then carried forward into subsequent relationships, where they are further reinforced or modified during times of stress (Sroufe, 2005).

Attachment scholars have expanded upon Bowlby's work by classifying common variations of attachment into "styles". Based on their strange situation procedure, in which infants and caregivers are exposed to a variety of scenarios designed to activate the attachment system, Ainsworth and colleagues (1978) observed and described three primary attachment styles: secure, anxious-avoidant, and anxious-ambivalent. The nature and distribution of those three primary styles has been shown to be relatively stable across time and cultures, with a population breakdown of approximately 65% secure, 21% anxious-avoidant, and 14% anxious-ambivalent (Hazan & Shaver, 1987; van IJzendoorn & Kroonenberg, 1988).

Perhaps of particular relevance to the relationship between attachment and stress, a fourth classification, disorganized/disoriented attachment, was later added to better describe infants whose interactions with caregivers during the strange situation procedure were unpredictable (Main & Solomon, 1990). Those infants did not appear to have an "organized strategy" for coping with stress, sometimes approaching caregivers for comfort and sometimes avoiding or resisting them. Main and Hesse (1990) wrote that children with disorganized/disoriented attachment view their caregivers as "both a haven of safety and a source of fear". Consistent with this conceptualization, disorganized/disoriented attachment in infancy has since been linked to physical and/or sexual abuse and to PTSD later in life (MacDonald et al., 2008; van IJZendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Furthermore, there is some evidence of a relationship between disorganized/disoriented attachment style and the intergenerational transmission of trauma; studies have reported that many infants classified as having disorganized/disoriented attachment have mothers who have experienced a traumatic loss themselves (Main & Hesse, 1993; Solomon & George, 2006).

Early attachment patterns appear to play a significant role in social, emotional, and cognitive development (Johnson & Greenman, 2013; Sroufe, 2005). Prospective, longitudinal studies have demonstrated that, as compared to infants classified with insecure attachment in infancy, infants coded as securely attached in infancy tend to show greater self-reliance and emotional self-regulation both later in childhood and into adulthood (Sroufe et al., 2005). Moreover, securely attached infants go on to demonstrate higher levels of social competence later in childhood (see Groh et al, 2014, for a review) and into adulthood (Sroufe et al, 2005).

Attachment in adolescence and adulthood

Moving beyond the initial focus on attachment style in infancy, research has indicated that an individual's level of attachment security extends beyond childhood and remains relatively stable across the lifespan (Bowlby, 1998; Hazan, Campa, & Gur-Yaish, 2006; Main, Kaplan, & Cassidy, 1985; Grossmann, Grossman, & Waters, 2005). In the first study linking attachment in early childhood to significant relationships later in life, Hazan and Shaver (1987) found prevalence rates of Ainsworth's three primary attachment styles (secure, anxious-avoidant, and anxious-ambivalent) among a large sample of adults to be similar to those typically found among infants. Furthermore, participants' experiences with romantic love and other social relationships differed according to attachment styles and the quality of their relationships with their parents.

More recently, research on adult attachment has moved increasingly toward a dimensional rather than categorical understanding of internal working models (Bartholomew & Horowitz, 1991; Brennan et al., 1998; Mikulincer & Shaver, 2003, 2007). According to this conceptualization, the attachment system is composed of two primary orthogonal dimensions: anxiety and avoidance. The anxiety dimension represents sensitivity to perceived interpersonal threats (such as rejection), while the avoidance dimension reflects the degree to which proximity to others is sought out or avoided in the face of those threats (Brennan et al., 1998). An individual's relative position on both dimensions represents attachment style: low scores on both dimensions indicate secure attachment, while high anxiety and low avoidance is classified as "preoccupied", high anxiety and high avoidance as "fearful"; and low anxiety and high avoidance as "dismissive" (Bartholomew & Horowitz, 1991). Adult attachment researchers suggest

that, much like infants observed in the strange situation procedure, adults will respond to stress in characteristic ways according to their attachment orientation. Securely attached individuals have close relationships that can serve as safe havens in times of stress; they seek out the comfort of others in measured and predictable ways. Adults with insecure attachment, on the other hand, tend to exhibit extreme behavior in interpersonal relationships when distressed, either seeking comfort in heightened ways (preoccupied), avoiding others entirely (dismissive), or a mix of both (fearful; Bartholomew & Horowitz, 1991).

Some scholars have suggested that internal working models of attachment in adulthood may be more fluid than originally thought (Mikulincer & Shaver, 2007; Muller & Rosenkranz, 2009). According to this conceptualization, individual representations of the self and others can be altered by certain experiences—such as exposure to and/or healing from trauma—that challenge or enhance one's sense of safety and comfort in the world (Herman, 1992; Mikulincer, Shaver, & Horesh, 2006; Mikulincer et al., 2014). More broadly, some scholars believe that the effects of attachment style or orientation may change according to the social and environmental context (Sroufe, 2005). In other words, internal working models of attachment continuously interact with social and environmental factors throughout the lifespan. This conceptualization is consistent with the model proposed in the current study, which highlights the role of peer social support in the relationship between adult attachment and posttraumatic stress.

Attachment in military populations

In keeping with this interactive view of attachment across the lifespan, several scholars have applied attachment theory to the process of military training and

development (Bliese, Ritzer, Thomas & Jex, 2001; Davidovitz, Mikulincer, Shaver, Izsak, & Popper, 2007; Mikulincer & Florian, 1995; Tucker, Sinclair, & Thomas, 2005). Military leaders build unit cohesion by fostering a sense of loyalty and commitment among trainees; in other words, by encouraging the formation of secure attachment bonds to peers (Thomas, 2000). Studies suggest that the very process of military training is impacted by the trainee's pre-existing attachment style (Mikulincer & Florian, 1995). In a study of the reactions of Israeli recruits to their compulsory four-month military training, Mikulincer and Florian (1995) found significant differences in outcome variables based on Ainsworth's classifications of attachment. As compared to recruits classified with secure attachment, individuals with both anxious-ambivalent and avoidant attachment styles viewed the training process in a more threatening way. Recruits with anxious-avoidant attachment also reported fewer support-seeking behaviors. Interestingly, individuals with anxious-ambivalent attachment not only viewed themselves as less capable of coping with the rigors of training, they were also considered less fit for leadership positions by their peers (Mikulincer & Florian, 1995). This particular finding was later replicated in a larger study of Israeli recruits, suggesting that attachment style impacts not only self-appraisal but also appraisal by others in this population (Popper, Amit, Gal, Miksal-Sinai, & Lisak, 2004). Studies of Israeli military recruits are particularly useful, as their training units can be considered nationally representative due to military conscription (though, of course, participation in research remains voluntary).

The formation of strong attachment bonds to the unit and to the military as a whole, which may be affected by pre-existing attachment style, appears critical to military functioning (Tucker et al., 2005). Research has shown that secure attachment to

the military is positively related to effective leadership and negatively linked to interpersonal conflict (Bliese et al., 2001). Furthermore, secure attachment is linked to greater citizenship behaviors, job satisfaction, and work-family balance (Thomas, 2000). There remains a gap in this literature however, as researchers should continue to explore how social support may mediate the relationship between attachment—either at the peer, unit, or broader military level—and those functional outcomes. Though it may be difficult for military leaders and clinicians to intervene directly at the level of adult attachment, they may be able to encourage the improvement of social support systems, thus impacting key functional outcomes of attachment through this mediator.

Adult attachment and trauma

Traumatic events tend to challenge the way individuals view themselves in relation to others and the world around them (Herman, 1992). In theory, the attachment system is activated in times of stress, prompting securely attached individuals to seek safe haven with caregivers in childhood and close others later in life (Bowlby, 1956). Given the theoretical link between attachment and responses to stress across the lifespan, there is now a significant body of empirical research exploring the relationship between adult attachment and posttraumatic stress. Insecure attachment in adulthood has been consistently linked to maladaptive responses to psychological stress (see Mikulincer & Shaver, 2007, for a review). Adults reporting stronger attachment security in close relationships also tend to report greater posttraumatic growth (Arikan & Karanci, 2012) and lower rates of PTSD, anxiety, depression, and somatic symptoms following potentially traumatic events (Fowler, Allen, Oldham, & Frueh, 2013; Zakin, Solomon, & Neria, 2003), whereas adults who are more insecurely attached are at greater risk for

developing PTSD (Dieperink, Leskela, Thuras, & Engdahl, 2001; Ogle, Rubin, & Siegler, 2015).

Though there are no studies to date linking adult attachment to PTS in the student service member/veteran population specifically, researchers have found a connection between insecure attachment and PTSD symptom severity in related populations, including military recruits in training (Mikulincer & Florian, 1995; Neria et al., 2001), war veterans (Dekel, Solomon, Ginsburg, & Neria, 2004), former prisoners of war (Mikulincer, Ein-Dor, Solomon, & Shaver, 2011), survivors of terrorist attacks (Besser, Neria, & Haynes, 2009), and university students (Aspelmeier, Elliott, & Smith, 2007; Besser & Neria, 2012; O'Connor & Elklit, 2008; Sandberg, Suess, & Heaton, 2010; Shallcross et al., 2014). Longitudinal research suggests that young adults classified as insecurely attached before the occurrence of a traumatic event experience greater PTS following that event than young adults classified as securely attached (Shallcross et al., 2014).

There is some inconsistency in the literature about the unique predictive power of the two dimensions of adult attachment (anxiety and avoidance) on PTS and PTSD. Studies of both university students and war veterans have found that attachment anxiety in particular predicts greater PTS and PTSD (Besser & Neria, 2012; Elwood & Williams, 2007) and partially mediates the relationship between trauma exposure and PTS (Ferrajão & Oliveira, 2015; Sandberg et al., 2010). In a brief longitudinal study of undergraduate students, Shalcross, Frazier, & Anders (2014) found that both attachment anxiety and attachment avoidance significantly predicted greater PTSD symptoms, but that only attachment anxiety predicted an increase in PTSD symptoms over time. Other researchers

have identified attachment avoidance, and not attachment anxiety, as the more robust predictor of posttraumatic responses, particularly among combat veterans (Renaud, 2008). Furthermore some scholars have argued that trauma survivors with more avoidant attachment orientations may be underrepresented as research participants because they are less likely to seek treatment and/or respond to recruitment attempts—and that this may be particularly true among military veterans (Muller & Rosenkranz, 2009; Currier, Holland, & Allen, 2012). Therefore it seems important to continue to explore both attachment anxiety and attachment avoidance as unique predictors of PTS and PTSD.

Consistent with Mikulincer and Shaver's (2007) conceptualization of adult attachment as fluid and situation-dependent, relational treatments for trauma traditionally have incorporated the creation of a secure attachment bond within the therapeutic alliance (Courtois & Ford, 2013; Herman, 1992; McCann & Pearlman, 1990). Working from this model, clinicians offer a "corrective emotional experience" for clients with insecure attachment by providing consistent and caring therapeutic responses (Teyber & McClure, 2006). Studies of trauma survivors have indeed shown that attachment orientation can change over time; Muller and Rosenkranz (2009) found that both attachment anxiety and attachment avoidance were reduced in conjunction with PTSD symptoms following treatment as compared to wait-list control in an inpatient sample of survivors of mixed trauma types. There is also evidence to suggest that attachment can become more insecure over time as individuals cope with extreme trauma: A longitudinal study of Israeli war veterans found that both attachment anxiety and attachment avoidance increased over time in a group of ex-POWs as compared to a control group of non-POW veterans of the same war (Mikulincer et al., 2011; Solomon, Dekel, & Mikulincer , 2008).

Clinicians may be able to act directly on the attachment system in the context of the therapeutic alliance, but this type of intervention may not always be possible or preferable. If the relationship between attachment and posttraumatic stress were better understood, perhaps clinicians could intervene through other mechanisms that activate and interact with the attachment system, such as social support.

The role of social support

Though there is some variation in operational definitions of social support, researchers generally agree that it involves the giving and receiving of assistance or resources within a relationship, network of relationships, or community (Zimet et al., 1988). Social support can take on various forms, including emotional support, which provides the recipient with empathy, caring, and encouragement; companionship support, which offers a sense of social belonging; informational support, which involves the provision of practical advice or guidance; and tangible support, which offers actual services, goods, or financial resources (Langford, Bowsher, Maloney, & Lillis, 1997). Some authors have argued that social support by definition must "be intended to enhance the well-being of the recipient" (Shumaker & Brownell, 1984, p. 13) while others contend that social support can affect the recipient either positively or negatively (Cohen & Syme, 1985). An important distinction also has been drawn between *perceived* and *received* social support. Perceived social support refers to an individual's subjective or qualitative assessment of social support adequacy (Zimet et al., 1988), whereas received social support refers to the quantitative assessment of actual supportive actions, such as provision of resources or guidance (Gurung, Sarason, & Sarason, 2006).

There is extensive evidence documenting the link between social support and wellbeing (see Taylor, 2011, for a review). Research has consistently shown that individuals with greater social support enjoy better physical (e.g., Uchino, 2004, 2006) and mental (e.g., Cohen & Wills, 1985; Hefner & Eisenberg, 2009) health across the lifespan. Individuals with lower levels of social support, on the other hand, tend to be at greater risk for depression and anxiety (Barrera, 1986; Cohen & Wills, 1985; Lakey and Cronin, 2008; Whiteman et al., 2013), suicidal ideation (Casey et al., 2006), and PTSD (Brewin et al., 2000).

Social support is a particularly important construct to examine with regard to student veterans, who are more likely to be non-traditional students (DiRamio & Jarvis, 2011) and report feelings of isolation on campus (DiRamio, Ackerman, & Mitchell, 2008). Grossbard et al. (2014) found that lower perceived support from faculty members was linked to academic problems and lower GPA among 1,679 military and veteran students at the University of Minnesota. Whiteman et al. (2013) compared the effects of peer emotional support on a variety of related mental health outcomes in military-affiliated students (n=199) versus their civilian peers (n=181). Using a brief longitudinal design, the authors collected data via web-based survey at three time points over the course of one calendar year in order to test a multilevel model of change. Results indicated that though emotional support from university peers increased at a similar rate across time for both groups, military and veteran students reported less emotional support from their university peers at all three time points; in other words, military-affiliated students never attained the same level of peer emotional support as their civilian counterparts. Peer emotional support was negatively related to depression, anxiety and

general somatic symptoms for both groups, but the protective effect was much larger for the civilian students than the student service members/veterans. With regard to alcohol use, the authors found that, interestingly, students reporting greater peer support drank more frequently regardless of military affiliation; however, military and veteran students' frequency of drinking started off higher than their civilian counterparts and remained elevated, whereas civilian students started off drinking less but increased their frequency of drinking over time.

As noted by Whiteman and colleagues (2013), the findings of this study point to important differences in the needs of student service members/veterans versus civilian students. Peer emotional support from university peers, though still helpful, did not seem to have the same potent protective effect against mental health difficulties for student service members/veterans that it did for civilian students, suggesting that, for military-affiliated students, there may be a gap in on-campus support to be filled in by college counseling centers, other university resources, student veterans groups, and so forth. This study is strengthened by its inclusion of peer emotional support as an independent variable, its longitudinal design, and its use of multilevel modeling. In comparing the student service members/veterans to civilian students, the authors were careful to note that the military-affiliated students were more likely to be older and married than the civilian students, and to build those demographic variables into their nested analysis. But even though they found that age was a significant predictor of peer emotional support at Time 1, they did not fully discuss this finding or the impact of other demographic variables that may have differed between the military and civilian groups (other than to note that military spouses should be considered as a form of support in future research).

Furthermore, though the authors examined depression and anxiety—common presenting concerns for the broader population of university students—they did not include PTS, which may be of particular concern to military-affiliated students (Rudd et al., 2011).

The current study expanded upon this research by examining the effects of attachment and social support specifically on the outcome of posttraumatic stress in student veterans. This focus was guided by a wide body of existing research identifying social support as a "buffer" between stressful life situations and negative mental health outcomes (e.g., Cobb, 1976; Taylor, 2011), as detailed below.

Social support and trauma. Perceived social support is a well-established component of an individual's ability to cope with stress (Haber, Cohen, Lucas, & Baltes, 2007). In general, researchers believe that greater social support encourages adaptive coping behaviors, thus promoting resilience (Cutrona & Russell, 1990). Meta-analytic studies have identified a lack of social support as one of the most powerful risk factors for developing PTSD following trauma (Brewin et al., 2000; Ozer et al., 2003). Accordingly, high levels of social support have been linked to resilience against and recovery from PTSD, demonstrating a potential "buffering" effect against traumatic stress (King, King, Foy, Keane, & Fairbank, 1999). Furthermore, the quality of social experiences, in addition to the amount of support, can have a significant impact; while positive social interactions can play a protective role against PTSD, negative social interactions can act as a risk factor (Koenen, Stellman, Stellman, & Sommer, 2003), and social withdrawal is linked to increased distress (Frazier, Mortensen, & Steward, 2005). Some scholars have raised questions, however, about the directionality of the relationship between social support and PTS; longitudinal data from a large sample of Gulf War

veterans indicated that PTSD diagnosis led to interpersonal problems that may have inhibited access to social resources (King, Taft, King, Hammond, & Stone, 2006).

Evidence for the link between social support and posttraumatic stress comes from a wide range of populations of trauma survivors, including veterans of Operations Iraqi Freedom and Enduring Freedom (Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009), trauma-exposed civilian university students (Besser & Neria, 2010, 2012; Haden, Scarpa, Jones, & Ollendick, 2007), survivors of terrorism (Besser & Priel, 2010), and survivors of torture (Hall, Bonanno, Bolton, & Bass, 2014). Social support may be particularly important for military veterans as they reintegrate into civilian life following deployment to a combat zone (Milliken, Auchterlonie, & Hoge, 2007). Research suggests that perceived social support may moderate the relationship between combat trauma and a variety of psychological outcomes, including overall wellbeing (Park, Wachen, Kaiser, & Stellman, 2015). Veterans reporting greater social support also report fewer symptoms of PTSD, depression, and anxiety (Boscarino, 1995; Pietrzak et al., 2010). Furthermore, Brancu and colleagues (2014) found that PTSD diagnosis moderates the relationship between perceived social support and psychological distress among veterans; in other words, veterans officially diagnosed with PTSD may experience the relationship between low levels of social support and high levels of psychological distress particularly acutely. Additional research suggests that perceived social support plays a role in the relationship between symptoms of PTSD and depression and suicidality among veterans; DeBeer et al. (2014) found no association between depressive symptoms and post-deployment suicidal ideation in cases where social support was high, but a significant positive association when social support was low.

Several studies investigating the relationship between social support and veterans' coping with trauma have considered the effects of different sources of social support. Laffaye, Cavella, Drescher, & Rosen (2008) found that veteran friends provided the highest levels of perceived social support and the lowest levels of interpersonal stress, while other sources (spouses, family, and non-veteran friends) provided a mix of social support and interpersonal stress. Contrary to the authors' hypothesis, perceived social support did not predict the severity of PTSD symptoms. Wilcox (2010), on the other hand, found not only that male combat veterans differentiated between four different forms of social support (family, significant other, military, and friend) as measured by the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1998), but that social support received from family, significant others, and military peers *was* significantly related to PTS, whereas social support from civilian friends was not. In another study looking specifically at female veterans, higher levels of social support from military peers predicted higher levels of mental and physical health care utilization—but this relationship was unchanged by PTSD status (Lehavot, Der-Martirosian, Simpson, Shipherd, & Washington, 2013).

Two additional studies have looked specifically at the relationship between social support and PTS in the military and veteran student population. Using cross-sectional survey data, Nyaronga and Toma (2015) tested social support from both family and friends as potential predictors of PTS. They found that friend support, but not family support, significantly predicted PTS; in fact, friend support was the strongest predictor in the regression model, with a higher standardized beta coefficient than other significant predictors such as deployment to a combat zone, military branch, or marital status.

Romero and colleagues (2015) looked specifically at family social support as a potential moderator between coping style and three mental health outcomes: PTS, anxiety and depression (*n*=136). Path analysis showed that avoidant coping style directly predicted all three outcomes, and that family social support moderated the relationship between coping style and depression and anxiety. Consistent with Nyaronga and Toma's (2015) findings, however, family support did not directly predict PTS or moderate the relationship between coping style and PTS. The authors of both studies concede that the geographic distance between many of the students and their family members may lessen the impact of family social support as compared to other sources, such as peer, which they state should continue to be examined as moderators or mediators in future research.

Taken together, the early evidence regarding different sources of social support for veterans and student veterans coping with trauma suggests that though family support, in addition to military peer support, is predictive of PTS symptoms in general military populations (Wilcox, 2010), family support may not be as impactful as peer support among military and veteran *students* (Nyaronga & Toma, 2015; Romero et al., 2015). It remains unclear, however, whether support from fellow military-affiliated peers versus civilian peers is more related to PTS. Further investigation is needed to better inform service providers working with military and veteran students, who may receive social support from a variety of sources: military peers, non-military peers, family members, campus organizations, and so on. If researchers and mental health providers gain a better sense of how varying types of social support may impact the mental health of student veterans, they may be able to help foster or encourage certain types of social interaction, while at the same time identifying problematic gaps in support for this population on

campus. The current study will attempt to address this gap not only by separating peer support from family support, but also by differentiating between perceived social support from military peers versus on-campus civilian peers.

Attachment, social support, and posttraumatic stress

The relationship between adult attachment and perceived social support is intuitive as well as borne out in the literature. On a theoretical level, internal working models of attachment shape an individual's perception of needs being met by others, which would in turn impact how one views and accesses social support (Sroufe, 2005). Indeed the research shows that, in response to stress, more securely attached individuals report greater levels of perceived social support and more frequent support-seeking behaviors (e.g., Mikulincer, Florian, & Weller, 1993; Mikulincer & Shaver, 2003), while more insecurely attached individuals report negative perceptions of both their overall social support network and individual social interactions (see Lopez & Brennan, 2000, for a review). More specifically, in times of stress, individuals with high levels of attachment anxiety tend to heighten their emotional responses in an attempt to draw others in, while individuals with high attachment avoidance tend to mask or deny their emotions and distance themselves from others (Lopez & Brennan, 2000; Mikulincer et al., 1993; Mikulincer & Florian, 1995). In both cases, individuals with greater attachment insecurity have fewer sources of social support—which are either repelled with overwhelming affect and/or avoided entirely—and therefore fewer potential resources for coping with trauma. This, in turn, may lead to higher levels of PTS (Shalcross et al., 2014).

There is no research to date investigating peer social support as a potential mediator between adult attachment and trauma-related symptoms specifically in the U.S. military and veteran student population, however two recent studies lend support for a mediation model among the broader university student population (Besser & Neria, 2012; Shallcross et al., 2014). Besser and Neria (2012) tested a structural equation model in which perceived social support mediated the relationship between adult attachment orientation and PTSD symptoms in a sample of Israeli university students recently evacuated from their campus due to a missile attack. They found that lower levels of perceived emotional support from peers, family, and significant others accounted for the relationship between higher attachment anxiety and greater PTS. Additionally, the authors used hierarchical multiple regression to test whether perceived social support acted as a moderator between the predictor variables attachment anxiety and avoidance and the outcome variable PTS. This model was not supported, suggesting that the interrelationships between the constructs in question were better explained by the mediation model, in which perceived social support acted as the mechanism through which attachment orientation impacted PTSD symptoms.

As part of a prospective longitudinal study of undergraduate students at two universities in the Midwestern United States, Shallcross et al. (2014) tested a similar model investigating the impact of social resources on the relationship between adult attachment orientation and PTSD symptoms as well as psychological distress. Participants who reported experiencing a traumatic event between the first and second round of data collection were included in the analysis relevant to the current study. By using this prospective longitudinal design, the authors were able to improve upon

previous research by ensuring that attachment orientation and social support data in fact preceded the mental health outcome data, thus lending stronger support to a causational model. The researchers found that the full mediation model, in which attachment orientation affected the outcome variables (PTSD, psychological distress) entirely through the mediator of social support, was a better fit for the data than the partial mediation model that included direct paths between attachment orientation and mental health outcomes. They ran the model separately for attachment anxiety and attachment avoidance, finding that social support acted as a full mediator between both dimensions and posttraumatic stress, but that this effect was slightly stronger for attachment anxiety.

The two studies described above provide an important start to understanding the impact of perceived social support on the established relationship between adult attachment orientation and trauma-related outcomes in university students. They do not, however, provide any information about how this relationship may look for specific sub-populations of U.S. university students. Given the likely prevalence of PTSD among student veterans and its potential to impact their functioning across social, emotional, cognitive, and occupational domains, it is critical for researchers and mental health care providers to identify psychosocial variables that may be contributing to the expression of PTSD symptoms in this population. It appears that adult attachment and social support may act on PTSD in this way (Besser & Neria, 2012; Shalcross et al., 2014), but due to demographic differences between traditional university students and student veterans, a similar mediation model must be tested specifically in a sample of U.S. student veterans to provide evidence for a similar effect in this special population. (Though the Israeli university students in Besser and Neria's [2012] study can be considered veterans due to

military conscription in that country, their service differed in length and nature as compared to the U.S. students in this study, who chose to enter military service and served for an average of more than 8 years). Furthermore, increasing evidence suggests that specific sources of social support impact veterans and student veterans in different ways (Romero et al., 2015; Wilcox, 2010). Therefore, various sources of perceived social support need to be delineated and tested separately as potential mediators of the relationship between attachment and PTS.

Summary

In sum, the existing research on the mental health of student veterans suggests that PTS is a particularly relevant construct to examine in this population (Rudd et al., 2011), and that it may impact student veterans differently from civilian university students (Barry et al., 2012). For example, though there appears to be a similar relationship between PTS and alcohol use in student service members/veterans and civilian students (Barry et al., 2012), student service members/veterans (males in particular) may experience more severe life consequences as a result of binge drinking (Barry et al., 2012). On the other hand, student service members/veterans may experience fewer academic difficulties in relation to PTS (Barry et al., 2012). Yet there is little existing research on PTS and PTSD among military-affiliated students, and only one study to date exploring psychosocial predictors of PTS as an outcome variable in this population (Romero et al., 2015). Moreover, most of the studies on the military and veteran student population to date, including those examining the construct of PTS, do not fully account for or discuss the significant demographic differences between military-affiliated university students and civilian university students. The current study focused

on psychosocial risk factors for PTS only among military and veteran students, as researchers must gain a better understanding of the mental health needs of this population alone before comparisons can be useful.

There is both qualitative and quantitative evidence to suggest that military and veteran students feel isolated on campus, perceiving lower levels of social and emotional support from university peers as compared to civilian students (DiRamio et al., 2008; Whiteman et al., 2013). Recent studies of military-affiliated students suggest that perceived social support from peers is negatively linked to PTS (Nyaronga & Toma, 2015), and that perceived social support from peers and family members is negatively related to anxiety and depression (Romero et al., 2015; Whiteman et al., 2013), which commonly co-occur with PTSD (e.g., Keane & Wolfe, 1990; Stewart, 1996). Yet there is no research to date specifically examining how different sources of social support may moderate or mediate the relationship between psychosocial variables and PTS among student veterans. The current study aimed to address this gap by using structural equation modeling to test both military peer and civilian peer social support as potential mediators between adult attachment orientation and PTS in student veterans.

Adult attachment is a logical predictor variable to examine in such a model, given the vast body of research documenting the negative relationship between attachment security and PTSD symptom severity (Mikulincer & Shaver, 2007). Furthermore, attachment researchers increasingly believe that the effects of attachment orientation in adulthood are continuously shaped by social and environmental factors (Sroufe, 2005). Indeed, evidence from studies of the broader university student population suggests that perceived social support may act as a mediator in the well-documented relationship

between adult attachment and PTS (Besser & Neria, 2012; Shalcross et al., 2014). In other words, students with more insecure attachment orientations may experience more symptoms of PTSD because they have more difficulty accessing and maintaining social support, which is a powerful predictor of one's ability to cope with PTS (Brewin et al., 2000). There is conflicting research however, on the impact of attachment anxiety versus attachment avoidance on PTS in military-affiliated populations; some studies indicate that attachment anxiety is a stronger predictor of PTS (Besser & Neria, 2012; Elwood & Williams, 2007; Ferrajão & Oliveira, 2015; Sandberg et al., 2010), while other research more directly focused on veterans suggests that attachment avoidance may be more relevant in this population (Currier et al., 2012; Muller & Rosenkranz, 2009; Renaud, 2008). The current study addressed this conflict by exploring attachment anxiety and avoidance as separate causal variables in the mediation model.

Taken together, the findings discussed in this chapter have important implications for counseling university students, suggesting not only that counselors should be aware of their clients' adult attachment orientation, but also that social support may serve as a relational mechanism through which counselors could intervene in the treatment of PTS and PTSD (for example, social skills training could be provided in hopes of bolstering social resources in individuals with insecure attachment). Yet it cannot be automatically assumed that this model applies to military and veteran students, who, as compared to traditional university students, are demographically different (DiRamio & Jarvis, 2011), perceive different levels of social support (Whiteman et al., 2013), and may have different experiences with and ways of coping with trauma (Barry et al., 2011, 2012). The current study sought to expand upon the existing research by testing a model in which

two sources of social support—military peer and university peer—mediate the relationship between the two dimensions of adult attachment (anxiety and avoidance)—and posttraumatic stress.

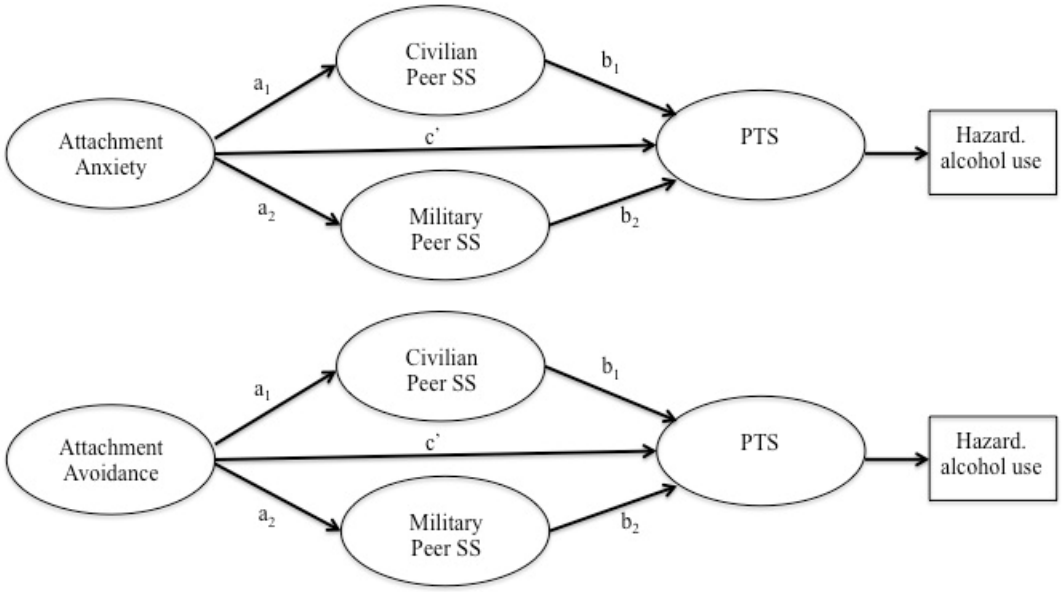
Chapter 3: Methods

The current study was a quantitative investigation using a non-experimental survey design. The researcher explored whether perceived social support from two different sources—civilian on-campus peers and military-affiliated on-campus peers—mediated the relationship between adult attachment orientation and posttraumatic stress (PTS) in a sample of military and veteran students (Figure 2). Adult attachment orientation was separated dimensionally into two factors, anxiety and avoidance. Problem alcohol use was also considered as an indirect outcome variable in the mediation model. The data was analyzed using latent variable path analysis, a form of structural equation modeling. Prior to conducting the latent variable path analysis, the researcher performed confirmatory factor analyses to verify the expected factor structure of the chosen instruments.

This chapter further details the methodological approach used in the current study, including research questions and hypotheses; research design; participants, sampling and data collection procedures; features and psychometric properties of the instruments to be used; data analysis plan; limitations and delimitations; and ethical concerns related to human participants.

Figure 2

Direct and social support mediation models of attachment and PTS



Research Questions and Hypotheses

According to Baron and Kenny (1986), the following conditions must be met in order to establish a full mediation effect: 1) there is a significant correlation between the causal variable and the outcome variable; 2) there is a significant correlation between the mediator and the causal variable; 3) there is a direct effect of the mediator on the outcome variable; 4) the direct effect of the causal variable on the outcome variable when controlling for the mediator becomes zero. Based on those guidelines, the following research questions and hypotheses were explored in this study:

1) Does perceived social support from civilian peers and/or military peers mediate the relationship between adult attachment orientation and PTS among military and veteran students?

    a. Is there a direct relationship between attachment anxiety and PTS among military and veteran students?

       H1a: *There will be a direct positive relationship between attachment anxiety and PTS among military and veteran students.*

    b. Is there a direct relationship between attachment avoidance and PTS among military and veteran students?

       H1b: *There will be a direct positive relationship between attachment avoidance and PTS among military and veteran students.*

    c. Is there a direct relationship between attachment anxiety and perceived social support from civilian and/or military peers among military and veteran students?

       H1c: *There will be a direct negative relationship between attachment anxiety and perceived social support from civilian and military peers among military and veteran students.*

    d. Is there a direct relationship between attachment avoidance and perceived social support from civilian and/or military peers (mediator) among military and veteran students?

       H1d: *There will be a direct negative relationship between attachment avoidance and perceived social support from civilian and military peers among military and veteran students.*

e. Is there a direct relationship between perceived social support from civilian and/or military peers and PTS among military and veteran students?

   H1e: *There will be a direct negative relationship between perceived social support from civilian and military peers and PTS among military and veteran students.*

f. Does perceived social support from civilian and/or military peers mediate the relationship between attachment anxiety and PTS among student veterans, such that this path is significantly diminished (partial mediation) or becomes zero (full mediation)?

   H1f: *Perceived social support from civilian AND military peers will either partially or fully mediate the relationship between attachment anxiety and PTS among military and veteran students.*

g. Does perceived social support from civilian and/or military peers mediate the relationship between attachment avoidance and PTS, such that this path is significantly diminished (partial mediation) or becomes zero (full mediation)?

   H1g: *Perceived social support from civilian AND military peers will either partially or fully mediate the relationship between attachment avoidance and PTS among military and veteran students.*

2) Is there a direct relationship between PTS and problem alcohol use among military and veteran students?

H2a. *There will be a direct positive relationship between PTS and problem alcohol use military and veteran students.*

Population and sampling

Summary

The population of interest in this study was university students who have served or are currently serving in any one of the five branches of the U.S. military (Air Force, Army, Coast Guard, Marines, or Navy). The sample was a nonprobability (convenience) sample recruited via email listserv through individual chapters of the Student Veterans of America (SVA) organization at universities across the United States. Convenience sampling was used due to resource limitations and the exploratory nature of this study. With permission from SVA national headquarters, the researcher used the organization's online directory to contact chapter advisers and representatives from each institution of higher education nationwide with valid chapter contact information in the directory (652 chapters). Military-only universities (e.g., National Intelligence University, National Defense University, and the Uniformed Services University of the Health Sciences), were not included in the sampling frame because of the lack of civilian students on campus to provide potential social support. In the initial letter, the researcher requested the chapter adviser distribute the survey invitation and link via email listserv to military and veteran students at their institution. Snowball sampling also was used: Students and chapter advisers were encouraged to forward the recruitment email to other military-affiliated students.

In summary, to be included in the study, participants had to be undergraduate or graduate students currently enrolled, either full or part time, at a non-military U.S.

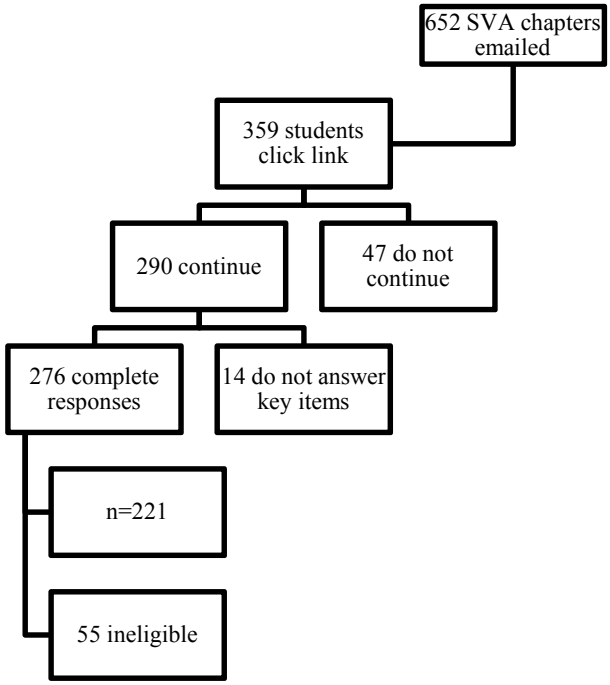
university, who served in the U.S. military after September 11, 2001 (to match the criteria for receiving Post-9/11 G.I. Bill benefits), and who had been exposed to at least one potentially traumatic event (PTE) in their lifetime. Students who had a previous diagnosis of active psychosis were also excluded due to potential impairments in functioning affecting their ability to participate effectively and willingly in the study. Students with a previous diagnosis of traumatic brain injury (TBI) or mild traumatic brain injury (mTBI) were included but compared to the rest of the sample for differences on all key variables (see below).

Participants

Upon receiving the initial or follow-up recruitment email, 356 students clicked on the survey link and 290 continued beyond the informed consent page. Of those 290, 276 students completed all key items of the survey. Fifty-five responses were excluded due to clear acquiescence or ineligibility due to lack of military service after September 11, 2001, lack of current university enrollment, or lack of trauma exposure, leaving a final *n* of 221 students (Figure 3). This number exceeded the researcher's goal of 200 cases, which is the recommended minimum sample size for structural equation modeling (Hoelter, 1983).

Figure 3

Sampling tree



Participant demographics are presented in Tables 1-3. Consistent with previous studies of military and veteran students (Cate, 2014; Kim & Cole, 2014), participants in this sample were older than traditional university students; the mean age was 32.10 (*SD* = 8.09) and 183 (82.90%) respondents were older than 25. Additionally, a majority of the students were either married (108; 48.87%) or divorced/separated 29 (13.12%), and 96 (43.44%) reported having children; again, those figures are consistent with previous research describing military and veteran students as non-traditional (Cate, 2014). The sample was approximately two-thirds male (151; 68.33%) and one-third female (68; 30.77%), with two respondents identifying as either transgender or gender non-conforming. Though females are overrepresented in this sample as compared to the proportion of service members in general who are female (16.20%), this number is representative of the military and student veteran population, which is estimated to be 20-

30% female (Cate, 2014; Kim & Cole, 2014). One hundred and eighty-six participants (84.54%) reported their ethnicity as Non-Hispanic and 34 (15.45%) identified as Hispanic. The majority of participants (168; 76.71%) identified their race as White, which is relatively consistent with previous studies of military and veteran students (Cate, 2014; Kim & Cole, 2014), as well as data on the university student population in general, reporting 70-75% of students as White (Radford & Wun, 2011). Black or African American students were slightly underrepresented in this sample (12; 5.48%) as compared to previous data on both military and veteran students (10.60%), however closer to the proportion of university students in general who identify as Black or African American (7.10%). Another 13 respondents (5.93%) identified as more than one race; 11 (5.02%) identified as Asian; 7 (3.20%) as other; 6 (2.74%) as American Indian or Alaska Native, and 2 (0.91%) as Native Hawaiian or Pacific Islander.

Information related to participant military service and educational background are presented in Tables 2 and 3. The majority of respondents were military veterans (139; 62.90), while 35 (15.84%) were retired, 33 (14.93%) were Reserve or National Guard, and 14 (6.33%) were active duty service members. More than half of students in the sample were affiliated with the U.S. Army (116; 52.49%), a slightly higher percentage than previous studies of military and veteran students (Cate, 2014; 39.70%). Thirty-eight students (17.19%) reported affiliation with the Marines, 30 (13.57%) with the Navy, 27 (12.22%) with the Air Force, 4 (1.81%) with the Coast Guard, and 6 (2.71%) with more than one branch. Participants had served in the military for a mean number of 8.45 years (SD = 5.87) and had been deployed outside of the continental U.S. on average 2.69 times (SD = 1.08). Seventeen students (7.69%) reported a previous diagnosis of TBI and 15

(6.78%) reported a diagnosis of mild TBI (mTBI). The majority of participants were full-time undergraduate students 166 (75.11%) and attended public four-year (138; 62.44%) or public two-year (57; 25.79%) institutions. Participants represented colleges and universities from across the U.S., with 84 (38.18%) from the Midwest; 67 (30.45%) from the South; 32 (14.50%) from the Northeast; 29 from the West (13.18%); and 8 (3.64%) online-based.

Table 1

Participant demographic characteristics

Variable	*N*	%	*M*	*SD*
Age			32.10	8.09
24 and younger	38	17.19		
25 and older	183	82.90		
Gender				
Male	151	68.33		
Female	68	30.77		
Transgender female	1	0.45		
Gender non-conforming	1	0.45		
American Indian/Alaska Native	6	2.74		
Asian	11	5.02		
Black/African American	12	5.48		
Native Hawaiian/Pacific Islander	2	0.91		
White	168	76.71		
More than one race	13	5.93		
Other	7	3.20		
Marital and parental status				
Single/never married	83	37.56		
Married	108	48.87		
Divorced/separated	29	13.12		
Widowed	1	0.45		
Has children	96	43.44		
Does not have children	124	56.11		

N = 221

Table 2

Participant educational characteristics

Variable	*N*	%
University region		
Northeast	32	14.50
South	67	30.45
Midwest	84	38.18
West	29	13.18
Online only institution	8	3.64
University type (check all)		
Public 4-year	138	62.44
Public 2-year	57	25.79
Private 4-year	25	11.31
Private 2-year	4	1.81
For profit/proprietary	21	9.50
Online/distance	44	19.91
Enrollment status		
Full-time undergraduate	166	75.11
Half-time or less undergraduate	14	6.33
Full time graduate	28	12.67
Half-time or less graduate	13	5.88

N = 221

Table 3

Participant military and diagnostic characteristics

Variable	*N*	%	*M*	*SD*
Service characteristics				
Years served			8.45	5.87
Number of deployments			2.69	1.08
Grand total deployment time				
Military status				
Active duty	14	6.33		
Reserve or National Guard	33	14.93		
Veteran	139	62.90		
Retired	45	15.84		
Branch served				
Air Force	27	12.22		
Army	116	52.49		
Coast Guard	4	1.81		
Marines	38	17.19		
Navy	30	13.57		
More than one	6	2.71		
History of traumatic brain injury (TBI)				
None	189	85.52		
Mild TBI	15	7.69		
TBI	17	6.78		

N = 221

Procedure

Data collection

Data was collected via self-report, online questionnaire. That mode of data collection was chosen to maximize ease, convenience, and privacy—and therefore likelihood of participation—among the chosen population. Student veterans and service members may have been hesitant to participate in an in-person interview or telephone survey on this topic, not only due to limited free time, but also out of a desire to remain anonymous; they may have felt uncomfortable discussing private matters due to the well-documented stigma related to mental health problems among military populations (e.g., Mittal et al., 2013). Furthermore, Internet surveys allow for data collection from a sufficiently sized sample within a relatively short period of time (de Leeuw, 2008). There are several limitations to online self-report questionnaires, however, including increased likelihood of prematurely ending the survey and distraction due to multitasking (de Leeuw, 2008). The online medium also assumes that participants have computer and Internet access in a reasonably private setting, which may have limited participation for some individuals, as well as generalizability to students who have means to access the Internet. Those limitations were deemed minimal relative to the benefits of online data collection, especially among a sample that was likely to be technologically savvy and invested in the topic of veterans' mental health. Furthermore, methodological studies comparing web-based, paper-and-pencil, and telephone surveys have found little difference in response rate among college students addressing relevant topics such as alcohol use (e.g., Kypri, Gallagher, & Cashell-Smith, 2004; McCabe, Diez, Boyd, Nelson, & Weitzman, 2006).

Following approval from The George Washington University's (GWU) Institutional Review Board (IRB), participants were recruited via email listserv of individual SVA chapters. The researcher sent a request for participation via email to 652 university/organizational officials listed as chapter advisers (i.e., military and veterans affairs liaisons, representatives, and service providers), asking them to disseminate the survey invitation to subscribers of military and veteran student listservs. As an incentive to participate, students were offered the opportunity to be entered into a drawing for one of ten $50 gift cards to Amazon.com. Five university representatives responded citing a policy against sending out external surveys to students. Three university officials directed the researcher to their institution's own IRB process; approval was granted by two of those institutions. The third institution requested changes that would have conflicted with the research proposal approved by GWU; therefore, the institution was not included. Data collection ran from late September to mid-November 2015. A follow-up reminder email was sent to all university liaisons (with the exception of non-participating schools described above) seven to 10 days after they received the initial recruitment email.

Survey materials and procedures. In the body of each email, participants received a brief cover letter (one version for the initial email and one version for the reminder email). The web link to the instrument also was included in each email. When participants clicked on this link, they accessed the informed consent page. Participants consented by clicking "continue" to proceed with the survey. The survey took approximately 15-20 minutes to complete (in one sitting; however participants were allowed to return to the survey once started) and consisted of 22 demographic items (age, gender, race and ethnicity, marital and parental status, military status, military branch,

number of deployments, typical and total length of deployments, university enrollment status, type of university attended, geographic region of university attended, employment status, annual income, on-campus/off-campus housing status, diagnostic status regarding active psychosis and traumatic brain injury), 20 items assessing adult attachment, 16 items assessing social support, 17 items assessing exposure to traumatic events, 20 items assessing PTS, and 10 items assessing problem drinking, for a total of 104 items. Upon completing the survey items, participants were taken to a debriefing page providing additional referrals to military and veterans' hotlines, support organizations, counseling resources, and a mobile app designed to help cope with PTSD symptoms (PTSD Coach). They also were provided with a generic email address where they could send their request to be entered into the drawing for the gift cards. Of the 276 respondents who completed the survey, 113 requested to be entered into the drawing. The 10 winners were randomly selected and sent electronic Amazon gift cards in the amount of $50 each on December 31, 2015.

The survey was conducted via Qualtrics, an online survey program provided free to GWU students and faculty. The Qualtrics account was opened by the researcher and was not accessed by anyone else. The responses were downloaded into the Statistical Program for the Social Sciences-Version 22 (SPSS 22) for analysis in November 2015. All SPSS data and output files were stored on a password-protected computer accessed only by the researcher. No identifying information, such as name, address, email address, or specific university attended, was requested or saved at any time.

Estimated cost. The only costs associated with this survey study were the 10 Amazon.com gift cards of $50 value and a six-month rental license for LISREL 9.1, for a

total of $575. The George Washington University offers free access to the full versions of both Qualtrics and SPSS 22, which were used for preliminary data collection and analysis. The six-month rental copy of LISREL 9.1 was used to run the structural equation model. Therefore, the total cost of this study was $575, which was covered by the researcher's independent funds.

Power, sample size, and effect size. In structural equation modeling, statistical power—or the probability of correctly rejecting the null hypothesis—impacts the decision-making process about the fit of sample data to the specified model. Schumacker and Lomax (2010) recommend power be established a priori and also calculated post-hoc after running a structural equation model. Power for the current study was established a priori at the conventional level of .80. Once data was collected and the structural equation model was tested (along with modifications), the post-hoc statistical power was calculated according to the method outlined by Saris and Satorra (1993), using the noncentrality parameter (NCP) value generated by LISREL. The NCP value of 147.08 was entered into G*power 3—a free online calculator of power, sample size, and effect size—and generated a post-hoc power level of 1.00.

Desired sample size is inherently related to statistical power and was determined a priori. Determination of minimum sample size in structural equation modeling is complex due to the presence of multiple variables and non-independent parameters with differing standard errors within a theoretical model (Schumacker & Lomax, 2010). Previous guidelines set forth by Hoelter (1983) suggest SEM sample sizes should be greater than or equal to 200. Subsequent reviews of empirical studies using SEM have indicated, however, that models can be successfully run and evaluated with sample sizes smaller

than 200. Breckler (1990) reviewed 72 studies that used SEM, reporting sample sizes ranging from 40 to 8,650, with a median of 198. Another study found that up to 20% of studies using SEM had sample sizes of less than 100 (MacCallum & Austin, 2000). It should be noted, however, that with a small sample size (less than 100), statistical power will be limited, and the likelihood of encountering technical difficulties with SEM software increases (Kline, 2005). For the current study, the researcher aimed for Hoelter's (1983) recommended minimum sample size of 200, which was exceeded by the actual sample size of 221.

In order to understand the magnitude or practical significance of the various relationships within a structural equation model, effect sizes should be considered along with tests of statistical significance (Soper, 2015). Effect sizes in SEM are represented by the strength of the structural or path coefficients. For each relationship estimated by the model, both the statistical significance and the strength (effect size or practical significance) of the path were determined. Both direct and indirect effects were included in effect size magnitude. For the current study, a medium effect size of 0.15 (Cohen, 1988) was considered meaningful.

Measures

Trauma exposure. The 17-item Life Events Checklist for DSM-5 (LEC-5; Weathers et al., 2013) was used to assess the type and nature of traumatic events to which participants had been exposed. The LEC-5 is publicly available through the National Center for PTSD (U.S. Department of Veterans Affairs, 2014), takes approximately five minutes to complete, and contains 16 items corresponding to a specific type of traumatic event, e.g., "Combat or exposure to a war zone (in the military or as a civilian)" and

"Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)"; and one item asking about "Any other very stressful event or experience". For each item, participants were asked to indicate the nature of their exposure by choosing "Happened to me", "Witnessed it", "Learned about it", "Part of my job", "Not sure", or "Doesn't apply". In order to be included in the study as survivors of trauma, participants had to select "Happened to me", "Witnessed it", and/or "Part of my job" for at least one item on the scale. The assessment was scored by totaling the number of events the respondent had experienced, witnessed, or experienced as part of her job. This total score was used as a control variable in the latent variable path analysis, discussed further below.

The LEC-5 was chosen to measure trauma exposure in the current study because of its brevity and specificity in identifying both the type and nature of trauma exposure. The inclusion of the "Part of my job" response category made the scale particularly appropriate for this population, as it allowed for the assessment of non-combat related trauma that may have occurred as a part of military service (such as responding to a natural disaster). Participants were instructed specifically to think of their "job" as any role they held or currently hold as a member of the U.S. military.

The LEC-5 is a revised version of the Life Events Checklist (LEC), which was developed in conjunction with the Clinician-Administered PTSD Scale for DSM-IV (Weathers, Keane, & Davidson, 2001). Minimal changes were made from the LEC to the LEC-5: the developers simply added the response category of "Part of my job" and changed the wording of the item "Sudden, unexpected death of someone close to you" to "Sudden, accidental death". As a result, minimal differences are expected between the

psychometric properties of the LEC and LEC-5 (U.S. Department of Veterans Affairs, 2014); psychometric data for the LEC are discussed here.

The LEC has demonstrated strong test-retest reliability and validity in samples of both university students and combat veterans (Gray, Litz, Hsu, & Lombardo, 2004). Among university students, with respect to test-retest reliability, both the full scale and individual items were found to be relatively stable over a period of seven days. Kappa coefficients were calculated for both the full scale and for direct exposure ("Happened to me") and were reported above .50 for all but one item. Convergent validity was established with the well-validated Trauma Life Events Questionnaire (TLEQ; Kubany et al., 2000), with seven of the nine "like-item" pairs achieving kappa coefficients greater than .40, and two out of the seven (sexual assault and natural disaster) converging about .70. The LEC and the TLEQ showed similar patterns of moderate association with two measures of PTSD symptom severity, the Modified PTSD Symptom Scale (American Psychiatric Association, 1994) and the PTSD Checklist (Weathers, Litz, Huska, & Keane, 1991), with Pearson *r* coefficients ranging from .38 to .48. In a clinical sample of combat veterans, the LEC was significantly correlated with a series of measures of psychiatric disorders known to be associated with trauma, including the PCL and the CAPS for PTSD.

Posttraumatic stress. The level of PTS experienced by participants was measured using the PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013), which is publicly available online via the National Center for PTSD. The PCL-5 is a 20-item, self-report measure corresponding with the symptom criteria for PTSD diagnosis in DSM-5. For each item, the respondent was asked to rate how much she has been bothered over the

past month by a particular symptom (e.g., "Repeated, unwanted memories of the stressful experience"), using a five-point Likert scale ranging from 0 = "Not at all" to 4 = "Extremely". The PCL-5 provides an overall symptom severity score ranging from 0 to 80, as well as four subscale scores, ranging from 0 to 20, that correspond to the DSM-5 symptom clusters of B) intrusion, C) avoidance, D) negative alterations in cognition and mood, and E) alterations in arousal and reactivity. There are no reverse-scored items, and higher scores on all scales represent greater PTS symptom severity. A "provisional diagnosis" of PTSD can be made by cross-referencing PCL-5 scores with DSM-5 criteria. Each symptom endorsed as "2 = Moderately" or higher is considered a symptom experienced. DSM-5 criteria require at least one cluster B symptom (questions 1-5), one cluster C symptom (questions 6-7), two cluster D symptoms (questions 8-14) and two cluster E symptoms (questions 15-20). Cut-points for the PCL-5 appear to be 11-15 points lower than previous versions of the PCL, with initial validation work suggesting a cut-point of 24 and a range of 28-31 as indicative of moderate PTSD (Wortmann et al., 2015).

The PCL-5 was expanded and adapted from the widely used, 17-item PCL for DSM-IV (Weathers, Litz, Huska, & Keane, 1991). Though the PCL-5 is a relatively new measure, early psychometric data has been strong among samples of trauma-exposed college students (Contractor, Armour, Wang, Forbes, & Elhai, 2015; Blevins, Weathers, Witte, 2014). The PCL-5 has demonstrated convergent validity with other measures of trauma and discriminant validity from measures of other types of psychological distress, such as depression and anxiety (Blevins et al., November 2012). Previous researchers have reported internal reliability figures ranging from .94 to .95 for both the full scale and

the four subscales. In the current study, the Cronbach's alpha coefficient was .96 for the full scale and ranged from .87 to .92 for the four subscales.

Further evidence in favor of the PCL-5 can be drawn from the extensive psychometric background of the PCL for DSM-IV, on which it was heavily based. The three versions of the PCL for DSM-IV—Military, Civilian, and Specific Trauma, which focuses on one particular event—have demonstrated strong psychometric properties over the past two decades. All three versions are 17-item self-report scales that generate an overall total score as well as three subscale scores: Intrusion, Avoidance, and Hyperarousal. The PCL-Military (PCL-M) has been used with several different types of military populations, including combat veterans from the Vietnam, Persian Gulf, and OEF/OIF wars, while the PCL-Civilian (PCL-C) and PCL-Specific Trauma (PCL-S) have been tested on a wide variety of populations, including male and female veterans, university students, and survivors of intimate partner violence (see Wilkins, Lang, & Norman, 2011, for a review). Test-retest reliability among the three versions has ranged from .96 at three days to .66 at three weeks. Cronbach's alpha internal consistency figures have consistently been calculated above .90 for the full scale, and between .83 and .93 for the Intrusion scale, between .82 and .92 for the Avoidance scale, and between .80 and .92 for the Hyperarousal scale. Strong convergent validity has been demonstrated with other measures of PTS, including the Clinician Administered PTSD Scale and the Mississippi PTSD Scale (McDonald & Calhoun, 2010; Wilkins, Lang, & Norman, 2011). Regarding factor structure, the majority of studies of the three versions of the PCL have supported a four-factor model, leading researchers to propose a fourth subscale of "Dysphoria" (Wilkins et al., 2011). Those findings were reflected in the DSM-5 revision

of PTSD symptom criteria to include a fourth symptom cluster of "Negative alterations in cognition and mood" (American Psychiatric Association, 2013), which is, in turn, included as a subscale of the PCL-5.

The PCL-5 was chosen to measure posttraumatic stress in the current study based of the strong psychometric background of all PCL versions, and because it reflects the updated four-factor conceptualization of PTSD now being used in DSM-5.

Adult attachment. Participants' general adult attachment orientation was measured using the Experiences in Close Relationships-Revised-General Short Form (ECR-R-GSF; Wilkinson, 2011), a shortened version of the 36-item ECR-R (Fraley, Waller, & Brennan, 2000). This self-report instrument consists of 20 items, each measured on a five-point Likert scale, with 10 items assessing anxiety (e.g., "I often worry that other people close to me don't really love me") and 10 items assessing avoidance (e.g., "I prefer not to show others how I feel deep down"). Participants were instructed to consider each item with regard to "people in [their] life", thus probing at general adult attachment orientation rather than a specific target (e.g., a romantic partner or parent). Both a total score measuring overall attachment orientation and separate mean scores for each subscale (anxiety and avoidance) were calculated. Seven items were reverse coded in the scoring process (e.g., "I am very comfortable being close to other people" is reverse scored to measure avoidance). Total scores were calculated by taking the mean of all 20 items for the full scale; the even-numbered items for the anxiety scale; and the odd-numbered items for the avoidance scale.

The ECR-R and its short form (ECR-S) are among the most widely used measures of adult attachment and have demonstrated strong psychometric properties among

samples of both university students (Mikulincer & Shaver, 2007; Sibley & Liu, 2004; Sibley, Fisher, & Liu, 2005) and U.S. military veterans (Clark & Owens, 2012; Owens et al., 2014; Renaud, 2008). Factor analytic studies of the original ECR-R have consistently supported a two-factor solution of attachment anxiety and attachment avoidance, with appropriate convergent validity with other well-validated measures of adult attachment such as the Relationships Questionnaire-General Version (RQ; Bartholomew & Horowitz, 1991; e.g., Sibley et al., 2005). Cronbach's alpha coefficients for both subscales of the ECR-R are consistently reported around .90, and test-retest reliability coefficients typically range between .50 and .75 (Mikulincer & Shaver, 2007).

The ECR-R-GSF was developed from the broader pool of ECR-R items to provide a measure of adult attachment that would be shorter as well as geared toward general relationships as opposed to romantic relationships specifically. To create the ECR-R-GSF, Wilkinson (2011) selected 20 items from the original 36-item ECR-R that could be reworded to apply to close relationships in general and would be appropriate for a wide range of ages. Confirmatory factor analysis showed strong support for a two-factor model of anxiety and avoidance, consistent with the ECR-R. Construct validity was established by comparing the anxiety and avoidance scales of the ECR-R-GSF to the four subscales of the RQ, which generates four subscales matching the adult attachment classifications of secure, fearful, preoccupied, and dismissing; and the Inventory of Parent and Peer Attachment Short Form (IPPA; Armsden & Greenberg, 1987), which generates three subscales reflecting peer attachment, maternal attachment, and paternal attachment. As expected, both the anxiety and avoidance scales of the ECR-R-GSF were moderately and negatively correlated with the RQ Secure subscale (r = -.50 and -.37

respectively). Furthermore, the anxiety scale was moderately-strongly and positively correlated with the Fearful (.42) and Preoccupied (.59) items, and the avoidance scale was moderately-strongly and positively correlated with both the Fearful (.61) and Dismissing (.45) items. Thus, convergent validity was demonstrated between the Anxiety scale of the ECR-R-GSF and the attachment orientations associated with high anxiety on the RQ (Fearful and Preoccupied), as well as the avoidance scale of the ECR-R-GSF and the attachment orientations associated with high avoidance on the RQ (Fearful and Dismissing). With regard to the IPPA, both the anxiety and avoidance scales of the ECR-R-GSF were moderately-strongly and negatively correlated with peer attachment (-.60 and -.44 respectively) but only weakly-moderately and negatively correlated with both maternal and paternal Attachment (ranging between -.18 and -.38), perhaps reflecting the significant influence of peer relationships in adolescent development. Both subscales were shown to be reliable, with Cronbach's alpha coefficients of .88 for each. In the current sample, the Cronbach's alpha coefficients were similar, at .91 for the full scale, .89 for anxiety and .90 for avoidance.

The ECR-R-GSF was chosen for the current study because it provides a relatively brief assessment of general attachment orientation. Though it is a relatively new version of the ECR-R, the original instrument from which it was developed is a widely used and well-validated measure.

Peer social support. Social support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988). The full version of this self-report instrument contains 12 items assessing social support from three different sources: friend (FR), significant other (SO), and family (FA). Each item is measured on a

7-point Likert scale ranging from 1 ("Very strongly disagree") to 7 ("Very strongly agree"). Full-scale scores range from 12 to 84 and subscale scores range from 4-28, with higher scores representing greater levels of perceived social support. There are no reverse-scored items. Though all 12 items were administered in the current study in order to preserve the psychometric properties of the instrument (and to collect significant other and family data for descriptive statistics and/or to inform future research), only the four-item FR subscale was analyzed in the model. Participants were asked to respond to all "friend" items for both on-campus civilian friends/peers (CF) and military-affiliated friends/peers (MF), bringing the item total for this scale to 16. This use of the MSPSS follows previous research by Wilcox (2010), in which four additional peer support items were added for military peers.

The MSPSS is a widely used self-report measure of perceived social support that has demonstrated strong reliability and validity across diverse populations, including combat veterans (Wilcox, 2010); both male and female undergraduate students (e.g., Dahlem, Zimet, & Walker, 1991; Osman, Lamis, Freedenthal, Gutierrez, & McNaughton-Cassill, 2014); married graduate students (Zimet, Powell, Farley, Werkman, & Berkhoff, 1990); urban adolescents (Canty-Mitchell & Zimet, 2000); and both adolescent and college-aged trauma survivors (Besser & Neria, 2012; Wang & Chung, 2014). Evidence for the validity of the MSPSS includes negative and significant relationships between the total scale and known correlates of lack of social support, such as anxiety and depression among adolescents (Canty-Mitchell & Zimet, 2000), and depression in undergraduate students (Dahlem et al., 1991). Canty-Mitchell and Zimet (2000) found evidence for the validity of the separate subscales, in that MSPSS Family

items correlated more strongly (r = .76) than the other two subscales (r = .48 and .33) with another self-report measure of family caring. Factor analytic studies of the MSPSS have consistently reported strong evidence for a three-factor solution representing Family, Significant Other, and Friends (Dahlem et al., 1991; Osman et al., 2014; Zimet et al., 1990). Wilcox (2010) found, with the addition of the four military peer support items, strong evidence for four factors representing Family, Significant Other, Friends, and Military Peers, with consistent results using the Kaiser-Guttman eigenvalue of one rule (Kaiser, 1960), the visual scree plot method (Catell, 1978), and Horn's parallel analysis (1965). The internal reliabilities of both the full MSPSS and its subscales have consistently been reported as excellent, with Cronbach's alpha figures falling around .91 for the total scale and between .90 and .95 for the three subscales (Dahlem et al., 1991). Wilcox (2010) found acceptable internal reliability (.73) for the added subscale of military peers. Cronbach's alpha coefficients for the current study were .93 for the full scale and ranged from .92 to .98 for the subscales, including the new MF scale.

The MSPSS was chosen to measure social support in the current study because of the extensive research documenting its reliability, validity, and factor structure in a variety of relevant populations, and because there is previous evidence for its use as a measure of military peer support.

Problem alcohol use. Problem drinking was measured using the Alcohol Use Disorders Identification Test (AUDIT; Babor, de la Fuente, Saunders, & Grant, 1992). Developed by the World Health Organization, the AUDIT is a widely used screening measure to detect alcohol misuse, abuse, and dependence. It is offered in both a self-report questionnaire and clinical interview version; the self-report questionnaire will be

utilized for the current study. The questionnaire version of the AUDIT contains 10 five-point Likert-type items: three assessing the frequency and quantity of drinking (Hazardous Use), three assessing for alcohol dependence (Dependence), and four assessing problems caused by drinking (Harmful Use). Items responses range from 0-4, with total scores ranging from 0-40. Total scores higher than 8 are considered representative of problematic drinking.

The AUDIT was designed to detect less severe drinking problems as well as alcohol dependence (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). Both the clinical interview and the self-report questionnaire version have been used extensively with university students (e.g., Fleming, Barry, & McDonald, 1991; Kypri et al., 2004; McShane & Cunningham, 2003; Young & Mayson, 2010), and combat veterans (e.g., McDevitt-Murphy et al., 2014; Richardson et al., 2012). Research has also shown the AUDIT to have concurrent validity with other measures of problem alcohol use such as the Michigan Alcohol Screening Test, and to be able to successfully discriminate between nondrinkers and problem drinkers (Bohn, Babor, & Kranzler, 1995). The AUDIT also demonstrates strong cross-cultural validity (Allen, Litten, Fertig, & Babor, 2007). The self-report questionnaire version of the AUDIT has been shown to be both externally and internally reliable, with internal consistency alpha coefficients averaging .83 for the full scale (Reinert & Allen, 2007) and .93 and .81 for the Hazardous Use and Harmful use domains respectively (Fleming et al., 1991). Cronbach's alpha coefficients for the current study were also acceptable for the full scale (.87), Hazardous Use scale (.80) and Harmful Use scale (.75); the coefficient for the Dependence subscale was lower, however, at .65.

The AUDIT was chosen to measure problem drinking in the current study because of its strong psychometric properties and its appropriateness for use with university students, veterans, and individuals with a wide range of alcohol use behaviors. This distinguishes it from other alcohol screening tools such as the CAGE Assessment (Ewing, 1984); though the CAGE Assessment was used previously to measure problem drinking in a study of student veterans (Barry et al., 2011), research has shown that it is less appropriate for use with college students or nonclinical samples versus psychiatric or inpatient samples (Devos-Comby & Lang, 2008; Dhalla & Kopec, 2007).

Data analysis

Preliminary data handling. Data was imported directly from Qualtrics into SPSS 22 for preliminary cleaning and descriptive analysis. Responses to demographic and LEC-5 items were used to screen out participants who took the survey despite not meeting the demographic inclusion criteria stated in the recruitment emails. Participants were excluded if they had never been a member of the U.S. military or were not enrolled either part- or full-time at a non-military institution of higher education. They also were excluded if they did not endorse "Happened to me," or "Witnessed it," or "Part of my job" on at least one LEC-5 item.

Raw variables were reverse-coded and aggregated into total scores as necessary in order to conduct the final analyses. Seven items from the ECR-R-GSF were reverse coded, such that high scores on both subscales (anxiety and avoidance) and the total attachment scale represented greater insecurity. None of the other instruments required reverse coding. For the ECR-R-GSF, total scores were calculated by taking the mean of all 20 items for the full scale, the even-numbered items for the anxiety scale, and the odd-

numbered items for the avoidance scale. For the MSPSS, the researcher calculated a total of four aggregate variables: relevant items were totaled for the SO and FA subscales, as well as for the CF and MF subscales. For the PCL-5, the researcher calculated a total score reflecting overall PTS as well as four subtotals for the intrusion, avoidance, negative alterations in cognitions and mood, and alterations in arousal and reactivity scales. The researcher also created a binary variable reflecting probable PTSD diagnosis, coding participants who endorsed (2 or higher) at least one intrusion symptom, at least one avoidant symptom, at least two alteration symptoms, and at least two arousal symptoms. A total score for the AUDIT was calculated by adding up the responses to all 10 items, as well as subtotals for Hazardous Use, Dependence, and Harmful Use. Reliability statistics (Cronbach's alpha) were computed for each total instrument and each subscale and compared to those obtained by previous researchers. Descriptive statistics, including measures of central tendency (mean, median, mode), standard deviation, variance, range, and frequencies, were calculated for each individual survey item as well as instrument subscales and total scores. This information is presented in Chapter 4.

Missing data. To further prepare the data, the researcher conducted an analysis to determine what percentage of items and cases had missing data. Though only one item (AUDIT #2) had more than 5% missing data, 16 (7.24%) cases had missing data on at least one item to be included in the analysis. Per Allison's (2003) recommendation that no more than 5% of cases have missing data to avoid a large drop in sample size following listwise deletion, the researcher imputed the data using the estimation maximization (EM) algorithm. This method assumes that the data are missing at random

(MAR). To ensure the data were missing at random, the researcher scanned the data for differences between cases with missing data and cases without missing data and found no identifiable pattern. The imputed dataset was used to generate correlations and standard deviations for the SEM syntax.

Assumptions checking. There are several assumptions underlying the use of SEM, including adequate sample size, multivariate normality (and thus homoscedasticity), a lack of multicollinearity among independent variables, and that residuals of covariances be small and centered around zero (Kline, 2005). To ensure the normality assumption was met, the researcher checked univariate normality by examining the skew and kurtosis of each variable included in the analysis per Kline's (2005) recommendations that skew does not exceed three and kurtosis does not exceed eight. The only variables that violated the normality assumption were two of the AUDIT Dependence items and one of the AUDIT Harmful Use items, all of which were positively skewed and leptokurtic. Given the lack of normality in the Dependence and Harmful Use scales, the researcher decided to use only the Hazardous Use scale as measured variable reflecting alcohol use behaviors. In order to make the case for multivariate normality, the data was checked for outliers using the test of Mahalanobis distance. Initially, seven multivariate outliers were identified using this test; however, once the Dependence, Harmful Use, and military peer support items (discussed below) were removed, those cases were no longer multivariate outliers and were thus retained for the analysis.

Bivariate multicollinearity was assessed by examining the bivariate correlations between latent factors. Pearson's *r* correlations between the four military peer support

items all exceeded .90, suggesting severe multicollinearity. Multivariate multicollinearity can occur when a large portion of the variance in one particular variable can be explained by other predictors in the model. This was checked by regressing all items in the analysis as predictors onto a default dependent variable. The tolerance ($1-R^2$) and variance inflation factor (VIF; $1/[1-R^2]$) statistics were checked against Kline's (2005) recommendations that tolerance figures exceed .10 and VIF figures not exceed 10.00. The only predictors that did not meet those standards were the four military peer support items. Due to both bivariate and multivariate collinearity, the military peer support items could not be included in the SEM analysis, and the researcher tested only civilian peer support in the mediation model. Implications of this psychometric problem are discussed in Chapter 5.

To verify the assumption of linearity, the remaining variables were plotted against one another and demonstrated linear relationships. Finally, SEM requires that the residuals of the covariances be small and centered around zero. This was verified using the Lagrange Multiplier test.

Data analysis method. Structural equation modeling (SEM)—and specifically latent variable path analysis—was used to answer the research questions outlined earlier in the chapter. SEM was chosen as the appropriate method of data analysis because the key variables in question are latent, meaning that some degree of error is inherent in their measurement. SEM is a more robust method for approximating causality among latent variables than multiple regression because it takes into account this measurement error (Maruyama, 1998). Furthermore, SEM analyzes covariances rather than correlations in

order to describe relationships within a model, which provides more accurate parameter estimates, standard errors, and statistical significance tests (Boomsma, 1983).

The researcher followed the two-step process of structural equation modeling, which involves fitting both a measurement model (Step 1) and a structural model (Step 2) to the sample data. Using confirmatory factor analysis (CFA), the measurement model specified and tested the relationships between measured variables and latent variables onto which they were expected to load. In other words, the factor structure of all instruments included in the model had to be confirmed. Hypothesized relationships between latent variables were not included in the measurement model; rather, all latent variables were allowed to covary. In the structural model, however, the researcher defined the hypothesized structure by specifying the pathways between latent variables. Evaluation of both the measurement model and the structural model was conducted in five sub-steps: (1) model specification, (2) model identification, (3) model estimation, (4) testing model fit, and (5) if necessary, model modification (Kenny, 2012). Each of these steps is described below.

Model specification. Model specification is the process of defining expected relationships between latent variables based on existing theory. In a structural model, independent variables—or variables that are not caused by other factors in the model—are known as exogenous variables, whereas dependent variables—or variables that act as both independent *and* dependent variables, such as a mediator or moderator—are referred to as endogenous variables. Associational (non-directional) relationships, direct effects (direct relationships), and indirect effects (in which one variable affects another through a third variable) must all be clearly specified (Hoyle, 1995). The theoretical rationale

behind the model specified in the current study was described in detail in Chapter 2. To summarize, the model featured the following direct effects: attachment anxiety on PTS (which is hypothesized to go to zero in the mediation model), attachment avoidance on PTS (which is hypothesized to go to zero in the mediation model), attachment anxiety on peer social support, attachment avoidance on peer social support, peer social support on PTS, and PTS on alcohol use behaviors; and the following indirect effects: adult attachment insecurity through peer social support on PTS (mediation) and thus problem drinking, and peer social support on alcohol use behaviors through PTS.

Model identification. Model identification involves comparing the number of observations to the number of free parameters that need to be estimated in the model. In order to proceed to the model estimation phase, the researcher required an over-identified model in which the number of data points was greater than the number of estimated parameters (rather than a just-identified model, in which the two figures are equal, or an under-identified model, in which the number of parameters exceeds the number of observations). The number of observations was calculated through the formula $v(v+1)/2$, where v is the number of measured variables. There are several types of free parameters estimated: each path coefficient (direct and indirect), covariances between exogenous variables, variances of exogenous variables, and disturbance variances on measured variables. For the confirmatory factor analysis conducted in the measurement model, the unit of measurement was set for each latent variable by standardizing that factor and specifying the measured reference variables that would load onto it. In other words, there needed to be sufficient measured information to define each latent variable. As a general rule, there must be at least two indicators on each latent variable (Kenny, 2012).

Model estimation. In the model estimation phase, the researcher tested the identified model to see how well it fit the sample data. In simple path analysis, the hypothesized relationships in the model are tested using multiple regression equations. In structural equation modeling, however, more advanced methods of path estimation are used. Maximum-likelihood (ML) estimation is the most commonly used method for model estimation in SEM and will be used in the current study. In this method, a statistical software program goes through multiple iterations of sets of parameters to determine which population covariance matrix has the greatest likelihood of yielding the sample data observed. Research has shown that, as compared to other estimation methods such as generalized least squares and asymptotic distribution free, ML generates the most consistent and unbiased results (Chou & Bentler, 1995). It is a very robust method when multivariate normality is assumed, though it does tend to underestimate values in tests of statistical significant (Chou & Bentler, 1995). LISREL 9.1 was used to conduct ML in the current study (Jöreskog & Sörbom, 2014).

The process of model estimation requires a covariance matrix for all variables included in the analysis. This matrix can be generated from the raw data or by using correlations and standard deviations. Control variables can be included in the analysis by using partial correlations; in other words, the effects of the control variable can be partialed out from each correlation between measured variables (Schumacker & Lomax, 2010). In the current study, the researcher controlled for the number of traumatic events, and therefore used a partial correlation matrix, generated in SPSS 22, that removed the effects of this variable from the correlation matrix. Standard deviations were also generated in SPSS 22.

Once the estimation process was conducted, the model was evaluated by examining measures of model fit. There are three major types of model fit indices: absolute, parsimonious, and incremental. Absolute fit indices simply compare the observed and model-estimated covariance matrices. Parsimonious fit indices also compare those matrices but take model complexity (or the number of parameters to estimated) into account. Incremental fit indices compare the model-implied and independence (or null) covariance matrices. Researchers gain the most complete picture of model fit by examining a combination of these types of fit indices.

Model fit. For the current study, the following model fit indices were examined within LISREL 9.1: Model Chi-Square (χ^2) statistic, Standardized Root Mean Square Residual (SRMR), Root Mean Square Error Approximation, Akaike Information Criterion (AIC), and Comparative Fit Index (CFI). The χ^2 statistic and the SRMR are absolute fit indices. The χ^2 statistic is the only available test of model significance. It looks for statistically significant differences between the specified model and the independence (null) model, in which all variables are unrelated. As the model theorized approaches saturation (in which all parameters have been estimated), the χ^2 statistic gets lower and closer to 0.00, thus indicating better fit. The χ^2 statistic is vulnerable to changes in sample size, however, and therefore should only be considered in conjunction with other model fit indices. Hu and Bentler (1998) recommend the SRMR always be reported because it provides the most sensitive detection of model misspecification. Values of the SRMR range from 0 to an unlimited positive upper bound, where 0 represents perfect fit; values less than are equal to .08 are indicative of good fit (Hu & Bentler, 1998). Because they are absolute fit indices, both the χ^2 statistic and the SRMR are limited in that they do

not account for model complexity—specifically, their values tend to improve with each additional parameter, therefore favoring over-identified models. The RMSEA and the AIC are considered parsimonious indicators because they penalize for model complexity in their comparisons of the observed and model-implied covariance matrices. Values of the RMSEA reflect the difference in fit between the specified model and a perfectly identified model. They rarely exceed 1.00, though they range from 0 to an unlimited upper bound. Good fit is indicated by RMSEA values of .06 or lower (Hu & Bentler, 1998). For the current study, it is important to note that the RMSEA is sensitive to sample size and often rejects models that actually fit well in smaller sample of less than 250 (Hu & Bentler, 1998). The planned sample size is less than 250, and therefore the RMSEA must be interpreted with caution and in conjunction with the other fit indices. Like the RMSEA, the AIC is a parsimonious fit index but is used only for model comparison. It is calculated by taking the sum of the χ^2 value and 2t, where t = the number of parameters specified in the model. Lower values indicate better fit. For the current study, the AIC will be examined during the modification phase along with χ^2. The CFI was the only incremental fit index examined. It represents goodness of fit between the model-implied and covariance matrices. CFI values range from 0 to 1.00, with values between .90 and .95 considered marginal fit, and greater than .95 indicating good fit (Hu & Bentler, 1998, 1999; Kenny, 2012).

Model modification and respecification. Once the researcher evaluated the fit indices, the original model was modified/respecified with the aim of improving the fit. Modification indices were examined within LISREL 9.1 to determine whether releasing or imposing any specific constraints (i.e., adding or deleting free parameters) would

improve the model fit. Parameters that could be added or deleted include: the equality constraints on structural coefficients, error covariances, and any cross-loadings of measured variables onto multiple latent factors (which should be avoided). Chou and Bentler (2002) recommend imposing constraints ("backward search") over releasing constraints ("forward search"), as the process of deleting parameters tends to be highly dependent on initial model specified. Thus, imposing constraints was favored.

Human participants and ethics precautions

There were no direct benefits from participation in this study, apart from receiving referrals to mental health resources and the option to be entered in a drawing for an Amazon gift card. Potential broader benefits of this study included adding to the existing literature on student veterans' mental health as well as informing the supportive services offered to this population by both university and community providers (including college counseling centers, private counseling and psychotherapy practices, and military and veterans organizations). Though such benefits to the broader population appear to outweigh potential risks to individual participants, several precautions were taken to minimize those risks. It was clearly stated in the informed consent letter that participants could choose whether or not to participate in the survey (i.e., there is no requirement from their university or military branch), could stop taking the survey at any point, and should consider their own psychological wellbeing in making those decisions. Given the subject matter of the survey, it was possible that some students would experience psychological distress, particularly when asked about traumatic events in their history. The researcher took several steps to address this possibility: 1) direct contact information for two licensed mental health providers (the researcher and her adviser) with

experience in treating trauma was provided both in the informed consent letter and at the end of the survey, so that participants could contact this person for treatment referrals; 2) a list of mental health hotline numbers and web resources was provided both in the informed consent letter and at the end of the survey; and 3) a link to download the free "PTSD Coach" mobile application developed by the National Center for PTSD and the National Center (U.S. Department of Veterans Affairs, 2014) was provided at the end of the survey. This mobile application provides additional PTSD information and resources as well as immediate symptom tracking and coping exercises for participants who may be experiencing distress. As of January 2014, PTSD Coach had been downloaded more than 130,000 times in 78 countries, with research showing veterans found it moderately to very helpful in coping with PTSD symptoms (Kuhn et al., 2014). Participants were cautioned, however, that the PTSD Coach application is not a substitute for clinical treatment of PTSD and were again referred to the mental health contact described above.

Given the potential stigma associated with mental health difficulties among military populations, it was particularly important to protect the confidentiality and anonymity of the participants. No identifying information such as name, address, email address, or specific university attended was collected at any time; the researcher simply asked for a general geographic region where the participant attends school. The survey program used to collect the data was programmed such that IP addresses were not associated with specific survey responses. In order to be entered into the gift card drawings, participants were directed to contact the researcher through a generic email account, so that their email could not be traced back to their specific response.

Design limitations

This study was vulnerable to the typical limitations of cross-sectional survey designs. First, the generalizability of the results was limited because the data came from one particular sample at only one point in time. Second, the survey relied entirely on participants' self-report, leaving it vulnerable to response biases related to item wording and ordering as well as social desirability. Third, some participants may have interpreted certain questions differently from others based on their culture and context in a way that diverges from the researcher's intention. Lastly, response rates may have differed based on a participants' level of distress. Students experiencing higher levels of distress may have been less likely to answer the survey because it may have been too triggering or they may simply have felt more overwhelmed and pressed for time in their daily lives. On a broader level, student veterans may be more mentally "healthy" than the larger population of military veterans, in that they have been able to function well enough to be admitted to and attend institutions of higher education. Therefore, it is important to note that the results of this study are generalizable only to student veterans and not veterans more broadly.

Chapter 4: Results

This chapter will detail the results of the study, specifically descriptive statistics for relevant variables, the process of the latent variable path analysis, and the decision made for each research hypothesis.

Descriptive statistics

Means, standard deviations, and correlations for all variables included in the final analysis are discussed below and presented in Tables 4 and 5.

Trauma exposure and posttraumatic stress

The number of potentially traumatic events (PTEs) over the lifetime reported by participants in the current study spanned 1 to 17 (M = 8.67, SD = 3.69), with a modal number of 10 traumatic events experienced either directly or indirectly (Table 6). More than 80% of participants (179) reported experiencing five or more traumatic events, and all but one of the 17 PTEs (captivity) was experienced by 70 (31.67%) or more participants. The most common event types that directly "happened" to participants were transportation accident (131; 59.28%), physical assault (111; 50.23%), and combat/other warzone experience (110; 49.77%). Another 108 participants (48.87%) reported some "other very stressful experience" that was not included on the LEC-5 had "happened" to them. Forty-three respondents (19.46%) reported directly experiencing sexual assault, and another 70 (31.67%) reported some "other unwanted sexual experience". Of the female participants, however, more than half (37; 54.41%), reported directly experiencing sexual assault, and 48 (70.59%) reported directly experiencing another unwanted sexual experience.

Table 4

Correlations and descriptive statistics for attachment anxiety models

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. ECR 2	1.00																		
2. ECR 4	0.56**	1.00																	
3. ECR 6	0.45**	0.42**	1.00																
4. ECR 8	0.31**	0.40**	0.44**	1.00															
5. ECR 10	0.55**	0.45**	0.42**	0.30**	1.00														
6. ECR 12	0.56**	0.55**	0.46**	0.40**	0.51**	1.00													
7. ECR 14	0.49**	0.46**	0.46**	0.35**	0.54**	0.65**	1.00												
8. ECR 16	0.40**	0.58**	0.32**	0.39**	0.41**	0.45**	0.43**	1.00											
9. ECR 18	0.49**	0.44**	0.37**	0.36**	0.47**	0.44**	0.43**	0.41**	1.00										
10. ECR 20	0.31**	0.49**	0.48**	0.57**	0.39**	0.43**	0.44**	0.50**	0.47**	1.00									
11. PSS 6	-0.15*	-0.18**	-0.06	-0.07	-0.29**	-0.27**	-0.24**	-0.20**	-0.17*	-0.17*	1.00								
12. PSS 7	-0.19**	-0.21**	-0.10	-0.09	-0.32**	-0.30**	-0.27**	-0.23**	-0.20**	-0.16*	0.89**	1.00							
13. PSS 9	-0.15*	-0.18**	-0.06	-0.04	-0.31**	-0.28**	-0.28**	-0.17*	-0.18**	-0.11	0.85**	0.87**	1.00						
14. PSS 12	-0.14*	-0.17*	-0.05	-0.05	-0.30**	-0.29**	-0.25**	-0.15*	-0.16*	-0.08	0.84**	0.86**	0.90**	1.00					
15. INTRUS	0.37**	0.37**	0.26**	0.138	0.28**	0.37**	0.40**	0.23**	0.38**	0.24**	-0.15*	-0.18**	-0.17*	-0.21**	1.00				
16. AVOID	0.29**	0.31**	0.23**	0.02	0.21**	0.36**	0.36**	0.16*	0.33**	0.15*	-0.19**	-0.25**	-0.28**	-0.27**	0.76**	1.00			
17. ALTER	0.45**	0.35**	0.30**	0.11	0.44**	0.46**	0.51**	0.25**	0.43**	0.22	-0.26**	-0.30**	-0.20**	-0.30**	0.77**	0.71**	1.00		
18. AROUS	0.36**	0.32**	0.23**	0.06	0.25**	0.38**	0.41**	0.21**	0.36**	0.18**	-0.21**	-0.24**	-0.24**	-0.26**	0.79**	0.71**	0.80**	1.00	
19. AUD	0.03	0.04	0.10	-0.07	0.04	0.00	0.08	0.06	0.07	0.09	-0.05	0.03	0.00	-0.05	0.14*	0.10	0.12	0.14*	1.00
SD	1.16	1.18	0.97	1.06	1.07	1.23	1.29	1.09	1.18	1.01	1.75	1.87	1.96	1.95	1.10	1.32	1.10	1.10	2.78
Mean	2.43	3.09	2.41	2.29	2.42	3.10	2.78	2.60	2.94	2.67	3.95	3.99	3.98	3.83	7.01	3.27	9.53	9.57	3.61
Skew	0.46	-0.12	0.49	0.87	0.59	-0.17	0.32	0.20	0.04	0.18	-0.26	-0.21	-0.20	-0.11	0.48	0.25	0.48	.24	2.04
Kurtosis	-0.68	-0.97	-0.05	0.29	-0.20	-1.02	-1.11	-0.76	-0.94	-0.66	-0.75	-1.01	-1.16	-1.16	-0.68	-1.12	-0.95	-0.97	4.08

N = 221
** = $p < .01$
* = $p < .05$

Table 5

Correlations and descriptive statistics for attachment avoidance models

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. ECR 1	1.00																		
2. ECR 3	0.45**	1.00																	
3. ECR 5	0.46**	0.52**	1.00																
4. ECR 7	0.44**	0.40**	0.57**	1.00															
5. ECR 9	0.40**	0.39**	0.58**	0.47**	1.00														
6. ECR 11	0.36**	0.33**	0.50**	0.38**	0.24**	1.00													
7. ECR 13	0.43**	0.70**	0.54**	0.49**	0.40**	0.32**	1.00												
8. ECR 15	0.45**	0.43**	0.70**	0.53**	0.47**	0.51**	0.54**	1.00											
9. ECR 17	0.53**	0.44**	0.64**	0.60**	0.48**	0.42**	0.50**	0.55**	1.00										
10. ECR 19	0.50**	0.71**	0.55**	0.52**	0.39**	0.39**	0.73**	0.51**	0.52**	1.00									
11. PSS 6	-0.29**	-0.37**	-0.41**	-0.32**	-0.31**	-0.22**	-0.40**	-0.28**	-0.28**	-0.33**	1.00								
12. PSS 7	-0.27**	-0.38**	-0.46**	-0.34**	-0.32**	-0.25**	-0.41**	-0.30**	-0.30**	-0.32**	0.89**	1.00							
13. PSS 9	-0.27**	-0.38**	-0.48**	-0.35**	-0.35**	-0.26**	-0.46**	-0.36**	-0.36**	-0.38**	0.85**	0.87**	1.00						
14. PSS 12	-0.30**	-0.37**	-0.49**	-0.39**	-0.36**	-0.27**	-0.43**	-0.40**	-0.40**	-0.36**	0.84**	0.86**	0.90**	1.00					
15. INTRUS	0.34**	0.27**	0.33**	0.24**	0.21**	0.33**	0.18**	0.29**	0.29**	0.27**	-0.15*	-0.18**	-0.17*	-0.21**	1.00				
16. AVOID	0.36**	0.39**	0.39**	0.35**	0.25**	0.39**	0.28**	0.38**	0.38**	0.38**	-0.19**	-0.25**	-0.28**	-0.27**	0.76**	1.00			
17. ALTER	0.41**	0.38**	0.51**	0.31**	0.32**	0.47**	0.28**	0.33**	0.33**	0.37**	-0.26**	-0.30**	-0.20**	-0.30**	0.77**	0.71**	1.00		
18. AROUS	0.42**	0.35**	0.45**	0.34**	0.27**	0.40**	0.25**	0.36**	0.36**	0.37**	-0.21**	-0.24**	-0.24**	-0.26**	0.79**	0.71**	0.80**	1.00	
19. AUD	0.05	0.09	0.08	0.04	0.01	0.09	0.02	0.08	0.07	0.04	-0.05	0.03	0.00	-0.05	0.14*	0.10	0.12	0.14*	1.00
SD	1.03	1.08	1.20	1.25	1.04	1.20	1.10	1.26	1.12	1.04	1.75	1.87	1.96	1.95	1.10	1.32	1.10	1.10	2.78
Mean	3.70	3.77	3.04	3.31	2.58	2.91	3.67	3.06	3.43	3.73	3.95	3.99	3.98	3.83	7.01	3.27	9.53	9.57	3.61
Skew	-0.51	-0.63	-0.02	-0.22	0.59	0.02	-0.65	-0.07	-0.31	-0.60	-0.26	-0.21	-0.20	-0.11	0.48	0.25	0.48	.24	2.04
Kurtosis	-0.49	-0.54	-0.89	-1.10	-0.08	-1.00	-0.26	-1.12	-0.74	-0.45	-0.75	-1.01	-1.16	-1.16	-0.68	-1.12	-0.95	-0.97	4.08

N = 221
** = $p < .01$
* = $p < .05$

Table 6

Potentially Traumatic Events (PTEs) as Measured by the Life Events Checklist (LEC-5)

Event (*N*=221)	Happened to me *n* (%)	Witnessed it *n* (%)	Part of job *n* (%)
Transportation accident	131(59.28)	36(16.29)	11(4.98)
Male (*n* = 151)	86(59.95)	27(17.88)	10(6.62)
Female (*n* = 68)	44(64.71)	9(13.24)	1(1.47)
Gender non-conform/transgender (*n* = 2)	1(50.00)	0	0
Physical assault	111(50.23)	34(15.38)	14(6.33)
Male	74(49.00)	24(15.89)	14(9.27)
Female	36(52.94)	9(13.24)	0
Gender non-conform/transgender	1(50.00)	0	0
Combat/other warzone experience	110(49.77)	15(6.79)	32(14.48)
Male	81(53.64)	11(7.28)	23(15.23)
Female	28(41.17)	4(5.88)	9(13.24)
Gender non-conform/transgender	1(50.00)	0	0
Another very stressful experience	106(47.96)	18(8.14)	22(9.95)
Male	66(43.71)	14(9.27)	19(12.58)
Female	38(55.88)	4(5.88)	3(4.41)
Gender non-conform/transgender	2(100.00)	0	0
Natural disaster	90(40.72)	48(21.72)	13(5.88)
Male	60(39.74)	36(23.84)	10(6.62)
Female	30(44.12)	12(17.65)	2(2.94)
Gender non-conform/transgender	0	0	1(50.00)
Unwanted sexual experience	70(31.67)	10(4.53)	5(2.26)
Male	22(14.57)	8(5.30)	5(3.31)
Female	48(70.59)	0	0
Gender non-conform/transgender	0	2(100.00)	0
Exposure to toxic substance	69(31.22)	10(4.52)	41(18.55)
Male	51(33.77)	7(4.64)	31(20.53)
Female	17(25.00)	3(4.41)	10(14.71)
Gender non-conform/transgender	1(50.00)	0	0
Assault with weapon	64(28.96)	30(13.57)	25(11.31)
Male	48(31.79)	23(15.23)	19(12.58)
Female	15(22.06)	7(10.29)	6(8.82)
Gender non-conform/transgender	1(50.00)	0	0
Fire or explosion	58(26.24)	51(23.08)	39(17.65)
Male	46(30.46)	37(24.50)	30(19.87)
Female	11(16.17)	14(20.59)	9(13.24)
Gender non-conform/transgender	1(50.00)	0	0

Event *(cont'd)*	Happened to me *n* (%)	Witnessed it *n* (%)	Part of job *n* (%)
Serious accident	55(24.89)	49(22.17)	16(7.24)
Male	35(23.18)	37(24.50)	13(8.61)
Female	19(27.94)	12(17.65)	3(4.41)
Gender non-conform/transgender	1(50.00)	0	0
Sexual assault	43(19.46)	8(3.62)	5(2.26)
Male	6(3.97)	6(3.97)	5(3.31)
Female	37(54.41)	1(1.47)	0
Gender non-conform/transgender	0	1(50.00)	0
Serious injury, harm, or death you caused to someone else	28(12.67)	23(10.41)	19(8.60)
Male	26(17.22)	19(12.58)	17(11.26)
Female	2(2.94)	4(5.88)	2(2.94)
Sudden accidental death		66(29.86)	21(9.50)
Male		50(33.11)	19(12.58)
Female		15(22.05)	2(2.94)
Gender non-conform/transgender		1(50.00)	0
Sudden violent death		75(33.94)	21(9.50)
Male		57(37.75)	18(11.92)
Female		17(25.00)	3(4.41)
Gender non-conform/transgender		1(50.00)	0
Severe human suffering	7(3.17)	82(37.10)	17(7.69)
Male	6(3.97)	63(41.72)	14(9.27)
Female	1(1.47)	18(26.47)	3(4.41)
Gender non-conform/transgender	0	1(50.00)	0
Life threatening illness or injury	25(11.31)	68(30.77)	12(5.43)
Male	18(11.92)	47(31.12)	10(6.62)
Female	7(10.29)	20(29.41)	2(2.94)
Gender non-conform/transgender	0	1(50.00)	0
Captivity	4(1.81)	2(1.00)	7(3.17)
Male	1(0.06)	2(1.32)	7(4.64)
Female	3(4.41)	0	0
Gender non-conform/transgender	0	0	0

N = 221

Total Posttraumatic Checklist (PCL-5) scores for the current sample ranged from 0 to 77 (M = 29.39, SD = 20.51). The median score of 27.00 falls above the recently suggested cut-point of 24 (Wortman et al., 2015) and just below the range of 28-31 for moderate PTSD (National Center for PTSD, 2015). More than half the sample (116; 52.49%) had a total score higher than 24, and 88 participants (39.82%) met the DSM-5 criteria for a provisional diagnosis of PTSD. Mean item response scores, measured on a 0-4 point Likert scale, were relatively similar for each subscale, with Avoidance items endorsed most highly (M = 1.64, SD = 1.32), followed by Arousal (M = 1.60, SD = 1.10), Intrusion (M = 1.40, SD = 1.32), and Alterations in Cognition and Mood (M = 1.36, SD = 1.10).

Adult attachment orientation

Mean item response scores for the Experiences in Close Relationships-Revised-General Short Form (ECR-R-GSF) were calculated for the total scale and for the anxiety and avoidance subscales. They ranged from 1-5, with higher scores representing greater attachment insecurity. In the current sample, mean item response scores for the total scale fell directly in the middle of the range (M = 2.99, SD = .70) but were statistically significantly higher for avoidance (M = 3.32, SD = .83) than anxiety (M = 2.67, SD = .80), $t(220) = 12.07$, $p < .01$, Cohen's $d = 0.80$.

Peer social support

Full-scale scores on the Multidimensional Scale of Perceived Social Support (MSPSS) were calculated using the civilian friends items and ranged from 12-84 (M = 56.09, SD = 17.29). Sub-scale scores ranged from 4 to 28, with participants reporting the highest level of perceived social support from significant others (M = 20.76, SD = 7.85),

followed by family (M =19.59, SD = 6.35), military friends (M = 18.60, SD = 6.82), and civilian friends (M = 15.75, SD = 7.14). There were statistically significant differences between each pair of subscale means: significant others and family, $t(220) = 2.73$, $p < .01$, Cohen's $d = 0.17$; significant others and military friends, $t(220) = 4.71$, $p < .01$, Cohen's $d = 0.29$; significant others and civilian friends, $t(220) = 10.43$, $p < .01$, Cohen's $d = 0.67$; family and military friends, $t(220) = 2.32$, $p < .01$, Cohen's $d = 0.15$; family and civilian friends, $t(220) = 8.00$, $p < .01$, Cohen's $d = 0.57$; and military and civilian friends, $t(220) = 5.93$, $p < .01$, Cohen's $d = 0.41$.

Alcohol use behaviors

Scores on the AUDIT indicated that this sample, as a whole, exhibited very low alcohol use and problem alcohol use. Total AUDIT scores ranged from 0-33 (M = 5.82, SD = 1.93), with 73.76% of scores falling below the cutoff of 8.00 for problem drinking. Only the Hazardous Use subscale (M = 3.60, SD = 2.78), which represents frequency and quantity of alcohol use, was used in the latent variable path analysis due to problems with normality and reliability for the other two subscales (Dependence: M = .65, SD = 1.51; Harmful Use: M = 5.17, 1.93) as discussed in Chapter 3. Thirty participants (13.57%) reported they never have a drink containing alcohol, and another 120 (54.30%) reported they have a drink containing alcohol on 4 or fewer occasions per month. More than half the sample (123; 55.67%) reported that when they do drink, they have only 1-2 drinks, and 172 participants (77.82%) reported binge drinking either never or less than monthly.

Differences Based on TBI History

A one-way ANOVA was conducted to test for differences between Traumatic Brain Injury diagnostic categories (TBI, mild TBI, no history of diagnosis) and the variables to be tested in the path analysis: posttraumatic stress, hazardous alcohol use, attachment anxiety, attachment avoidance, civilian peer social support, and military peer social support. There was a statistically significant difference in mean PCL-5 scores between participants based on history TBI diagnosis, $F(2,218) = 12.31$, $p < .01$, $\eta^2 = .10$. Post-hoc tests revealed participants with no history of TBI diagnosis ($M = 26.82$; $SD = 19.68$) had statistically significantly lower PCL-5 scores than both the TBI ($M = 49.06$; $SD = 18.44$) and mTBI ($M = 39.60$; $SD = 18.67$) groups. There was no statistically significant difference in hazardous alcohol use scores based on TBI history.

The difference in PTS between the TBI diagnostic groups was expected given the severity of traumatic experiences that can lead to TBI. It was, however, important to test for any differences in the independent variables (attachment anxiety, attachment avoidance, civilian peer social support) based on TBI diagnosis that may have confounded the final analysis. The only significant difference found was between participants with a history of TBI diagnosis and participants without a history of TBI diagnosis on the attachment avoidance dimension, such that the mean total avoidance score of participants with a history of TBI diagnosis ($M = 37.59$; $SD = 8.18$) was statistically significantly higher than the mean total avoidance score of participants with no history of diagnosis ($M = 32.53$; $SD = 8.52$), $F(2,218) = 4.35$, $p < .05$, $\eta^2 = .04$. This apparent difference should be interpreted with caution, given the small sample size of participants with a history of TBI diagnosis (17) compared to the number of those with

no history of TBI diagnosis (189); on a practical level, the effect size indicates TBI diagnosis accounts for only 4% of the variance in mean scores. Nonetheless, it was considered during the interpretation of the following results.

Direct association models

The first requirement for mediation according to Baron and Kenny (1986) is that there be a significant direct relationship between the predictor and the outcome variables. Therefore, unmediated—i.e., direct association—models in which attachment anxiety (Research Question 1a) and attachment avoidance (Research Question 1b) directly predicted PTS, with hazardous alcohol use as an indirect outcome variable, were tested in two steps: measurement models and structural models. All models were tested using Maximum Likelihood (ML) estimation in LISREL 9.1. The computer program syntax was written using a matrix of partial correlations controlling for the effect of the number of traumatic events experienced; in other words, the effect of LEC-5 total score was partialed out of each bivariate correlation between variables. Standard deviations for each variable were also entered into the syntax.

Measurement models

The first step of latent variable path analysis is to specify and test the relationships between measured and latent variables using confirmatory factor analysis (CFA). Structural relationships between latent variables are not included in this step. Two separate measurement models were tested: one with attachment anxiety as a direct predictor of PTS, and one with attachment avoidance as a direct predictor of PTS.

Model specification and identification. For the model with attachment anxiety as the predictor, the even items (10) of the ECR-R-GSF were specified to load onto the

attachment anxiety factor. For the model with attachment avoidance as the predictor, the odd items (10) of the ECR-R-GSF were specified to load onto the attachment avoidance factor. In both models, the total scores of each of the four subscales of the PCL-5 were treated as measured indicators loading onto the PTS factor, as was the total AUDIT Hazardous use score (Figure 4).

In order to proceed to the model estimation phase, the researcher required an over-identified model, in which the number of data points (or observations) was greater than the number of estimated parameters. The number of observations was calculated using the formula $v(v+1)/2$, where v = the number of measured variables. There were 15 measured variables in each measurement model, and thus the calculation was:

$v(v+1)/2 = 15(16)/2 = 120$ observations

The number of estimated parameters in confirmatory factor analysis is calculated by totaling the number of factor loadings, covariances between exogenous variables, variances of exogenous variables, and disturbance variances on measured variables. In each of the two direct association measurement models, there were 15 factor loadings (10 onto the attachment factor and five onto the PTS factor) and 1 covariance between the attachment factor and PTS. Each exogenous variable was standardized and therefore had no error variances, but each of the 15 measured variables had a disturbance variance, bringing the total number of free parameters to 31. Therefore, the number of observations (120) exceeded the number of parameters (31) and the researcher could move on to the model estimation phase.

Model estimation, fit, and modification. Measurement models for the direct association models were tested using confirmatory factor anlaysis (CFA). Model fit was

initially evaluated using the following fit indices as detailed in Chapter 3: Model Chi-Square (χ^2) statistic, Root Mean Square Error Approximation, Standardized Root Mean Square Residual (SRMR), and Comparative Fit Index (CFI).

The initial measurement model for the direct association between attachment anxiety and PTS was a marginal fit for the data, $\chi^2(89)= 225.23$, $p < .01$; RMSEA = .08, SRMR = .07, CFI = .92 (Table 7). Modification indices suggested the addition of an error covariance between ECR-R-GSF items 8 and 20 would lead to a significant decrease in χ^2 of 30.7. On a theoretical level, this suggestion made sense, as both of those items relate to an unmet desire for closeness with others. Therefore, this covariance was added. The modified model showed improved fit, $\chi^2(88) = 193.45$, $p < .01$; RMSEA = .07, SRMR = .06, CFI = .94 (Table 7).

The initial measurement model for the direct association between attachment avoidance and PTS was a poorer fit for the data, $\chi^2 = 276.59$, $p < .01$; RMSEA = .10, SRMR = .06, CFI = .90 (Table 7). Similar to the anxiety model, modification indices suggested the addition of error covariance between ECR-R-GSF items 3, 13, and 19 would lead to a significant decreases in χ^2 ranging from 38.7 to 43.5. This appeared to be sound on a theoretical level, as all of those items relate to depending on other people. Therefore, these error covariances were added. The modified model showed improved fit, $\chi^2 = 149.74$, $p < .01$; RMSEA = .06, SRMR = .05, CFI = .97 (Table 7). With adequate fit for both measurement models, the researcher proceeded to the structural model step.

Structural models

For the direct association structural models, a direct path was added between each attachment factor and PTS.

Model specification and identification. Once again, in order to proceed to the model estimation phase, an over-identified model in which the number of observations exceeded the number of free parameters was required. With the addition of error covariances in the modified measurement models, and one direct path in the structural model, the number of parameters increased to 34 for the attachment anxiety model and 35 for the attachment avoidance model. Both figures were still less than the total number of observations (120).

Model estimation and fit. The structural model for the direct association between attachment anxiety and PTS was an adequate fit for the data, $\chi^2 = 193.45$, $p < .01$; RMSEA = .07, SRMR = .06, CFI = .94. (Table 7). The standardized direct path between attachment anxiety and PTS was .55, $p < .01$. Therefore, the hypothesis (Research Question 1a) that there would be a direct positive relationship between attachment anxiety and PTS was supported.

For the direct association between attachment avoidance and PTS, the structural model was a good fit for the data, $\chi^2 = 151.13$, $p < .01$; RMSEA = .06, SRMR = .05, CFI = .97 (Table 7). The standardized direct path between attachment avoidance and PTS was .56, $p < .01$. Therefore, the hypothesis (Research Question 1b) that there would be a direct positive relationship between attachment avoidance and PTS was supported.

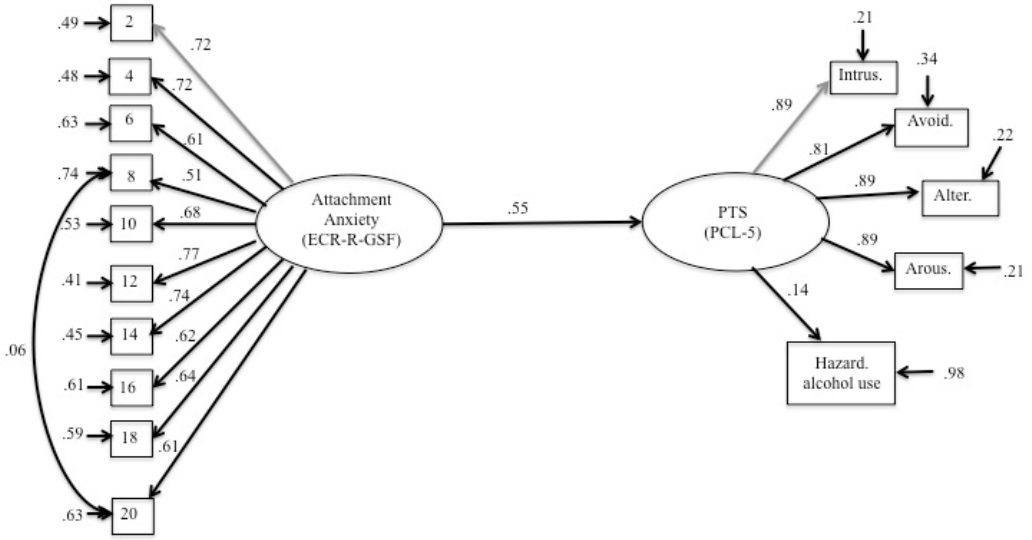
Table 7

Fit Statistics for Direct Association Models

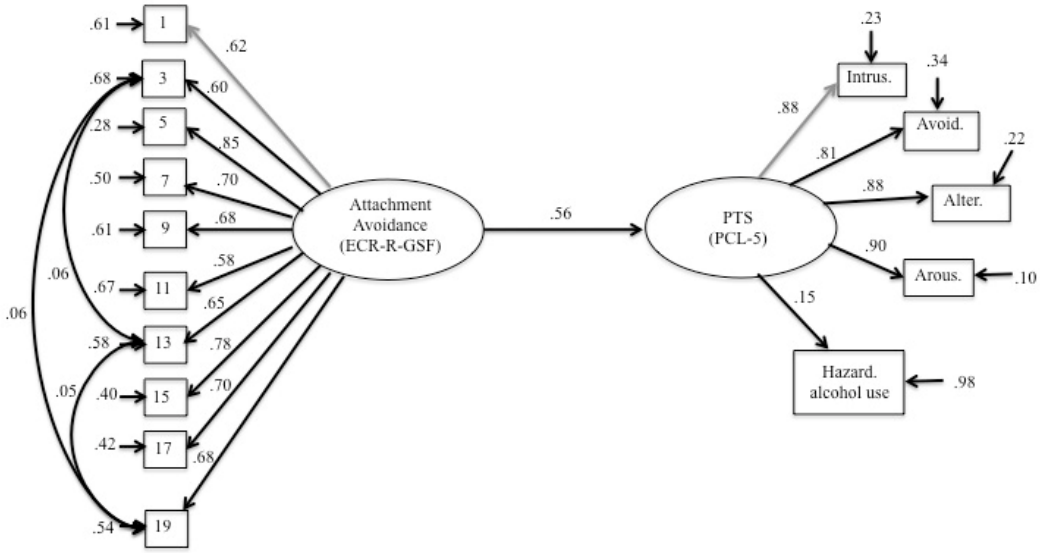
Model	χ^2	*P*	df	SRMR	RMSEA	CFI
Anxiety						
Init. Meas.	225.26	< .01	89	0.07	0.08	0.92
Mod. Meas.	193.45	< .01	88	0.06	0.07	0.94
Structural	193.45	< .01	88	0.06	0.07	0.94
Avoidance						
Init. Meas.	276.59	< .01	89	0.06	0.10	0.90
Mod. Meas.	149.74	< .01	86	0.05	0.06	0.97
Structural	151.13	< .01	86	0.05	0.06	0.97

Figure 4

Final Direct Association Structural Models



Note: All paths significant at the .05 level.



Note: All paths significant at the .05 level.

Mediational models

After verifying that both attachment anxiety and attachment avoidance were direct predictors of PTS, a series of models were generated to test the hypothesis that civilian peer social support either partially or fully mediates the relationship between attachment anxiety and PTS; and attachment avoidance and PTS (Research Question 1 e and f). The military peer support items were not included due to problems with multicollinearity as discussed in Chapter 3.

Measurement models

The first step in testing the mediational models was to verify the factor structures of the latent variables in each measurement model.

Model specification and identification. The researcher specified the even items (10) of the ECR-R-GSF to load onto the attachment anxiety factor; the odd items (10, seven of which were recoded) of the ECR-R-GSF to load onto the attachment avoidance factor; items 6, 7, 9, and 12 of the MSPSS to load onto the civilian peer support factor; the total scores of the four subscales of the PCL-5 (intrusion, avoidance, alterations, and arousal) to load onto the PTS factor; and the total AUDIT Hazardous Use score as a measured variable loading onto the PTS factor (Figure 4).

In order to proceed to the model estimation phase, the researcher required an over-identified model for both the attachment anxiety model and the attachment avoidance model, in which the number of data points (or observations) was greater than the number of estimated parameters. The number of observations was calculated using the formula $v(v+1)/2$, where v = the number of measured variables. After the elimination

of the four military peer support items, there were 19 measured variables in each model, and thus the calculation was:

$v(v+1)/2 = 19(20)/2 = 190$ observations

The number of estimated parameters for the measurement models was calculated by totaling covariances between exogenous variables, variances of exogenous variables, and disturbance variances and factor loadings on measured variables. The exogenous attachment factors were standardized and therefore did not contribute an error covariance to their model, and each of the 19 measured variables contributed a disturbance variance and a factor loading. Therefore, the total number of parameters estimated in each measurement model was 38. Because this is less than the 190 observations calculated, the researcher had an over-identified model and was able to proceed to the model estimation phase.

Model estimation and model fit. Model fit was initially evaluated using the following fit indices: Model Chi-Square (χ^2) statistic, Root Mean Square Error Approximation, Standardized Root Mean Square Residual (SRMR), and Comparative Fit Index (CFI). Both initial measurement models were marginal fits: for the attachment anxiety model, χ^2 (149) = 324.10, $p < .01$; RMSEA = .07, SRMR = .06, CFI = .93; and for the attachment avoidance model, χ^2 (149) = 375.85, $p < .01$; RMSEA = .08, SRMR = .06, CFI = .92 (Table xx).

Model modification and respecification. Modification indices were checked for suggestions to improve the fits of the measurement models. For the attachment anxiety model, modification indices suggested the fit could be improved further with the addition of error covariances between, once again, ECR-R-GSF 8 and 20 ($\Delta\chi^2 = 30.7$), as well as

MSPSS 6 and PSS 7 ($\Delta\chi^2 = 30.2$), and PSS 9 and PSS 12 ($\Delta\chi^2 = 32.1$). Again, the pairing of ECR-R_GSF 8 and 20 was logical, as they both measure feelings about closeness with others. The MSPSS item pairs also made sense on a theoretical level, in that items 6 and 7 reflect tangible or direct support, whereas items 9 and 12 reflect emotional support and communication. Therefore, the researcher decided to allow all three errors to covary. This change led to final measurement model for the attachment anxiety model that was a good fit for the data, χ^2 (147) = 262.84, $p < .01$; RMSEA = .06, SRMR = .06, CFI = .97 (Table xx). For the attachment avoidance model, modification indices suggested the addition of covariances between ECR-R-GSF items 3, 13, and 19, as in the direct association model ($\Delta\chi^2 = 38.4$, 38.9, and 43.8), and covariances between MSPSS items 6 and 7 ($\Delta\chi^2 = 35.5$) and 9 and 12 ($\Delta\chi^2 = 25.9$), as in the attachment anxiety model. The modified measurement model with the addition those error covariances was a good fit for the data, χ^2 (144) = 217.74, $p < .01$; RMSEA = .05, SRMR = .05, CFI = .98 (Table 8).

Structural model

In the second step of latent variable path analysis, structural relationships between latent variables are specified and tested in the model.

Model specification and identification. The model specified in this step differed from the original hypothesized model in that the military peer support factor was removed due to multicollinearity between the items. Therefore, for both attachment anxiety and attachment avoidance, a partial version of the original model was tested, with the following structural relationships: a direct path between the attachment factor and civilian peer support; a direct path between civilian peer support and PTS; and an indirect path between the attachment factor and PTS.

In order to proceed to the model estimation phase, the researcher required an over-identified model, in which the number of data points (or observations) was greater than the number of estimated parameters. The number of observations was calculated using the formula below, where v = the number of measured variables. After the elimination of the four military peer support items, there were 19 measured variables in each mediational model.

$v(v+1)/2 = 19(20)/2 = 190$ observations

The number of estimated parameters was calculated by totaling the number of paths (direct and indirect), covariances between exogenous variables, variances of exogenous variables, and disturbance variances on measured variables. There were two direct paths (attachment factor → civilian peer support, civilian peer social support → PTS) and one indirect path (attachment anxiety → PTS), for a total of three paths. The only exogenous variable in the models was the attachment factor, which was standardized and therefore did not contribute error variance. Each of the 19 measured variables contributed a factor loading and a disturbance variance, for a total of 38 additional parameters. Therefore, the total number of parameters estimated was 41 (three paths, zero covariances, zero error variances, 19 factor loadings, and 19 disturbance variances), which is less than 190 observations. The researcher had an over-identified model and was able to proceed to the model estimation phase.

Model estimation and model fit. Like the measurement model, the structural model was tested using ML estimation in LISREL 9.1. Partial correlations were again used to control for the effects of number of traumatic events experienced (LEC-5 total). Standard deviations for each variable were input in to the syntax.

As in the measurement model, model fit was evaluated using the χ^2 statistic, RMSEA, SRMR, and CFI. The initial structural model for attachment anxiety was a marginal fit for the data, χ^2 (149) = 363.44, $p < .01$; RMSEA = .07, SRMR = .11, CFI = .94 (Table 8). The initial structural model for attachment avoidance was also a marginal fit for the data, χ^2 (145) = 254.38, $p < .01$; RMSEA = .06, SRMR = .11, CFI = .96 (Table 8).

Model modification and respecification. Modification indices were checked for ideas on how to improve model fit. For the attachment anxiety model, the indices suggested two modifications that made theoretical sense: First, the addition of a direct path between attachment anxiety and PTS, which was consistent with a partial mediation model ($\Delta\chi^2 = 37.6$). Second, the reversal of the path between civilian peer support and PTS, such that PTS predicted civilian peer support ($\Delta\chi^2 = 37.6$). Therefore, two modified models were tested reflecting each of those changes.

The partial mediation model, featuring the addition of the direct path between attachment anxiety and PTS, was good fit for the data, χ^2 (146) = 262.84, $p < .01$; RMSEA = .07, SRMR = .06, CFI = .97 (Table 8). The final structural model is presented in Figure 5. The direct paths between attachment anxiety and both civilian peer support (-0.31) and PTS (0.48) were significant, indicating a strong negative relationship between attachment anxiety and civilian peer social support, and a strong positive relationship between attachment anxiety and PTS. The path between civilian peer support and PTS, however, was smaller (-0.11), indicating a weaker negative relationship between civilian peer support and PTS. PTS also significantly predicted problem alcohol use, but the

relationship was relatively weak and should be interpreted with caution, as discussed, due to the low prevalence of problem drinking in the sample overall.

According to Kenny (2012), the indirect, or mediation effect, can be calculated as the product of path a (predictor→ mediator) and path b (mediator→ outcome): -0.31*-0.11 = 0.03. Recently, Imai, Keele, and Tingly (2010) have also suggested the indirect effect can be calculating as c-c', or the difference between the predictor-to-outcome path in the direct association model and the predictor-to-outcome path in the mediational model: 0.55-0.48 = 0.07. Thus, it appears that the mediation effect, though present, was rather small.

The second modified model, in which PTS completely mediated the relationship between attachment anxiety and civilian peer support, was also good fit for the data, χ^2 (146) = 270.17, $p < .01$; RMSEA = .07, SRMR = .06, CFI = .95 (Table 8; Figure 6). The direct path between attachment anxiety and PTS was positive and significant (0.52), and the direct path between PTS and civilian peer support was negative and significant (-0.28). The indirect effect can be calculated as the product of the path a and path b, thus .52*-0.28 = 0.15. This mediation effect can be considered moderate.

For the attachment avoidance model, modification indices also suggested the addition of the direct path between attachment avoidance and PTS ($\Delta\chi^2 = 33.3$), and the reversal of the path between civilian peer support and PTS, such that PTS predicted civilian peer support ($\Delta\chi^2 = 33.3$). Therefore, models corresponding with each of modifications were tested. The first modified model, in which civilian peer support partially mediated the relationship between attachment avoidance and PTS, was a good fit for the data, χ^2 (144) = 217.74, $p < .01$; RMSEA = .05, SRMR = .05, CFI = .98 (Table

8). The paths between both attachment avoidance and PTS and attachment avoidance and civilian peer support were both strong and significant (0.51 and -0.54 respectively). The path between civilian peer support and PTS, however, was very weak (0.02) and insignificant. Therefore, one of the requirements for mediation was not met, and the mediation hypothesis was not supported for the attachment avoidance model (Research Question 1e).

The second modified model, with PTS completely mediating the relationship between attachment avoidance and civilian peer support, did not improve the SRMR and was still only a marginal fit for the data, χ^2 (145) = 267.41, $p < .01$; RMSEA = .06, SRMR = .12, CFI = .96 (Table 8).

Table 8

Fit Statistics for Mediational Models

Model	χ^2	*P*	df	SRMR	RMSEA	CFI
Anxiety						
Init. Meas.	324.10	< .05	149	0.06	0.07	0.93
Mod. Meas.	262.84	< .05	147	0.06	0.06	0.97
Full med.	363.44	< .05	149	0.11	0.06	0.94
Part. med.	262.84	< .05	146	0.06	0.07	0.97
PTS full med.	270.17	< .05	146	0.06	0.07	0.95
Avoidance						
Init. Meas.	375.85	< .05	149	0.06	0.08	0.92
Mod. Meas.	217.74	< .05	144	0.05	0.05	0.98
Full med.	254.38	< .05	145	0.11	0.06	0.96
Part. med.	217.74	< .05	144	0.05	0.05	0.98
PTS full med.	267.41	< .05	145	0.12	0.06	0.96

Figure 5

Civilian Peer Social Support as Partial Mediator between Attachment Anxiety and PTS

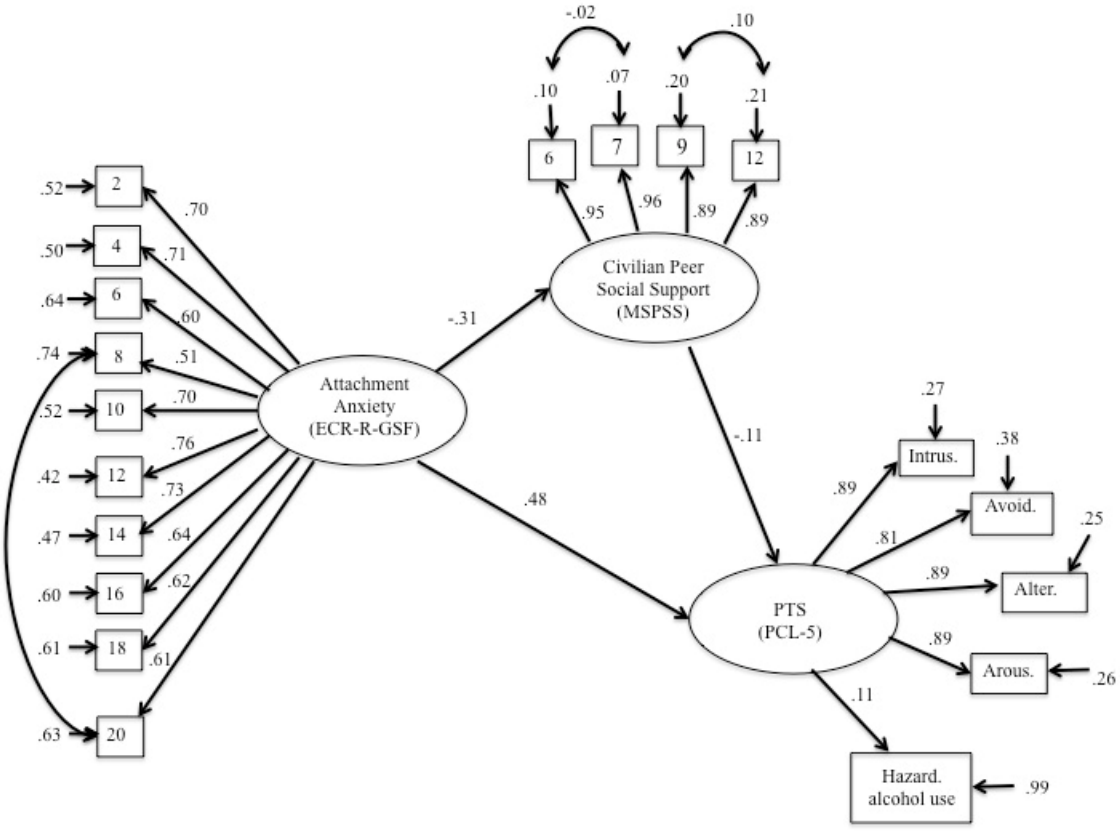
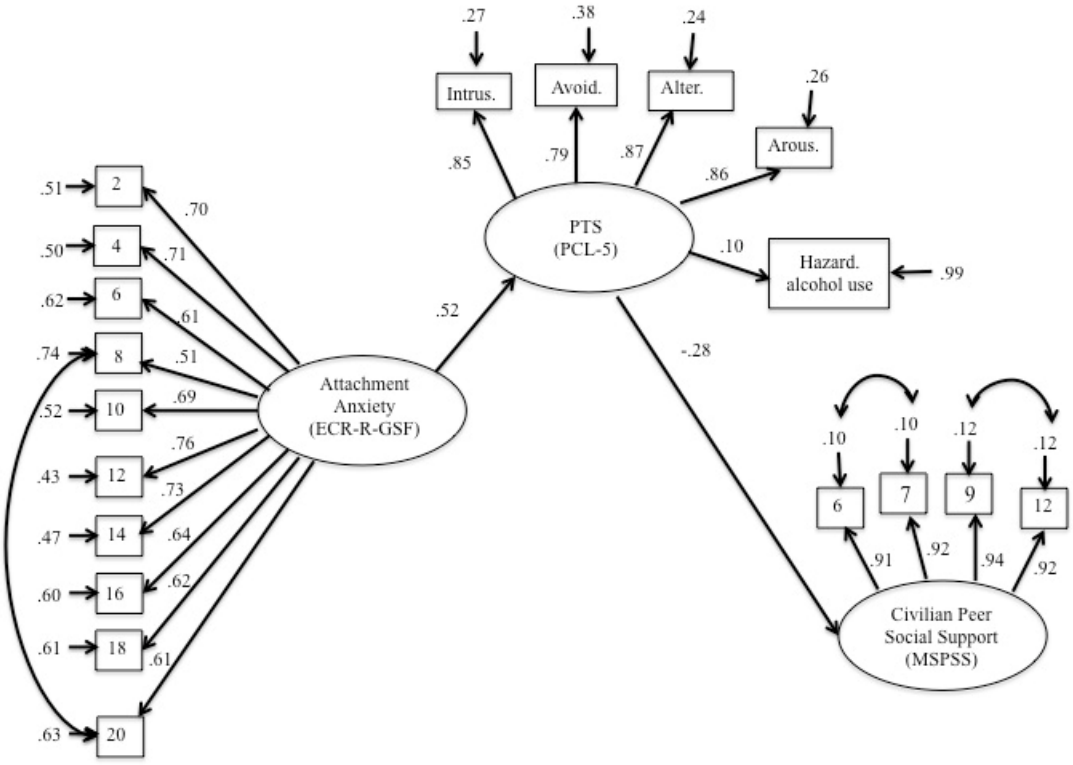


Figure 6

PTS as Full Mediator Between Attachment Anxiety and Civilian Peer Support



Note: All paths significant at the .05 level.

Summary of research questions and hypothesis testing decisions

1) Does perceived social support from civilian peers and/or military peers mediate the relationship between adult attachment orientation and PTS among military and veteran students?

    a. Is there a direct relationship between attachment anxiety and PTS among military and veteran students?

        H1a: *There will be a direct relationship between attachment anxiety and PTS among military and veteran students.*

        Decision: This hypothesis was supported.

    b. Is there a direct relationship between attachment avoidance and PTS among military and veteran students?

        H1b: *There will be a direct relationship between attachment avoidance and PTS among military and veteran students.*

        Decision: This hypothesis was supported.

    c. Is there a direct relationship between attachment anxiety and perceived social support from civilian and/or military peers among military and veteran students?

        H1c: *There will be a direct relationship between attachment anxiety and perceived social support from civilian and military peers among military and veteran students.*

        Decision: This hypothesis was supported.

d. Is there a direct relationship between attachment avoidance and perceived social support from civilian and/or military peers (mediator) among military and veteran students?

   H1d: *There will be a direct relationship between attachment avoidance and perceived social support from civilian and military peers among military and veteran students.*

   Decision: This hypothesis was supported.

e. Is there a direct relationship between perceived social support from civilian and/or military peers and PTS among military and veteran students?

   H1e: *There will be a direct relationship between perceived social support from civilian and military peers and PTS among military and veteran students.*

   Decision: This hypothesis was supported for civilian peer social support in the attachment anxiety model only. Multicollinearity between the military peer support items precluded further testing.

f. Does perceived social support from civilian and/or military peers mediate the relationship between attachment anxiety and PTS among student veterans, such that this path is significantly diminished (partial mediation) or becomes zero (full mediation)?

   H1f: *Perceived social support from civilian AND military peers will either partially or fully mediate the relationship between attachment anxiety and PTS among military and veteran students.*

Decision: This hypothesis was supported only for civilian peer support as a partial mediator, and the mediation effect was small. Multicollinearity between the military peer support items precluded further testing.

g. Does perceived social support from civilian and/or military peers mediate the relationship between attachment avoidance and PTS, such that this path is significantly diminished (partial mediation) or becomes zero (full mediation)?

H1g: *Perceived social support from civilian AND military peers will either partially or fully mediate the relationship between attachment avoidance and PTS among military and veteran students.*

Decision: This hypothesis was not supported.

2) Is there a direct relationship between PTS and problem alcohol use among military and veteran students?

H2a. *There will be a direct relationship between PTS and problem alcohol use military and veteran students.*

Decision: This hypothesis was supported, however the measure of problem alcohol use was reduced to include only the Hazardous Use items on the AUDIT, which relate to hazardous alcohol use behaviors (frequency and amount of alcohol consumed).

Chapter 5: Discussion

The purpose of this study was to explore on-campus social support from both military and civilian peers as a potential mediator between adult attachment and posttraumatic stress (PTS) in military and veteran students. Hazardous alcohol use also was included as an indirect outcome variable. Data was collected via online, self-report survey from 276 respondents from across the United States over a period of two months. The mediation model was tested using latent variable path analysis with a final sample of 221 cases. Due to psychometric issues with items measuring military peer support, only a partial model with civilian peer support as a mediator between attachment anxiety and PTS/hazardous alcohol use was ultimately tested. Results indicated that civilian peer support did act as a small but significant partial mediator between attachment anxiety and PTS. To the researcher's knowledge, this is the first study to date to use structural equation modeling to explore psychosocial predictors of PTS in U.S. military and veteran students, and the only study to examine the relationship between adult attachment, peer social support, and PTS in that population.

This chapter discusses the major findings of this study in the context of existing literature on attachment, social support, and PTS in the military and veteran student population as well as military and university populations more broadly. Limitations, future directions for research, and implications for counseling are also discussed.

Major descriptive findings

Trauma exposure

There were several notable descriptive findings in this study. First, participants in this sample reported a relatively high level of trauma exposure and PTS. The mean and

modal number of potentially traumatic events (PTEs) reported by participants was 8.67 and 10.00 respectively, out of a possible 17. Comparisons to previous research are difficult to make; to the researcher's knowledge, this is the first study to collect data on PTEs using the LEC-5 in a sample of military and veteran students. Previous studies have looked specifically at combat exposure and have not included other trauma types. More than 70% of participants in the current study reported experiencing combat either directly, as a witness, or as part of their job. The most commonly reported traumatic experiences, however, were transportation accident (80.55%) and physical assault (71.94%). Additionally, the prevalence of sexual assault in this sample was striking. Nearly 20% of participants reported directly experiencing sexual assault in their lifetime, and another 6% reported they had either witnessed it or that it was "part of their job". Among female students in the sample, however, more than half reported directly experiencing sexual assault and more than 70% reported directly experiencing another unwanted sexual experience at some point in their lives. It is important to note that these findings refer to sexual victimization at *any* point over the lifetime; sexual trauma during military service was not asked about in isolation. Prevalence rates of sexual trauma in military populations are difficult to calculate due to low reporting rates, stigma, and fears of professional repercussions, and range anywhere from 4-71% (Suris & Lind, 2008). A recent study of 409 student service members and veterans found that 26.1% of women and 7.1% of men had experienced sexual assault at some point in their lives, and 42.6% of women and 10.1% of men had experienced another unwanted sexual experience. (Bryan, Bryan, & Clemans, 2014). The results of the current study suggest the rates may be even higher, adding to the mounting evidence that sexual trauma—whether

experienced before, during, or after military service—is highly prevalent among military service members and veterans.

Taken together, the descriptive findings related to trauma exposure indicate that military and veteran students experience a wide variety of traumatic events beyond experiences that are traditionally associated with combat or the "warzone". Researchers have noted that the theaters of OEF/OIF differ significantly from previous wars; improvised explosive devices (IEDs), roadside bombs, terrorist threats, urban warfare, and chemical weaponry are distinctive features of the Iraqi and Afghan conflicts (Kinney, 2012; Tanelian & Jaycox, 2008). Interestingly, approximately 17.65% of participants conceptualized their experience of a fire or explosion as "part of their job"; another 18.55% considered exposure to a toxic substance as "part of their job". More than half of participants reported sexual victimization (sexual assault or other unwanted sexual experience) at some point in their lives, making it the third most common traumatic event experienced after transportation accident and physical assault—more common than exposure to combat or other warzone experience. Therefore, previous studies that have looked only at combat-exposed military and veteran students may not have captured the full range of individuals or experiences in this population.

Posttraumatic stress

The level of PTS in the sample of 221 military and veteran students was normally distributed with both mean and median PCL-5 scores falling near the cut point of 28 for moderate PTS. Nearly 40% (88 participants; 39.81%) of this sample met the criteria for a provisional diagnosis of PTSD according to PCL-5 scoring guidelines outlined by the National Center for PTSD, and more than half (116; 52.48%) scored above a recently

recommended cut-point of 24 (Wortmann, et al., 2015). These figures are consistent with previous research finding that 46% of military and veteran students reported symptoms consistent with PTSD diagnosis (Rudd et al., 2011). These results should be interpreted with caution given the PCL-5 is a self-report measure designed only as a *provisional* diagnostic tool (only a trained clinician should make a final diagnosis of PTSD). Nonetheless, it is striking that approximately 40% of participants in two separate samples of military and veteran students reported symptoms consistent with PTSD, given that only 29.1% of veterans utilizing VA healthcare (U.S. Department of Veterans Affairs, 2013), 12.5% of OEF/OIF veterans (Hoge et al., 2004), and 6-17% of university students (Clemans, 2015), and 8% of the general U.S. population meet the criteria for the diagnosis (Kilpatrick et al., 2013). Thus, the current study adds to the evidence that military and veteran students may experience PTSD at higher rates not only than the general population but also compared to other veterans and university students. This finding is particularly concerning given previous research suggesting that PTSD increases the risk of suicidal ideation and behaviors among student veterans (Rudd et al., 2011).

Alcohol use

Surprisingly, despite the prevalence of PTS, participants reported very low rates of problematic alcohol use. This finding differs from previous research indicating that military and veteran students are drinking at high rates similar to their civilian peers (Barry et al., 2012; Widome et al., 2011). Only 51 participants (23.08%) had an AUDIT score higher than 8, which is considered the cutoff for "hazardous and harmful alcohol use", and only 9 (4.08%) scored 20 or above, which "clearly warrant[s] further diagnostic evaluation for alcohol dependence" (Babor et al., 2001, p. 20). Thirty participants

(13.57%), on the other hand, reported they never drink alcohol at all. Removal of the dependence and harmful use questions of the AUDIT corrected initial issues with bivariate and univariate normality; Cronbach's alpha coefficients for those two subscales also were rather low.

Reported alcohol use behaviors in the current sample may have been low for a variety of reasons. First, the sample was recruited through military and veteran student organizations on campus. This group may reflect a high-functioning subset of military and veteran students in a variety of ways, including limited problem alcohol use. Furthermore, recent research suggests that military-affiliated students who are deployed may be at greater risk for problem drinking than those who are not deployed (Grossbard et al., 2014). Deployment status was not directly asked about in the current study, and the recruitment method through campus organizations may not have accessed many students currently away on deployment. Finally, issues with reliability and normality for the AUDIT questions used to assess alcohol dependence and harmful use suggest that this measure was not the best instrument for measuring problematic alcohol use in this population and/or via online, self-report survey (vs. interview).

Adult attachment orientation

Participants in this study appeared to represent the full range of adult attachment orientation, with mean item total scores falling around the midpoint of 3.00 for the total scale as well as the Anxiety and Avoidance subscales. Interestingly, participants reported significantly higher levels of attachment avoidance than attachment anxiety. This finding is consistent with the suggestion by other researchers that attachment avoidance may be more common than attachment anxiety in military populations (Renaud, 2008), however

it does not support the idea that participants with avoidant attachment styles are underrepresented or more difficult to recruit (Currier et al., 2012; Muller & Rosenkranz, 2009).

Social support

Military and student veterans in this study reported the highest level of perceived social support from significant others, followed by family, military peers, and civilian peers. This ordering differs from the only other study to date that has added a military peer support dimension to the Multidimensional Scale of Perceived Social Support. Wilcox (2010) found that married male combat veterans reported the highest levels of perceived social support from family, followed by military peers, friends in general, and significant others. Other studies of military and veteran students consistently report higher levels of perceived social support from family versus friends, however that this support may not necessarily predict PTS, as discussed below (Nyaronga & Toma, 2015; Romero et al., 2015). Low levels of perceived social support from friends among military and veteran students is consistent with previous qualitative research indicating that they feel isolated from their peers (DiRamio et al., 2008). One factor that was not directly considered in the current study but may have played a role is institution size; the majority of participants in the current study came from public, four-year universities that tend to be larger than other types of schools, and therefore may be more intimidating to navigate in terms of accessing social support from civilian peers.

As noted in Chapter 4, severe multicollinearity between all four military peer support items prevented their inclusion in the latent variable path analysis—and perhaps indicated that the four items were not independently necessary to measure perceived

social support from military peers. This differs from Wilcox (2010), who did not report multicollinearity and found the added military peer support items had a Cronbach's alpha of only .73, compared to .98 in the current study. There are a few possible explanations for this difference. First, different subgroups of military service members may perceive social support in different ways or value different sources of social support more strongly. Wilcox's sample consisted only of married male combat veterans, who, interestingly, reported the highest level of social support from military peers and lowest level of social support from significant others. This result appears consistent with previous studies finding high rates of marital difficulties among male combat veterans, particularly those diagnosed with PTSD (Price & Stevens, 2015). As noted by Wilcox, married male combat veterans may spend more time with family and military peers versus civilian friends—whereas the diverse sample of military and veteran students in the current study may be surrounded by a wider range of potential support (e.g., campus resources, civilian student friends, student organizations, etc.). This may decrease the potential impact and nuances of military peer social support. Additionally, the instruction that participants in the current study consider only on-campus military peers may have severely limited the number of individuals they were considering when answering the questions, such that each question was answered in a very similar way. Military and veteran students are likely to receive a significant amount of support from military peers *off-campus* (e.g., while on deployment or participating in military-related activities and organizations), and this was not captured in the current study.

Relationship between Adult Attachment Orientation and PTS

The strong relationship between adult attachment orientation and PTS is already well established in the literature (see Mikulincer & Shaver, 2007, for a review); however, to the researcher's knowledge, this study is the first to confirm this relationship in a sample of U.S. military and veteran students. Furthermore, the current study separated the dimensions of attachment anxiety and attachment avoidance. The researcher's finding that greater attachment anxiety strongly predicts greater PTS among U.S. military and veteran students is consistent with previous research with Israeli university students (Besser & Neria, 2012); U.S civilian university students (Sandberg, Suess, & Heath, 2010); survivors of interpersonal trauma (Elwood & Williams, 2007); and Portuguese war veterans (Ferrajao & Oliveira, 2015). Those studies consistently report that attachment anxiety, not attachment avoidance, mediates the relationship between trauma exposure and PTS.

The results of this study suggest, however, that attachment avoidance is also strongly predictive of PTS. Previous research has suggested that, specifically in military populations, attachment avoidance is actually more predictive of PTS than attachment anxiety (Renaud, 2008), but that service members and veterans with avoidant attachment styles tend to be underrepresented in the existing literature because they are less likely to participate in research studies. This did not appear to be the case in the current study, however, as items reflecting avoidance were actually endorsed slightly but significantly more highly than items reflecting anxiety. In this sample, individuals with higher levels of attachment avoidance also reported higher levels of PTS.

Civilian Peer Support as a Partial Mediator between Attachment and PTS

The central hypothesis of this study was that both civilian and military peer social support would act as mediators in the relationships between attachment anxiety and PTS and attachment avoidance and PTS, with problem alcohol use as an indirect outcome variable through PTS. Due to multicollinearity between the military peer support items, however, only the civilian peer support items could be included in the latent variable path analysis. The problem alcohol use variable also was reduced to include only the hazardous use (frequency and consumption) items due to a lack of normality and reliability in the other items. Thus, the researcher tested only partial models in which civilian peer support mediated the relationship between the attachment factors and PTS, with hazardous alcohol use as an indirect outcome variable.

For attachment anxiety, the initial models in which civilian peer support was theorized as a full mediator between attachment anxiety and PTS and attachment avoidance and PTS (i.e., no direct path between attachment anxiety and PTS), were not supported. A modified model with the addition of a direct path between attachment anxiety and PTS, as well as error covariances between pairs of logically related civilian peer support items, achieved adequate fit, though the size of the mediation effect was small. Similar modifications were made to the attachment avoidance model, and fit indices improved; however the relationship between civilian peer support and PTS was insignificant.

The results indicate that civilian peer support acted as a partial mediator between attachment anxiety, but not attachment avoidance, and PTS in this sample of U.S. military and veteran students. This is generally consistent with Besser and Neria's (2012)

finding that overall social support partially mediated the relationship between attachment anxiety and PTS among Israeli university students recently exposed to a missile attack. One potential explanation for the interplay between attachment anxiety and social support is that anxiously attached individuals may reach out in negative ways that feel overwhelming to—and thus ultimately repel—potential supporters, while avoidant individuals are less likely to reach out in the first place (Mikulincer & Florian, 1995). Research has shown that such negative social interactions increase the risk of PTS, while positive social interactions protect against PTS (Koenen et al., 2003). Military and veteran students may feel particularly anxious about their relationships with civilian peers, from whom they report feeling disconnected and isolated (DiRamio et al., 2008). This sense of disconnection stems not only from differences in life experiences, but also from demographic differences such as age and marital status that may lead military and veteran students to feel they have little in common with their classmates. Thus, they may have a difficult time establishing relationships with civilian students—the largest potential source of support on most U.S. campuses.

It is important to note, however, that though the results do lend support to the partial mediation hypothesis, the strength of indirect (mediation) effect was rather small in comparison to the direct path between attachment anxiety and PTS. In other words, though civilian peer support seemed to explain part of the relationship between the variables, its role was relatively small. By contrast, Besser and Neria found the direct path between attachment anxiety and PTS was diminished nearly to the point of insignificance with the addition of social support as a mediator. There are several possible explanations for this difference. First and foremost, the students in Besser and

Neria's sample were responding to PTS in relation to a common traumatic event they had all experienced: a missile attack. Thus, the impact of social support as participants coped collectively with their trauma was likely quite strong. The U.S. military and veteran students in the current study, on the other hand, were from different institutions across the country, reporting symptoms of PTS related to different types and instances of trauma. Second, the researcher ultimately looked only at civilian peer social support, while Besser and Neria considered social support more broadly. And lastly, of course, the samples reflect different populations. Though Israeli university students may be considered student veterans due to military conscription in their country, they were younger on average than—and the nature of their military service likely differed significantly from—the current U.S. sample.

The relatively small effect of civilian peer social support suggests that by no means is it the only mechanism through which attachment anxiety affects PTS. Certainly, other forms of peer social support—perhaps most notably military—that were not explored in this study could play significant roles. Relatedly, individuals who enter military service with insecure attachment orientations tend to have difficulty forming attachment bonds with their unit, which is critical both to the training process and successful functioning within the military later on (Mikulincer & Florian, 1995; Tucker et al., 2005). Without those critical bonds, insecurely attached individuals may experience greater interpersonal conflict and a lack of support from their unit and the military community more broadly, thus increasing their risk for PTS. Therefore, by the time they arrive on campus, the relationship between insecure attachment and symptoms of PTS is already well established, and may be only slightly impacted by—and perhaps inhibit

access to—new sources of social support. This pattern may then be compounded by demographic differences between military and university students and their civilian peers, such as age and marital status.

PTS as a Mediator between Attachment and Civilian Peer Social Support

Interestingly, the modified model in which PTS acted as a full mediator between attachment anxiety and civilian peer social support was a good fit for the data. This is consistent with previous research that has raised questions about the directionality of the association between social support and PTS (King et al., 2006; Keane et al., 1985). Though the prevailing theory has been that social support acts as buffer between trauma exposure and PTS—such that low levels of social support predict the severity of PTS following a trauma (Brewin, 2003; King et al., 1999)—there is some longitudinal data suggesting that PTS may actually predict social support among veterans (King et al., 2006). In other words, symptoms of PTS may result in interpersonal problems that hinder a veteran's ability to access social support. The current study raises the possibility that the high prevalence of PTS among military and veteran students may account, at least in part, for their feelings of isolation on campus.

Indeed, the timing of traumatic events reported by participants in this study was unknown and may have played a significant role. Many of the military and veteran students in this sample likely experienced trauma prior to entering college. Those with anxious attachment styles may have been more likely to develop symptoms of PTS—and it is perhaps those symptoms that inhibit the development of civilian peer social support, and not the other way around. Interestingly, PTS was not found to mediate the relationship between attachment avoidance and civilian peer social support. Perhaps,

while avoidant individuals with PTS eschew civilian social support altogether, individuals with anxious attachment actually attempt to access support for their mental health difficulties but encounter negative interactions with their peers in doing so.

Bowlby's original theory posited that conditions producing insecure attachment in childhood impair an individual's ability to cope with stress in the long term. Accordingly, the relationship between attachment orientation and PTS tends to be stronger among survivors of early life traumas versus later-life traumas (Ogle, Rubin, & Siegler, 2015). Among veterans specifically, a history of adverse childhood experiences (ACEs) increases the risk for the development of PTSD (Bremner, et al., 1993; Engel et al., 1993; Zaidi & Foy, 1994). This phenomenon is perhaps best understood within a neuropsychosocial framework, in which exposure to early-life trauma results changes to neurological wiring that fundamentally impact the ability to cope with stress—both on a physiological level and a psychosocial level by inhibiting the formation of protective attachment bonds later in life (Score, 2002; Schechter, 2012; van der Kolk, 2014). Therefore, military and veteran students exposed to early life traumas may enter military service *and* higher education at a disadvantage for coping with subsequent traumatic events (such as combat and sexual victimization).

Military and Veteran Students as Survivors of Complex Trauma

The results of this study indicate that the growing number of service members and veterans on U.S campuses have experienced a wide range of traumatic events in their lives. The modal number of 10 potentially traumatic events (PTEs) experienced by participants in this study is striking when compared to the figure of three for the general population (Kilpatrick et al. 2013). More than 80% of participants reported experiencing

five or more traumatic events at some point in their lifetime. All but one of the 17 PTEs had been directly or indirectly experienced by more than 30% of participants.

These figures suggest that military and veteran students are survivors of complex trauma, both in terms of the number and types of traumas commonly experienced (e.g., combat, sexual victimization, witnessing or causing harm to others). This may, in part, explain why the prevalence of PTS in this population appears to be higher than in the general and university populations; it is well established that survivors of repeated, complex traumas are more likely to develop PTSD than survivors of single incident traumas (e.g., Kessler et al., 1995). The question remains, however, as to why initial reports of PTS among *student* service members and veterans appear so much higher than rates of PTS among military-affiliated populations in general. This may be due in large part to reporting issues and the comparative ease of access to student populations for research purposes, as well as the tendency of veterans who are students to be younger. It is also possible that certain elements of the higher education experience—such as feelings of isolation, academic stress, and potential exposure to another traumatic event (e.g., sexual assault)—increase the risk or severity of PTS.

Limitations

This study was strengthened by its diverse sample of military and veteran students from across the United States and by the use of structural equation modeling to answer the research questions. Most previous investigations have focused on students from one university or geographic region and have relied on descriptive statistics or inferential techniques such as multiple regression analysis that are more vulnerable to measurement error. Furthermore, this is one of only three studies to date that has examined

psychosocial predictors of PTS—and the only one to look at the relationship between attachment, social support, and PTS—among military and veteran students.

There were, however, several limitations to this study. As a cross-sectional survey study, it was vulnerable to self-report and interpretation bias. Furthermore, directionality and causality cannot be assumed from the results. Though structural equation modeling is a more robust technique than multiple regression analysis, only correlational inferences can be drawn from cross-sectional data. As discussed above, the directionality of the relationship between social support and PTS remains in question.

With respect to generalizability, it is important to note that, despite the high levels of trauma and PTS observed in this sample, military and veteran students may be considered a higher-functioning subset of the military population as a whole; therefore the results and conclusions of this study should be applied only to that subset. Another potential limitation was the method of recruiting students through student veterans' organizations. In order to receive the survey invitation, students needed to be subscribed to the email listserv of veterans' offices or organizations on campus, and therefore may reflect a group of students that is more connected to resources. And of the students who received the invitation, those who responded may be more interested in student veterans' issues, which may have influenced the results. Additionally, there was some evidence that participants with a history of traumatic brain injury (TBI) diagnosis were higher in attachment avoidance that individuals with no history of diagnosis. It is possible that the relationships tested in this study would look different in a larger group of individuals with a positive TBI history.

Furthermore, psychometric issues during data analysis limited the researcher's ability to fully test the original research questions. Items related to military peer support could not be included due to multicollinearity. Additionally, because the current sample was very low in alcohol use overall, the original variable of problem alcohol use had to be reduced to items measuring frequency and consumption of alcohol (hazardous alcohol use). These issues suggest that there may be better ways to measure military peer support and alcohol use in military and veteran students. Lastly, the trauma exposure measure used (the LEC-5) does not necessarily distinguish between discrete trauma exposures and multiple trauma types experienced during a single event; for example, a participant who endorsed "transportation accident", "severe human suffering", and "fire or explosion", could have experienced each of those events separately, or together as part of a single event. Therefore, the modal number of 10 potentially traumatic events reported by the participants in this study could be inflated due to this limitation.

Suggestions for Future Research

The current study raises several questions that should be explored in future investigations. First, the finding that nearly 40% of participants met the criteria for a provisional diagnosis of PTSD is alarming and echoes another large-scale survey study of military and veteran students (Rudd et al., 2011). Further data on the prevalence rates of PTS and other mental health difficulties must be collected in order to better understand the treatment needs of this population; wherever possible, researchers should consider using interview assessments in addition to self-report surveys in order to gather the most accurate information. Second, though civilian peer support was identified as a partial mediator in the relationship between attachment anxiety and PTS in military and veteran

students, the relatively small effect size suggests that this relationship is far more complex. Researchers should continue to explore potential mechanisms through which attachment anxiety affects PTS in this population, including other forms of social support. Perhaps one of the most interesting possibilities is that insecure attachment affects the ability to form critical attachment bonds within and to the military unit; thus, future studies should explore the role of military affiliation and culture as a mediator between adult attachment and PTS.

To fully examine this picture, researchers must be able to accurately measure key constructs such as military peer support and military culture. The results of this study suggest there may be a more nuanced way to measure military peer support than adapting the friend support items of the MSPSS. Further scale development and validation work may be necessary to accurately capture this construct. Similarly, the development of scales to measure military culture is still in its infancy.

Future explorations of attachment, social support, and other psychosocial predictors of PTS in military and veteran students could be more specific than the current study through the use of a latent group comparison technique such as structured means analysis. It should be noted, however, that such an investigation would require a much larger sample size—ideally more than 200 participants *per* group (Hancock, 2001). The experiences of military and veteran students relative to their civilian peers could be better understood with the inclusion of a comparison group of non-military students. The relationship between psychosocial predictors and PTS could also be compared across gender, military branch, combat vs. non-combat veterans, on-campus vs. off-campus students, and so on. For example, it may be useful to compare across gender because

male and female service members and veterans may have disparate experiences due to different prevalence rates of traumatic events such as combat exposure and sexual victimization. As suggested by Sandberg et al. (2010), it may be important to separate trauma types when considering the relationship between attachment, social support, and PTS. It is possible that because the association between insecure attachment and PTS is particularly strong among survivors of interpersonal, early life traumas, the mediational role of social support could be much stronger in that population as well.

At the same time, the descriptive results of this study highlight the fact that military and veteran students are likely to be survivors of multiple and complex traumas. It may be difficult to separate one traumatic event from another, especially when using a cross-sectional design. Ideally, future investigations would follow a longitudinal design, examining the relationship between attachment, social support and PTS following a newly experienced traumatic event, while accounting for trauma history. This would also allow researchers to gather more information on the directionality of the relationships between attachment, social support, and PTS.

Implications for Practice

This study has several implications for counselors and university staff concerned with the mental health of military and veteran students. Many of the current recommendations for "veteran-friendly" campuses highlight the importance of creating a "dedicated veterans' space and point of contact", with the aim of increasing access to veteran peer support as well as targeted financial and academic resources (American Council on Education, 2015). The results of this study do not diminish the importance of such efforts, but they also suggest that civilian peer support may play a role in the mental

health of students by, at least to some degree, reducing psychosocial risk for PTS. Therefore, creating a "culture of trust and connectedness", per President Obama's recommendation for veteran-friendly institutions, should involve efforts to enhance the connection not only between military-affiliated students, but also between military-affiliated students and their civilian peers. One way to do this would be to provide psychoeducation to both groups of students—perhaps through outreach events—about differences in their life experiences and how to bridge communication gaps. In a clinical setting, university counseling centers could offer mixed process groups of military and non-military affiliated students, thus creating a safe space for communication and connection. Counselors also could intervene during individual sessions by encouraging exploration of student veterans' friendships with civilians. Behavioral approaches such as social skills training could be used to develop and enhance those relationships. Such efforts may be particularly important for military and veteran students with anxious attachment styles and severe symptoms of PTS, as the current results suggest that those symptoms may preclude them from accessing civilian peer social support on their own.

The persistent strength of the relationship between attachment anxiety and PTS, however, suggests that attachment-oriented counseling approaches may be helpful for military and veteran students experiencing symptoms of both constructs. Within the framework of the therapeutic relationship, the counselor can act as a secure base from which the student can explore both traumatic experiences and related interpersonal difficulties. Through the provision of a safe holding environment, counselors may be able to help clients rework their anxious attachment patterns (Muller, Kraftcheck, & McLewin, 2004). This is achieved not only by providing a corrective emotional

experience in which the counselor is a consistent and reliable source of support (Teyber & McClure, 2006), but also by targeting maladaptive working models of the self in relation to others (Muller, Kraftcheck, & McLewin, 2004). Counselors may be able to promote self-esteem and affect tolerance in military and veteran students, perhaps within relevant frameworks such as McCann and Pearlman's (1992) constructivist self-development theory or Briere's (1997) self-trauma model. Both frameworks are appropriate for survivors of complex trauma (Courtois, 2010), which likely characterizes most military and veteran students. Self-development theory may be particularly useful, in that it was specifically developed with traumatized university students in mind. In this approach, counseling progresses sequentially, beginning with stabilization of acute symptoms and development of positive coping skills, and moving toward reworking of maladaptive working models of the self. Counselors help their clients increase their capacity to tolerate and regulate overwhelming emotions and affect, including in relation to intrusive traumatic memories; and to rework cognitive schemas about themselves, others, and the world (McCann and Pearlman, 1992). In turn, mental health professionals working with military and veteran students may help ameliorate anxious attachment behaviors, thus improving access to social support and reducing the risk of PTSD.

Summary and conclusions

The primary findings of this study are as follows:

1. Nearly 40% of military and veteran students reported symptoms consistent with a current probable diagnosis of PTSD. This figure is much higher than prevalence rates of PTSD among broader populations of military veterans and university students.

2. Military and veteran students in this study reported experiencing a wide variety of traumatic events in their lifetime, with more than 80% of participants endorsing five or more types of events. This figure suggests that military and veteran students are survivors of repeated and complex trauma.
3. Despite the high prevalence of trauma exposure and PTS in this sample, alcohol use was very low in general. Less than one quarter of participants reported alcohol use that is consistent with problem drinking.
4. There was a direct and positive relationship between both attachment anxiety and posttraumatic stress and attachment avoidance and PTS in this sample of military and veteran students.
5. Civilian peer social support acted as a partial mediator between attachment anxiety (but not avoidance) and posttraumatic stress among military and veteran students, but the mediation effect was practically small. Military peer social support could not be evaluated as a mediator between attachment anxiety and posttraumatic stress due to multicollinearity.
6. Hazardous alcohol use was directly related to PTS in the mediational model described in #5. This result should be interpreted with caution, however, due to the relative weakness of the relationship and the low prevalence of problem drinking in the sample overall.
7. In a separate model, posttraumatic stress acted as a full mediator between attachment anxiety (but not avoidance) and civilian peer social support, suggesting that it may be the symptoms of PTS that inhibit civilian social support, and not the other way around.

Though this study was limited by its cross-sectional design and psychometric problems encountered during data analysis, it was strengthened by its diverse sample and use of structural equation modeling—and represents the first attempt to explore the relationship between adult attachment, social support, and PTS in the growing population of U.S. military and veteran students. Descriptive results of this study echo previous findings that military and veteran students are exposed to multiple and complex traumatic events and may experience PTS at higher rates than either the general military or university populations. Inferential results suggest that civilian peer social support may act as a partial mediator in the relationship between attachment anxiety and PTS in this population—but also, that PTS itself may in fact mediate the relationship between attachment anxiety and civilian peer social support. Therefore, the prevalence of PTS among military and veteran students may, in part, explain their feelings of isolation on campus. Lastly, this study provides further confirmation that attachment anxiety is a powerful predictor of PTS. Counseling and outreach interventions for PTS in military and veteran students should combine efforts to improve social resources with attachment-oriented approaches. Researchers should continue to investigate the relationships between psychosocial variables and reactions to trauma in this population. Future investigations should consider the nature and directionality of those relationships—as well as the complex nature of trauma exposure among students at the intersection of military and university cultures.

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Appendix A: Electronic Informed Consent

Information about the Research Study
Social Support and Mental Health Outcomes Among
Military-Affiliated Undergraduate Students

You are invited to participate in a research study under the direction of Dr. Sylvia Marotta-Walters in the Department of Counseling and Human Development at the Graduate School of Education and Human Development at The George Washington University (GWU). Taking part in this research is entirely voluntary. The status of your academic standing, military benefits, or any position of employment you hold with the university or military will not, in any way, be affected should you choose not to participate or if you decide to withdraw from the study at any time.

The purpose of this study is to enhance our understanding of how social support relates to mental health outcomes in military-affiliated undergraduate students. We will be collecting demographic data and quantitative data from self-report instruments assessing exposure and reactions to traumatic events; experiences in close relationships with others; social support; and alcohol use behaviors and outcomes.

If you choose to participate in this study, you will be asked to answer a series of questions about yourself, your life experiences, and your relationships with others. The survey should take about 25-30 minutes to complete. You may refuse to answer any of the questions and you may stop your participation in this study at any time.

Possible risks or discomforts you could experience during this study include new and/or uncomfortable emotional reactions as you recall your experiences. Participants are encouraged to contact Megan Doughty Shaine, M.A. and/or Dr. Marotta-Walters for referrals to mental health treatment in their local area (contact information below). Additionally, both at the end of this letter and the end of the survey, participants will find mental health hotline numbers as well as a link to download the free PTSD Coach app, which is designed to help people cope with symptoms of posttraumatic stress.

You will not benefit directly from your participation in the study. The benefits to science and humankind that might result from this study are: a contribution to the knowledge base surrounding the role of interpersonal relationships in the lives of service members and veterans on campus; a better understanding of the factors related to posttraumatic stress; and the subsequent development of more informed and effective support programs at institutions of higher education.

The information you provide through this survey is entirely anonymous and confidential. Your name, address, exact university attended, or any other identifying information will not be collected at any time. The survey program used is intentionally programmed to decouple specific survey responses with IP addresses. Survey responses will be stored in a password-protected account only accessible to the researcher. If the results of this study are reported in scientific journals or at professional meetings, data will be reported in aggregate form and participants will not be identified in any way.

If you complete this survey, you may choose to be entered in a drawing to win one of 10 $50 Amazon gift cards. In order to be entered into the drawing, you must send an email to the generic email address provided on the last page of the completed survey.

The Office of Human Research at GWU, at telephone number (202) 994-2715, can provide further information about your rights as a research participant. Further

information about the specifics of this study, as well as referrals to mental health treatment, can be obtained by contacting one of the researchers below:

- Sylvia Marotta-Walters, PhD, ABPP (licensed psychologist)
  - syl@gwu.edu
  - 202-994-6642
- Megan Doughty Shaine, M.A., LPC (licensed professional counselor)
  - mdoughty@gwu.edu
  - (312) 914-9565

Important hotlines and resources

If you experience psychological distress and any point before, during, or after taking this survey, you are encouraged to access the following resources in addition to asking for referrals.

- PTSD Coach app
- National Center for PTSD
- If you are in crisis:
  - Call 911
  - Veterans Crisis Line, 1-800-273-8255, press 1
  - Suicide Prevention Lifeline, 1-800-273-TALK (8255)

****Your willingness to participate in this research study is implied if you proceed to the next page****

*Please keep a copy of this document in case you want to read it again.

Appendix B: Experiences in Close Relationships-Revised-General Short Form (ECR-R-GSF; Wilkinson, 2011)

GENERAL DIRECTIONS: This survey contains several brief sets of questions. We are interested in your relationships, how you cope with stress (including alcohol use), and what role your friends play in all of this. Please do your best to answer all the questions. Thank you for your time.

Think about all of the people in your life. Now read each of the following statements and rate how much it describes your feelings.

	Disagree strongly	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
1. I prefer not to show others how I feel deep down.					
2. I often worry that other people close to me don't really love me.					
3. I find it difficult to allow myself to depend on other people.					
4. I often worry that other people					

don't care as much about me as I care about them.					
5. I am very comfortable being close to other people.					
6. Sometimes people change their feelings about me for no apparent reason.					
7. It is usually easy for me to discuss my problems and concerns with other people.					
8. My desire to be close sometimes scares people away.					
9. It helps to turn to others for support in times of need.					
10. My relationships with people make me doubt myself.					
11. I am nervous when people get too emotionally close to me.					
12. When I show my feelings to people I care about, I'm afraid that they will not feel the same about me.					
13. I find it easy to depend on other people.					
14. I am afraid that once somebody gets to know me, he or she won't like who I am.					
15. It is easy for me to be affectionate with other people.					
16. It makes me mad that I don't get the affection and support I need from other people.					
17. I feel comfortable sharing private thoughts and feelings with other people.					
18. I worry a lot about my relationships.					
19. I feel comfortable depending on other people.					
20. I find that other people don't want to be as close as I would like.					

Appendix C: Life Events Checklist for DSM-5

(LEC-5; Weathers et al., 2013)

Listed below are a number of difficult or stressful things that sometimes happen to people. For each event check one or more of the boxes to the right to indicate that: (a) it happened to you personally; (b) you witnessed it happen to someone else; (c) you learned about it happening to a close family member or close friend; (d) you were exposed to it as part of your job (for example, paramedic, police, military, or other first responder); (e) you're not sure if it fits; or (f) it doesn't apply to you (i.e., you haven't experienced it). Be sure to consider your entire life (growing up as well as adulthood) as you go through the list of events.

	Happened to me	**Witnessed it**	**Learned about it**	**Part of my job**	**Not sure**	**Doesn't apply**
Natural disaster (for example, flood, hurricane, tornado, earthquake)						
Fire or explosion						
Transportation accident (for example, car accident, boat accident, train wreck, plane crash)						
Serious accident at work, home, or during recreational activity						
Exposure to toxic substance (e.g., dangerous chemicals, radiation)						
Physical assault (for example, being attacked, hit, slapped, kicked, beaten up)						
Assault with a weapon (for						

example, being shot, stabbed, threatened with a knife, gun, bomb)						
	Happened to me	**Witnessed it**	**Learned about it**	**Part of my job**	**Not sure**	**Doesn't apply**
Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)						
Other unwanted or uncomfortable sexual experience						
Combat or exposure to a war-zone (in the military or as a civilian)						
Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war)						
Life-threatening illness or injury						
Severe human suffering						
Sudden violent death (for example, homicide, suicide)						
Sudden accidental death						
Serious injury, harm, or death you caused to someone else						
Any other very stressful event or experience						

Appendix D: Posttraumatic Checklist for DSM-5

(PCL-5: Weathers et al., 2013)

On this page are a list of problems that people sometimes have in response to extremely stressful experiences: keeping your worst event in mind, please read each problem carefully and then select the choice that best indicates how much you have been bothered by that problem in the past month.

	Not at all	**A little bit**	**Moderately**	**Quite a bit**	**Extremely**
Repeated, disturbing, and unwanted memories of the stressful experience?					
Repeated, disturbing dreams of the stressful experience?					
Suddenly feeling or acting as if the stressful experience were actually happening again?					
Feeling very upset when something reminded you of the stressful experience?					
Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?					
Avoiding memories, thoughts or feelings related to the stressful					

experience?					
	Not at all	**A little bit**	**Moderately**	**Quite a bit**	**Extremely**
Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects or situations)?					
Trouble remembering important parts of the stressful experience?					
Having strong negative beliefs about yourself or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?					
Blaming yourself or someone else for the stressful experience or what happened after it?					
Having strong negative feelings such as fear, horror, anger, guilt, or shame?					
Loss of interest in activities that you used to enjoy?					
Feeling distant or cut off from other					

people?					
	Not at all	**A little bit**	**Moderately**	**Quite a bit**	**Extremely**
Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings toward people close to you)?					
Irritable behavior, angry outbursts or acting aggressively?					
Taking too many risks or doing things that could cause you harm?					
Being "super alert" or watchful or on guard?					
Feeling jumpy or easily startled?					
Having difficulty concentrating?					
Trouble falling or staying asleep?					

Appendix E: Alcohol Use Disorders Identification Test
(AUDIT; Babor et al., 1992)

Now we are going to ask you some questions about your use of alcoholic beverages during the past year. An alcoholic beverage is defined here as approximately one beer, one glass of wine, or a drink containing one shot of spirits.

1. How often do you have a drink containing alcohol?
   ___ Never
   ___ Monthly or less
   ___ 2-4 times a month
   ___ 2-3 times a week
   ___ 4 or more times a week

2. How many drinks containing alcohol do you typically have on a day when you are drinking?
   ___ 1 or 2
   ___ 3 or 4
   ___ 5 or 6
   ___ 7 to 9
   ___ 10 or more

3. How often do you have six or more drinks on one occasion?
   ___ Never
   ___ Less than monthly
   ___ Monthly
   ___ Weekly
   ___ Daily or almost daily

4. How often during the last year did you find you were not able to stop drinking once you started?
   ___ Never
   ___ Less than monthly
   ___ Monthly
   ___ Weekly
   ___ Daily or almost daily

5. How often during the last year have you failed to do what was normally expected of you because of drinking?
   ___ Never
   ___ Less than monthly
   ___ Monthly

___ Weekly
___ Daily or almost daily

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
___ Never
___ Less than monthly
___ Monthly
___ Weekly
___ Daily or almost daily

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
___ Never
___ Less than monthly
___ Monthly
___ Weekly
___ Daily or almost daily

8. How often during the last year have you been unable to remember what happened the night before because of your drinking?
___ Never
___ Less than monthly
___ Monthly
___ Weekly
___ Daily or almost daily

9. Have you or someone else been injured because of your drinking?
___ Never
___ Less than monthly
___ Monthly
___ Weekly
___ Daily or almost daily

10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?
___ Never
___ Less than monthly
___ Monthly
___ Weekly
___ Daily or almost daily

Appendix F: Multidimensional Scale of Perceived Social Support
(Zimet et al., 1988)*

We are interested in how you feel about each statement. Please read each statement carefully. Indicate how you feel about each statement. *IMPORTANT NOTES: 1) For the statements that ask about "friends" on this page, please think about your friends ON CAMPUS who are NOT affiliated with the U.S. military. If you attend an online school, please think about friends you have met, either virtually or in person, through attending that school. 2) For the statements about a "special person", please think about a significant other or romantic or life partner.

	Very Strongly Disagree	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**Very Strongly Agree**
There is a special person who is around when I am in need.							
There is a special person with whom I can share my joys and sorrows.							
My family really tries to help me.							
I get the emotional help and support I need from my family.							
I have a special person who is a real source of comfort to me.							
My friends* (see above) really try to help me.							
I can count on my friends* (see above) when things go wrong.							
I can talk about my problems with my family.							
I have friends* (see above) with whom I can share my joys and sorrows.							
There is a special person in my life who cares about my feelings.							

My family is willing to help me make decisions.							
I can talk about my problems with my friends* (see above).							

Now, we are interested in how you feel about each statement in regard to your friends^ ON CAMPUS who ARE affiliated with the U.S. military (i.e., active duty service members, veterans, Reserve or National Guard). If you attend an online school, please think about military-affiliated friends you have met, either virtually or in person, through attending that school.

	Very Strongly Disagree	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**Very Strongly Agree**
My friends^ (see above) really try to help me.							
I can count on my friends^ (see above) when things go wrong.							
I have friends^ (see above) with whom I can share my joys and sorrows.							
I can talk about my problems with my friends^ (see above).							

Appendix G: Demographic Questionnaire

Please answer the following questions about yourself.

What is your age in years? _____

How do you describe your gender identity?

___ Male
___ Female
___ Transgender male
___ Transgender female
___ Gender nonconforming
___ Self identify: _____

Are you of Hispanic or Latino origin or descent?

___ Yes, Hispanic or Latino
___ No, not Hispanic or Latino

How would you describe your race?

___ American Indian or Alaska Native
___ Asian
___ Black or African American
___ Native Hawaiian or other Pacific Islander
___ White
___ More than one race (please specify: _____)
___ Other (please specify: _____)

What is your current marital status?

___ Single
___ Married
___ Divorced
___ Separated
___ Widowed

Do you have children?

___ Yes
___ No

Did you serve in the U.S. military after September 11, 2001?

___ Yes
___ No

What is your current U.S. military status?

___ Active duty
___ Reserve or National Guard
___ Veteran
___ Retired
___ Never served in the U.S. military

For how many years did you/have you serve(d) in the U.S. military? _____

How many times have you been deployed outside the continental U.S. since September 12, 2001? (This question refers to ALL deployments outside the continental U.S., including those that were and were not combat-related, and those that were and were not in support of a named U.S. military operation).

___ 0
___ 1
___ 2
___ 3 or more

What has been the typical length of your deployments in number of months? (If the length has been quite variable, please write "variable"). _____

What is the grand total of time, in months, that you were deployed as a member of the U.S. military? _____

How many years of education have you completed? (For example, high school graduates have completed 13 years; high school graduates who have completed one year of college have completed 14 years, etc.) _____

What type of U.S. college or university do you currently attend? Please check all that apply.

___ Public 2-year
___ Public 4-year
___ Private 2-year
___ Private 4-year
___ Online or distance learning
___ I am not currently enrolled at a U.S. college or university.

Is the university you currently attend for profit or not for profit?

___ For profit or proprietary
___ Not-for-profit

In what geographic region is the college or university you currently attend?

___ Northeastern U.S. (ME, VT, NH, NY, MA, RI, CT, PA, NJ)
___ Southern U.S. (DE, MD, DC, VA, WV, KY, TN, NC, SC, MS, AL, GA, FL, OK, AR, TX, LA, PR)
___ Midwestern U.S. (OH, IN, IL, MI, WI, MN, IA, MO, ND, SD, NE, KS)
___ Western U.S. (MT, ID, WY, UT, CO, AZ, NM, NV, CA, WA, OR, HI, AK)

___ Fully online

What is your enrollment status at your college or university?

___ Full-time undergraduate student (typically 12 or more enrolled credits)
___ Half-time undergraduate student (typically between 6 and 12 enrolled credits)
___ Less than half-time undergraduate student (typically less than 6 credits)
___ Full-time graduate student (typically 9 or more enrolled credits)
___ Half-time graduate student (typically between 5 and 9 enrolled credits)
___ Less than half-time graduate student (typically less than 5 credits)
___ Not currently enrolled

How would you describe your current living situation?

___ On campus
___ Off campus

Are you currently working while in school?

___ Yes, full time
___ Yes, part time
___ No

What was your approximate annual income last year (2014) in U.S. dollars? _____