

THESIS

PSYCHOSOCIAL CHARACTERISTICS OF STUDENT
VETERANS WITH SERVICE-RELATED DISABILITIES: IMPLICATIONS FOR FURTHER
RESEARCH AND OCCUPATIONAL THERAPY INVOLVEMENT

Submitted by

Samantha Dutra

Department of Occupational Therapy

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Master's Committee:

Advisor: Aaron Eakman

Catherine Schelly
Kimberly Henry

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ABSTRACT

PSYCHOSOCIAL CHARACTERISTICS OF STUDENT VETERANS WITH SERVICE-RELATED DISABILITIES: IMPLICATIONS FOR FURTHER RESEARCH AND OCCUPATIONAL THERAPY INVOLVEMENT

The purpose of this study was to assess how post-9/11 university student veterans differ from nonveteran university students on four mental health indicators. In comparison to a demographically matched sample of nonveteran students, we found that veterans in our study had significantly higher levels of depression and post-traumatic stress symptomatology and non-significantly lower levels of engagement in meaningful activities and meaning in life. Our non-experimental study indicates mental health differences between student veterans and their nonveteran peers do exist and argues for the inclusion of occupational therapy services for student veterans.

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TABLE OF CONTENTS

ABSTRACT	ii
ACKNOWLEDGEMENTS	iii
INTRODUCTION	1
Key Constructs	3
<i>Post-Traumatic Stress Disorder</i>	3
<i>Depression</i>	3
<i>Meaning in Life</i>	4
<i>Engagement in Meaningful Activities</i>	5
Study Hypotheses	6
METHOD	7
Participants	7
Instruments	8
<i>PTSD Checklist for Civilians (PCL-C)</i>	8
<i>Patient Health Questionnaire Levels of Depression Scale (PHQ - 9)</i>	9
<i>The Meaning in Life Questionnaire (MLQ)</i>	10
<i>Engagement in Meaningful Activities Survey (EMAS)</i>	10
Data Analysis	11
RESULTS	14
Post-Traumatic Stress Disorder	14
Depression	15
Presence of Meaning in Life	16
Engagement in Meaningful Activities	16
Zero-Order Correlations between Variables	17
DISCUSSION	19
Implications for Occupational Therapy	23
Limitations & Future Research	25
Conclusion	26
REFERENCES	28

INTRODUCTION

Since September 11, 2001 over two million Americans have been deployed to wars in Iraq and Afghanistan (Obama, 2011). As wars end and soldiers come home they face the daunting task of transitioning back into civilian life. Many of these young men and women decide to take advantage of benefits accrued through the Post-9/11 Veterans Educational Assistance Act of 2008, better known as the New G.I. Bill, to improve their employment prospects by obtaining a higher education degree. Unfortunately, physical and psychological wounds acquired during service often make this transition difficult. Plach and Sells (2013) found student veterans face significant occupational challenges associated with transitioning to student life namely in developing and maintaining relationships, belonging, relating to classmates, performing the student role, driving, maintaining physical health, resting, and sleeping.

Occupational therapists take an active role in aiding the rehabilitation and reintegration of veterans suffering from physical wounds such as amputations, polytrauma, traumatic brain injuries (TBI), burns, etc. (Barnett, 2014). However, some of the most debilitating effects of war are psychological. It is estimated that over 26% of soldiers returning from post-9/11 wars meet the criteria for some mental illness, including post-traumatic stress disorder (PTSD), depression, or anxiety (Tanielian & Jaycox, 2008). Additionally over 19% of post-9/11 veterans reported a history of TBI in a 2008 survey by Schell & Marshall. These mental health conditions do not stop affecting an individual once they discharge from a hospital, nor are they confined to an outpatient therapy office. The consequences of mental health conditions follow our clients into their homes and communities, and for students, into classrooms, libraries, and football stadiums. Psychological symptoms manifest themselves as student veterans try to go about the most basic

activities of their daily lives; from getting up in the morning to driving to school to concentrating on a professor's lecture. According to the American Occupational Therapy Association's (AOTA) practice framework (OTPF), the purpose of occupational therapy is to enable our clients' participation "in roles, habits, and routines in home, school, workplace, community, and other settings" (AOTA, 2014, p. S1). As trained mental health professionals, and experts in everyday activities, occupational therapists offer a distinct set of skills for analyzing how mental health conditions such as PTSD and depression affect a person's daily life. Further, occupational therapists are qualified to reduce the impact these disorders have on student veterans' participation in meaningful roles and occupations.

Calls for advocacy to increase the presence of occupational therapists in support of military veterans' transition to civilian life have been made by several influential authors in the field (Amaker, Woods, & Gerardi, 2009; Radomski & Brininger, 2014; Tomar & Stoffel, 2014). There is currently a gap in literature, however, investigating veterans' transition to post-secondary education from an occupational therapy perspective. Additionally, current occupational therapy research has not quantified the difference in the mental health state of student veterans compared to nonveterans. This paper seeks to address these gaps by investigating key concepts intimately involved in the veteran experience and in the development of quality of life. We will compare levels of PTSD, depression, meaning in life, and engagement in meaningful activities in student veterans to a matched sample of nonveterans. Additionally, we will explore the relationships between the aforementioned constructs. Through this study we hope to reach a more informed understanding of the current psychosocial condition of veterans transitioning into postsecondary student life.

Key Constructs

Post-Traumatic Stress Disorder

The American Psychiatric Association (APA) (2013) reports the projected risk of developing PTSD by age 75 to be 8.7% for the general population; comparatively, for individuals who have seen military combat the risk jumps to 30% to 50% of those exposed to trauma. PTSD is associated with re-experiencing of traumatic events, avoidance of certain situations and environments, pervasive negative mood, chronic hyper-vigilance, confusion, and disorientation (APA, 2013). Post-traumatic stress disorder has been negatively associated with quality of life, sense of well-being, life satisfaction, and social functioning (Schnurr, Lunney, Bovin & Marx, 2009).

Universities today thus face the challenge of becoming a safe place, both emotionally and physically, for veteran students. Evidence shows more progress is needed to reach this goal. In a 2011 study with student veterans Elliot, Gonzalez, and Larsen found PTSD and combat exposure to be positively related to feelings of alienation from the campus community. Other studies have reported that post-9/11 veterans often feel stigmatized and offended by inappropriate questions and insensitive remarks of classmates and professors (Burnett & Segoria, 2009; Elliott et al., 2011; Glover-Graf, Miller, & Freeman, 2010). Additionally, hyper-arousal symptoms may cause veterans to be distracted in class (Rumann & Hamrick, 2010). Although they have returned home from the combat zone, physical safety remains of paramount concern to returning soldiers.

Depression

Individuals with PTSD are 80% more likely to suffer from at least one other mental health disorder, the most common being depression (APA, 2013). According to the World Health Organization (WHO), depression is the number one cause of disability in the world (WHO,

2015). Experiencing stressful life events, which are plentiful in military deployments, is a known risk factor for meeting the diagnostic criteria for depression (APA, 2013). The DSM-5 lists diagnostic criteria (symptoms) of depression as including low self esteem, sad or empty mood, greatly decreased interest or pleasure in activities most of the time, and inability to anticipate happiness. At their worst, depression, PTSD, and TBIs have each been related to suicidal ideation. Since these are hallmark injuries of post-9/11 wars, it is not surprising that rates of suicides and suicide attempts have been increasing in veterans returning from war, making mental health a major concern for United States military and veteran organizations (Tanielian & Jaycox, 2008).

Meaning in Life

Meaning in life has been widely associated with psychological well-being and quality of life (Steger, Frazier, Oishi, and Kaler, 2006; Zika & Chamberlain, 1992). Frankl (1978) described humans as constantly searching for meaning. His concept of logotherapy held that meaning was a therapeutic, healing force. Meaning in life has been defined in many different ways; with some authors focusing on goal progress and attainment, satisfaction with life actions, overall life cohesiveness, and sense of purpose (King, 2004; Steger et al., 2006; Weinstein, Ryan, & Delci, 2013). Steger et al. (2006) attempted to synthesize what they considered the most important aspects of meaning in life into their definition of the concept, “the sense made of, and significance felt regarding, the nature of one’s being and existence” (p. 81). In a study with veterans, Owens, Steger, Whitesell, & Herrera (2009) suggested meaning in life might be an important concern for veterans suffering from PTSD. The authors found that higher levels of depression and lower levels of meaning in life were positively related to PTSD severity. They also found PTSD and depression were inversely related to meaning in life. Considering findings

that student veterans reported difficulty finding joy and meaning in their lives and felt emotionally detached, alienated, and isolated, it follows that meaning and purpose in life is likely an important and under-investigated construct in this population (Glover-Graf et al., 2010).

Engagement in Meaningful Activities

According to Hammell (2009), engaging in meaningful activities contributes to a person's sense of purpose and well-being, and, through providing opportunities to demonstrate competency, adds to one's feeling of self-worth. Meaningful activities reflect who we are as a person and are sources of pleasure, satisfaction, and personal expression (B. Goldberg, Brintnell, and J. Goldberg, 2002). In a study with college students on the Meaningful Activity and Life Meaning (MALM) model, Eakman (2013, 2014) found meaningful activities provide opportunities for the satisfaction of the basic psychological needs, (autonomy, competence, and relatedness) which contribute to sense of meaning in life according to Self Determination Theory (Weinstein et al., 2013). Engagement in meaningful activities also impacts meaning in life directly (Eakman, 2013).

Literature suggests that meaningful activities are social in nature; they are things we do with others or things others' value (Eakman, 2013; Weinstein et al., 2013). Performing these activities provides a sense of one's actions as being related to and valued by society as a whole. Soldiers once engaged in many activities that encouraged this sense of meaningful engagement. Being a member of the U.S. military means working closely with others and being respected and valued for your sacrifice. This is a far cry from the feelings of stigma and isolation felt by many veterans on today's college campuses (Burnett & Segoria, 2009; Elliott et al., 2011; Glover-Graf et al., 2010).

Kim and Cole (2014) found that veterans participated in less co-curricular, social, and relaxing activities than nonveteran students. Symptoms of post-traumatic stress and depression which include avoiding activities previously found to be pleasurable, being in a consistently negative mood, or feeling chronically fatigued due to hyper-arousal may be contributing to this lack of participation (APA, 2013). Since according to Kuh, Kinzie, Buckley, Bridges, & Hayek (2006) student engagement is a predictor of academic success it is important to look at meaningful activities in college students, especially those at higher risk for mental health conditions, such as military veterans.

Study Hypotheses

The present study sought to examine potential psychosocial differences between student veterans with service-related disabilities and nonveteran students. We hypothesize that:

1. Level of PTSD will be higher for student veterans than nonveteran students.
2. Level of depressive symptomology will be higher for student veterans than nonveteran students.
3. Level of meaning in life will be lower for student veterans than nonveteran students.
4. Level of engagement in meaningful activities will be lower for student veterans than nonveteran students.

Additionally, we anticipate:

1. Level of PTSD will be positively related to level of depression.
2. Level of meaning in life will be positively related to level of engagement in meaningful activity.
3. Levels of PTSD and depression will be negatively related to levels of meaning in life and engagement in meaningful activities.

METHOD

Participants

This is a non-experimental, cross-sectional, matched groups design. Veteran participants were recruited through contact with an academic support program designed to help post-9/11 student veterans with service-related injuries successfully transition into college life at a Mountain university. New Start for Student Veterans (NSSV) participants were eligible for program support if they had experienced a service-related injury, been honorably discharged from the military, and were actively pursuing a degree at the university. Following the study's approval by the university's Institutional Review Board, participants were invited by NSSV student coordinators to complete an online survey. A total of 21 NSSV participants provided informed consent, completed the survey in April 2014, and received a \$10 gift card. Table 1 offers demographic information regarding the NSSV participants.

Nonveteran participants were recruited via convenience sampling; 292 undergraduate students provided informed consent and completed the same online survey as the veterans. To obtain this sample, 3,276 randomly selected undergraduate students were emailed an invitation to complete the survey in April, 2010, followed by two reminder emails. A total 299 surveys were completed and these participants were entered into a lottery for an iPad Mini. Of these, 7 participants reported veteran status and were excluded from the sample. See Table 1 for demographic characteristics of the $N = 292$ nonveteran sample.

TABLE 1 Demographic characteristics of veterans and nonveterans

Demographic variables	Veterans (<i>N</i> = 21)	Nonveterans (<i>N</i> = 292)	Matched nonveterans (<i>N</i> = 21)
Age in years	31.1 ± 8.3 range: 24-57	20.8 ± 2.9 range: 18-37	27.4 ± 3.7 range: 22-37
Gender			
Male	18 (85.7%)	150 (51.4%)	15 (71.4%)
Female	3 (14.3%)	140 (47.9%)	6 (28.6%)
Did not answer	0 (0%)	2 (0.7%)	0 (0%)
Marital status			
Married	7 (33.3%)	10 (3.4%)	6 (28.6%)
Not Married	14 (66.7%)	282 (96.6%)	15 (71.4%)
Race/ ethnicity			
American Indian/ Alaska Native	1 (4.8%)	3 (1.0%)	0 (0.0%)
Asian	0 (0.0%)	14 (4.8%)	0 (0.0%)
Black/African American	1 (4.8%)	3 (1.0%)	0 (0.0%)
Hispanic/ Latino	4 (19.0%)	25 (8.6%)	1 (4.8%)
White/Caucasian	15 (71.4%)	236 (80.8%)	19 (90.5%)
Did not answer	0 (0.0%)	8 (2.7%)	1 (4.8%)
Year of study			
Freshman	5 (23.8%)	136 (46.6%)	2 (9.5%)
Sophomore	7 (33.3%)	77 (26.4%)	8 (38.1%)
Junior	2 (9.5%)	70 (24.0%)	8 (38.1%)
Senior	7 (33.3%)	8 (2.7%)	2 (9.5%)
Graduated	0 (0.0%)	1 (0.3%)	1 (4.8%)
Campus living status			
On campus	0 (0.0%)	139 (47.6%)	0 (0.0%)
Off campus	21 (100%)	153 (52.4%)	21 (100%)

Instruments*PTSD Checklist for Civilians (PCL-C)*

The PCL-C is the civilian form of the PTSD checklist developed by Weathers, Huska, and Keane (1991). It contains 17 items intended to assess level of post-traumatic stress as

defined by diagnostic criteria in the DSM-IV along three symptom clusters; re-experiencing, avoidance, and increased arousal (APA, 1987). The PCL-C asks participants to rate how much they have been bothered by a list of problems in the last month on a scale from 1) *Not at all* to 5) *Extremely*. Items include: “Repeated, disturbing memories, thoughts, or images of a stressful experience from the past?” “Avoiding activities or situations because they reminded you of a stressful experience?” and “Being ‘super-alert’ or watchful or on guard?” Possible scores range from 17 - 85 with a higher score representing a higher level of post-traumatic stress. The PCL-C has demonstrated high internal consistency and test-retest reliability in samples of Vietnam and Persian Gulf War veterans (Weathers, Litz, Herman, Huska and Keane, 1993) and university students (Ruggiero, Del Ben, Scotti, & Rablais, 2003). Strong correlations between the PCL-C and other PTSD measures such as the Mississippi Scale and the Impact of Event Scale demonstrate the assessment’s convergent validity (Ruggiero et al, 2003).

Patient Health Questionnaire Levels of Depression Scale (PHQ - 9)

The PHQ - 9 is a nine-item instrument used to measure level of depression based on DSM-IV disease criteria (Kroenke Spitzer, & Williams, 2002). The assessment asks how often the participant has been bothered by certain problems in the last two weeks on a scale of 0) *Not at all* to 3) *Nearly every day*. Sample items include, “Little interest or pleasure in doing things”, “Feeling down, depressed, or hopeless”, and “Trouble concentrating on things, such as reading the newspaper or watching television”. Possible scores range from 0 – 27 with a higher score indicating a higher level of depression. Kroenke, Spitzer, and Williams (2001) found the instrument demonstrated excellent internal reliability, strong construct validity, and criterion validity. Their research indicated that as functional status improved, scores on PHQ - 9 increased. Scores on the PHQ - 9 were also correlated with patient self-reports of symptom

related difficulty, sick days, and health care utilization. Construct validity was demonstrated by Martin, Rief, Klaiberg, and Braehler (2006). Validity of the PHQ-9 in military veterans was recently demonstrated in three studies (Plach & Sells, 2013; Richardson, Cyr, Nelson, Elhai, & Sareen, 2014; Waltz et al., 2014).

The Meaning in Life Questionnaire (MLQ)

The MLQ is a 10-item survey that assesses presence of meaning in life and search for meaning in life. Our study used only the 5-item presence subscale in data analysis. The MLQ's author defined presence of meaning in life as "the sense made of, and significance felt regarding, the nature of one's being and existence" (Steger et al., 2006, p. 81). Sample items include: "I understand my life's meaning" and "I have discovered a satisfying life purpose". Participants are asked how much they agree with each statement on a scale of 1) *Absolutely untrue* to 7) *Absolutely true* with a possible score range of 5 – 35 on each subscale. The assessment has been found to demonstrate good internal consistency, test-retest reliability, and a unidimensional factor structure. In samples of undergraduate students the MLQ demonstrated high convergent validity with other meaning, well-being, and personality measures and discriminant validity from measures of other constructs including self-esteem and optimism (Steger et al., 2006). The MLQ has also been used to obtain valid, significant results in veteran samples by Owens et al. (2009).

Engagement in Meaningful Activities Survey (EMAS)

Meaningful activity is defined based on B. Goldberg et al.'s (2002) emphasis on the importance of activities being consistent with a person's sense of self and ability. The EMAS is composed of 12 items designed to assess how often a person senses a broad array of positive subjective experiences related to engagement in activities. Participants are asked to indicate the extent to which a list of statements about their day-to-day activities are true of their life on a

scale of 1) *Rarely* to 4) *Always*. Items include: “The activities I do reflect the kind of person I am”, “The activities I do contribute to my feeling competent”, and “The activities I do are valued by other people”. Possible scores on the EMAS range from a low score of 12 to a high score of 48. The EMAS was found to be a valid and unidimensional measure of meaningful activity participation in samples of college students and older adults (Eakman, 2012). Convergent validity of the EMAS was demonstrated through the scale’s significant correlations with related measures including those of life satisfaction, health related quality of life, self-determination, and meaning and purpose in life (Eakman, 2011). Adding to its convergent validity Eakman (2011) also found the EMAS to be negatively correlated with measures of boredom, anxiety, perceived stress, depressive symptomatology, and overall negative affect. The EMAS has yet to be tested in a veteran sample and establishing its discriminant validity in this population is an additional aspect of our study.

Data Analysis

We sought to reduce bias in estimates of between group differences between NSSV and nonveteran participants by matching on available demographic variables associated with the study’s outcomes. Our approach aimed to create a matched sample in which the distribution of observed demographic variables was similar between all veterans and nonveteran participants (Austin, 2011). We began by identifying a subset of demographic variables associated with the outcomes variables to use for propensity score matching of the larger nonveteran sample to the smaller number of NSSV participants. To this end, a total of four regression models were run in a combined sample of NSSV and nonveteran participants ($N = 313$) regressing each of the four outcome variables on the full set of demographic variables found in Table 1. Using a forward entry method, age and cohabitation were found to predict scores on the PCL-C and PHQ - 9.

Year of study also predicted PCL-C score and gender predicted score on the MLQ ($p < .10$ for each beta). Age, cohabitation status, year of study, and gender were then used in establishing a matched sample.

In proceeding with matching veterans to nonveterans, a reduced data set including only nonveterans living off campus was used as a proxy for an exact match on living arrangement because all veterans lived off campus. Propensity score matching was accomplished using Propensity Score Matching for SPSS, version 3.0.2 (Hansen, 2004; Hansen & Bowers, 2008; Ho, Imai, King, & Stuart, 2007a, 2007b; F. Thoemmes, 2011). Nearest neighbor matching with 1:1 replacement was used, we did not discard units outside of common support. There were 13 nonveterans initially matched to 21 veterans. In order to increase the analyzable sample size matching with replacement at a 1:2 ratio increased the nonveteran sample to 22 but imbalance was found in gender ($d = -.398$) using a test of standardized mean differences defined as the mean difference between the groups divided by the standard deviation of the nonveteran group (F. Thoemmes, 2011). Gender was then set for an exact match resulting in $N = 20$ for nonveterans and balance was maintained in all outcome variables. A replacement ratio of 1:3 was then tested that increased the analyzable nonveteran sample to $N = 21$ and balance in the outcome variables was maintained. Improved covariate balance (.828 to .524) was found for this model and data analyses proceeded using this final model (Thoemmes & Kim, 2011). This process maintained the 21 veterans with 21 nonveterans matched in age, gender, year of study, and living arrangement. See Table 1 for demographics on the matched nonveterans. Although we did not match on TBI status, the final nonveteran sample included 9 participants who reported history of TBI (compared to 16 veterans).

After establishing a matched sample, independent *t*-tests adjusted for propensity score weights were used to estimate differences in the outcome variables between the two groups (Austin, 2011; Stuart, 2010). Cohen's *d* effect sizes were estimated as an indicator of the magnitude of difference in the outcome variables between groups. Effect sizes were interpreted according to Maher, Markey, and Ebert-May's (2013) guidelines: .20 = small, .50 = medium, .80 = large, and 1.30 = very large. Lastly, zero-order correlations were used to explore relationships between the outcome variables. These analyses were conducted using IBM/SPSS Statistics version 22 (2013). The magnitude of zero-order correlations was interpreted as < .20 = low, .20 to .30 = moderate, and > .30 = large (Hemphill, 2003).

RESULTS

Post-Traumatic Stress Disorder

See table 2 for a representation of our findings for all outcome variables. Hypothesis one was supported through results on the PCL-C; which showed substantially higher levels of PTSD symptomatology were present in our veteran sample than the matched nonveteran sample. The nearly very large effect size (1.23) makes it likely this difference is due to our variable of interest, veteran status. Over half our veteran sample ($n = 13$, 61.9%) scored above 50, the recommended cut-off score (Weathers et al., 1993). In comparison, three nonveteran participants (14.3%) scored above 50. Individual PCL-C items provide a better picture of what it means to live with PTSD. Figure 1 (below) represents the number of participants who identified themselves as being “moderately,” “quite a bit” or “extremely” bothered by the identified item in the last month. The four items were selected because they represent one of each of the DSM-V clusters of PTSD symptoms (Re-experiencing, hyper vigilance, and avoidance) as well as the social implications of PTSD (feeling distant from others).

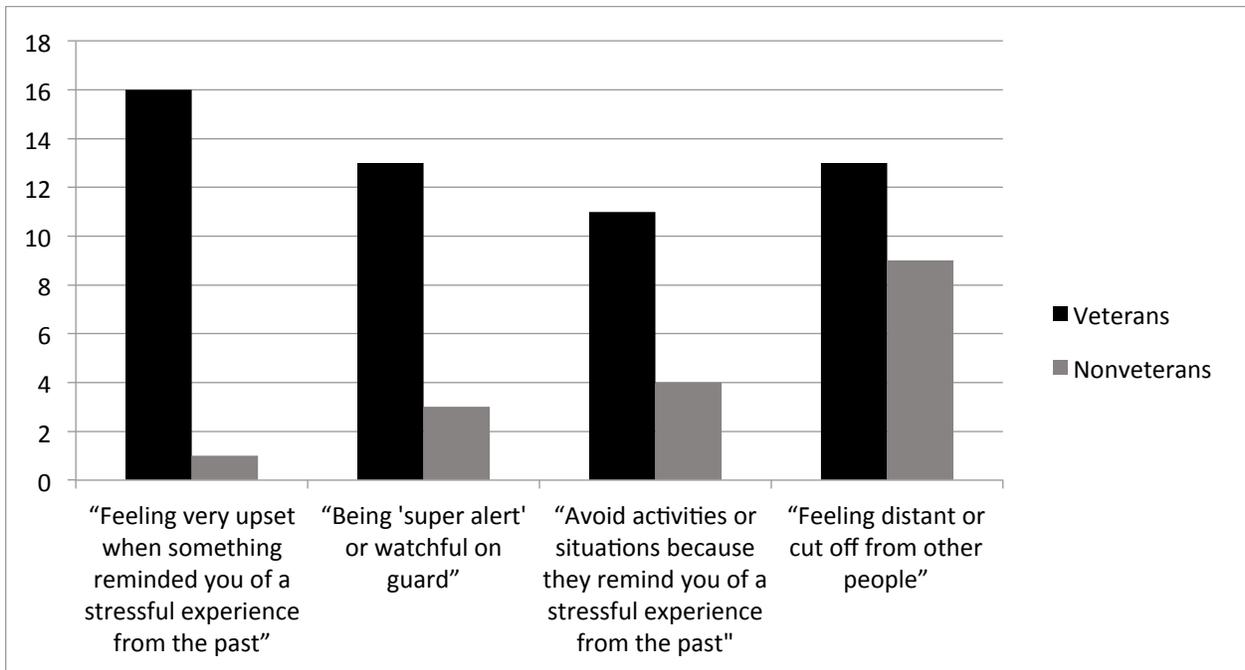


Figure 1: PCL-C Responses

Depression

Hypothesis two was supported through results on the PHQ-9 Depression Survey which indicated veterans self-reported significantly higher levels of depression than nonveterans with a large effect size of 0.90. A recent meta-analysis recommended use of the score range of 8-11 (and above) as the most accurate cutoff value for a depression diagnosis (Manea, Gilbody, & McMillan, 2012). Fourteen veterans (66.7%) scored over 8 on the PHQ-9 compared to seven nonveterans (33.3%). Figure 2 represents the number of participants who identified that in the last two weeks they were bothered by each of the items "More than half the days" or "Nearly every day". These items were selected because in addition to being indicators of depression they are also related to low self-esteem and social support, decreased activity engagement, poor sleep hygiene, and difficulty paying attention in class.

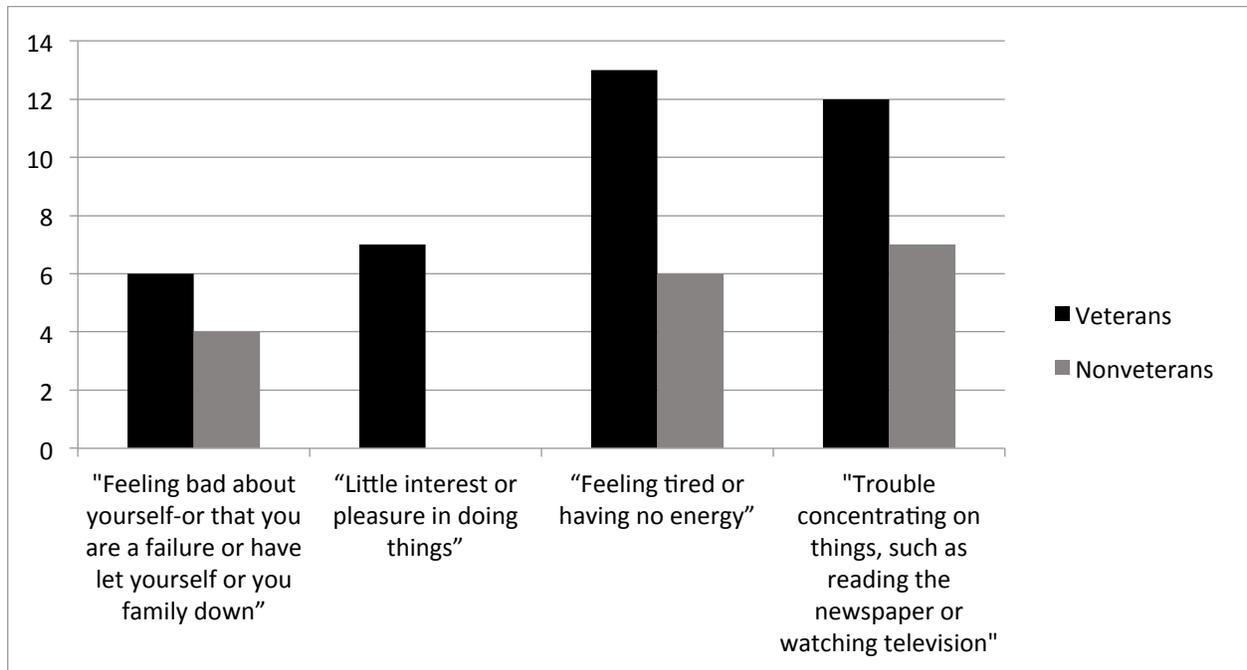


Figure 2: PHQ-9 Responses

Presence of Meaning in Life

Contrary to our hypothesis, the *t*-test did not reveal a significant difference in mean scores on the meaning in life presence subscale. The calculated effect size was small, (-0.13).

Engagement in Meaningful Activities

Our hypothesis that veterans would engage in less meaningful activities than nonveterans proved to be true at a non-significant level; although a medium effect size (-0.44) indicates a potential relationship exists between veteran status and lower level of engagement in life activities that offer opportunities to feel competent, valued, and in control.

TABLE 2 Differences in variables between veterans and matched nonveterans

	New Start veterans (N=21)	Matched nonveterans (N=21)	<i>t</i>	P-value	Cohen's <i>d</i>
	Mean (SD)	Mean (SD)			
PTSD Checklist – Civilian Version	48.14 (17.18)	30.57 (10.61)	3.99*	<.001	1.23
PHQ-9 Depression Survey	11.24 (6.08)	6.52 (4.30)	2.90	.006	.90
Meaning in Life Presence	22.43 (7.31)	23.41 (7.24)	-0.44	.663	-0.13
Engagement in meaningful Activities Survey	30.00 (7.93)	33.33 (7.21)	-1.42	.162	-0.44

PTSD = Post-Traumatic Stress Disorder, PHQ = Patient Health Questionnaire, *equal variances not assumed; groups were matched on age, gender, campus living status, and marital status.

Zero-Order Correlations between Variables

Our final research aim was to explore relationships among our variables of interest. We hypothesized that levels of PTSD and depression would be positively related to each other and negatively related to meaning in life and engagement in meaningful activities. We also hypothesized that scores of presence of meaning in life and engagement in meaningful activities would relate positively to each other. Please see Table 3. We found Depression to be correlated with each of the three other variables on a statistically significant level (positively with PTS and negatively with meaning in life and engagement in meaningful activities). Post-traumatic stress was also negatively correlated with meaning in life and engagement in meaningful activities, but

not as strongly as depression. Presence of meaning in life and engagement in meaningful activities were positively correlated with each other at a statistically significant level.

TABLE 3 Zero order correlations between variables in a combined sample of veterans and nonveterans (N=42)

Study Variables	1	2	3	4
1) PTSD Checklist – Civilian Version	-	.756**	-.357*	-.281
2) PHQ-9 Depression Survey		-	-.504**	-.351*
3) Meaning in Life Presence			-	.501**
4) Engagement in meaningful Activities Survey				-

**Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

DISCUSSION

Our study contributes to current literature by demonstrating the magnitude of the difference in PTSD and depression experiences of student veterans compared to their nonveteran classmates. Consistent with other sources, we found higher levels of PTSD and depression in veterans than would be expected to occur in the general population (APA, 2013; Plach & Sells, 2013; Tanielian, & Jaycox, 2008). Along with Rudd, Goulding, & Bryan (2011) our study demonstrates that this difference occurs specifically in the student veteran population. Our study went beyond these observational accounts by comparing veterans' scores on the PCL-C and the PHQ-9 to those of a matched sample of nonveteran students. In our veteran sample, 13 out of 21 participants met the recommended diagnostic cut-off score for PTSD, compared to 1 of 21 nonveteran participants. PCL-C items indicate that the veterans in our sample had trouble with re-experiencing traumatic events, connecting with others, concentrating, and sleeping. Likewise, nearly twice as many of our veteran participants (compared to nonveteran participants) reported scores on the PHQ-9 that reached diagnostically relevant criteria for depression. This means they reported being frequently bothered by experiences like not wanting to do things they used to enjoy, feeling hopeless, having little energy, trouble concentrating, and feeling like they are a failure. Post-traumatic stress disorder symptomatology has been positively related to feelings of alienation on campus, which has been reported as an issue in several studies with student veterans (Elliot et al., 2011; Glover-Graf et al., 2010; Tomar and Stoffel, 2014). Meanwhile depression has been linked to occupational performance deficits and challenges in interpersonal relationships (Plach & Sells, 2013; Rogers, Malinson, & Peppers, 2014).

Our study also adds to the literature through investigating two constructs not often explored in the student veteran population; presence of meaning in life and engagement in meaningful activity. We expected to find that student veterans had a lower sense of meaning in life than their nonveteran classmates, but given a small effect size, failed to support our hypothesis. Because this is the first comparison study of MLQ scores of veteran and nonveteran students we cannot speak to the consistency of this finding in the literature. We hope this result inspires new questions regarding how we understand meaning in life, especially in the veteran population. For example, how do individuals experiencing PTSD and depressive symptoms maintain perception of a clear and satisfying life purpose, at least to an almost equal extent as a seemingly healthier sample?

We posit that perhaps student veterans feel education is their purpose and that it is this goal that provides their life meaning. This supposition is supported by Plach and Sells (2013); when 30 young veterans were asked what motivated them to live healthy lives 77% responded that working toward a goal such as college graduation motivated them. Fifty percent reported spending time with family and friends to be motivating. According to Owens et al. (2009) meaning may be able to protect traumatized individuals from symptoms of PTSD and guilt. Woo and Brown (2013) and Lerner and Blow (2011) also emphasized the role of meaning-making in trauma survivors' psychological health. In that respect, the presence of meaning in our sample could imply a source of resiliency and strength that can be drawn upon by professionals to improve progress towards therapeutic goals.

Despite occupational therapy's long-founded emphasis on the importance of meaningful activity to quality of life, there is a paucity of research on this construct with veterans and until the present study no research had compared veteran college students to nonveterans using the

EMAS. Our study's medium effect size indicates that veterans in our sample reported less meaningful activity engagement than their nonveteran peers. This implies they perceived less opportunity in their daily lives to express their personal values and feel in control, accomplished, competent, or valued by others. These findings offer support to reports in Kim and Cole (2014) that student veterans participated in less social and relaxing activities than nonveteran students. While the present study did not explore specific categories of activity, we know from studies using the Canadian Occupational Performance Measure (COPM) that samples of veterans have reported dissatisfaction with performance of activities such as leisure, rest and sleep, social participation, and driving (Plach & Sells, 2013; Speicher, Walter, Chard, 2014). This dissatisfaction may contribute to perception of activities as being less meaningful.

The relationships our study identified between constructs add to current understandings of how these concepts may interact. The strong relationship we found between depression and PTSD echoes known comorbidity rates listed in the DSM-V (APA, 2013). Our findings were expected in that depression and PTSD were negatively correlated with meaning in life and engagement in meaningful activities. This is consistent with past research which suggested that finding meaning in life can be related to lower levels of depression (Woo & Brown, 2013). We noted that, compared to PTSD, level of depression was more strongly related to meaning in life and engagement in meaningful activities, implying that depression may have more of an effect on at least two experiences related to quality of life (sense of purpose and engagement in meaningful activities) than PTSD. Similarly, Speicher et al. (2014) found that while reductions in both PTSD and depression symptomatology were related to perceived improvements in occupational satisfaction, only reduction in depression severity was related to perceived improvement in occupational performance. This research points to the importance of considering

mental health needs of clients, especially those with depressive symptoms, in order to optimize their occupational performance.

Our study found engagement in meaningful activity is positively related to meaning in life in a student veteran sample, adding to models and research by King (2004) and Eakman (2014). Eakman (2014) found that engagement in meaningful activity predicts meaning in life, a sentiment echoed by Weinstein et al. (2013) and King (2004), indicating that engaging in activity could be an important source of meaning-making (Eakman, 2014). Although our observed difference in means was only approaching significance, exploration of meaningful activity involvement in veterans represents a potential area for future occupational therapy research because of its relevance to the practice of occupational therapy and the relationship of PTSD and depression to activity avoidance (APA, 2013).

This study substantiates the previously mentioned calls for advocacy within occupational therapy to expand services for transitioning veterans by highlighting potential mental health needs of student veterans. Our quantitative, matched subjects approach also lends objective support to existing qualitative studies describing challenges facing student veterans. Studies such as Glover-Graf et al. (2010) and Tomar and Stoffel (2014) have done an effective job representing the lived experience of student veterans. Our findings express in a quantifiable and objective manner how much these experiences differ from that of nonveteran students in terms of mental health, meaning, and activity engagement outcomes. Transitioning out of the military and into college would be stressful for anyone, but for someone experiencing symptoms that cause them to avoid activities they highly value, feel disconnected from others, lack basic self-esteem, and have little hope for their future happiness, it can seem an impossible task, especially when undertaken (as often occurs) without professional help.

Implications for Occupational Therapy

Complicating the issue of veterans' mental health is the military's longstanding culture that regards asking for help as a sign of weakness (Stecker, Fortney, Hamilton, & Ajzen, 2007). Kearney et al. (2012) estimated that among veterans who have begun seeking traditional mental health services, 38% drop out of therapy. Some studies have shown that alternative treatments such as high intensity sports paired with resiliency training, mindfulness training, and yoga can be effective in reducing PTSD and depression symptoms and have higher retention rates (Grossman, Niemann, Schmidt, & Walach, 2004; Kearney, McDermott, Malte, Martinez, & Simpson, 2012; Kluepfel et al., 2013; Rogers et al., 2014).

While lacking in research with veterans specifically, occupational therapy's involvement in supported education for adults with psychiatric disabilities has been proven effective in increasing participation in academic pursuits (Arbesman & Logsdon, 2011; Gutman, Kerner, Zombek, Dulek, & Ramsey, 2009). Occupational therapy currently provides services to post-secondary students with disabilities including teaching self-advocacy skills, recommending assistive technology, and coaching development of healthy habits and routines (Jirikowic, Campbell, DiAmico, Frauwith, Mahoney, 2013). These services could certainly be expanded to include transitioning veterans.

Additionally occupational therapy could focus on specific challenging occupations such as sleep hygiene or driving rehabilitation – a tactic reported to be successful for veterans receiving outpatient occupational therapy at Walter Reed Medical Center (Barnett, 2014). The complex nature of PTSD and depression necessitate an interdisciplinary team approach in which occupational therapists work closely with mental health professionals such as psychologists and psychiatrists, school counselors, and disability services, as well as the client and his/her support

system to facilitate successful integration into college life. To this team, the occupational therapist will contribute his or her distinct focus on reducing the impact of depression and PTSD on veterans' everyday participation in occupations, activities, routines, and habits.

Occupational therapists can also contribute to an interdisciplinary team through calling attention to the interaction between a person, task and environment and using knowledge of this interaction to support participation in daily life. Hasselkus (2011) emphasized the role of the environment in providing opportunities for engagement in activities that meet a person's needs/preferences. Several authors have detailed how veterans' experienced their campus and community context as offering supports and barriers to their transition (Elliot et al., 2011; Rumann & Hamrick, 2010; Tomar & Stoeffel 2014). Research has shown that the most effective predictor of student satisfaction is their perception of the environment as supporting both their academic and social needs (Kuh et al., 2006). Tomar and Stoffel (2014) suggested OTs could provide support with coordinating initial enrollment and connecting veterans with campus/community resources so that from the beginning, student veterans are set up for success. Brown's Person-Environment-Occupation fit (PEO) model (2014) could guide therapists in providing individualized treatment for student veterans; focusing on personal skill development, occupation modification, or environment adaptation to promote performance and participation.

Occupational therapists can maximize their efficacy in treating student veterans by pursuing special training in evidence based interventions including cognitive-behavioral therapy (CBT). The U.S Department of Veteran's Affairs supports CBT including Cognitive Processing Therapy (CPT) and Prolonged Exposure (PE) therapy as an effective treatment for PTSD (National Center for PTSD, 2013). Evidence has shown CBT to be successful in decreasing PTSD and depressive symptomatology and increasing mood regulation and community

integration in individuals with TBI (Arundine et al., 2012; Davis, 2011; Shearer, 2007). Evidence also suggests an interdisciplinary approach combining CPT, occupation-based, goal-oriented interventions, and adjunctive therapies such as yoga is effective in reducing PTSD and depressive symptomatology and increasing perceived occupational performance and satisfaction (Speicher et al., 2014). In addition to CBT, specialty certifications in trauma counseling or psychological first aid could be beneficial to occupational therapists working with this population (Plach & Sells, 2013). Finally, studies on motivational interviewing to decrease alcohol/ substance abuse indicate this could be an effective tactic to employ when veterans' school performance is suffering due to detrimental health habits (Burke, Arkowitz, & Menchola, 2003; Rubak, Sandbaek, Lauritzen, Christensen, 2005).

Limitations & Future Research

Although our study contributes to the current literature, it is not without its limitations. Our study was confined to 21 post-9/11 veterans with service-related injuries enrolled in a supported education program at a Mountain university. We have no reason to believe these veterans are categorically different from their comrades, but it is possible their injuries, especially the high incidence of TBI, could cause an issue with generalizability to the veteran population. Additionally, choice of school and decision to enroll in an academic support program could make these men different from other student veterans. Like many studies with veterans, ours had much fewer female than male participants. The experience of female veterans remains an under-investigated topic and one that should be considered for future research. Although we attempted to control for confounding variables via propensity matching there is always a possibility our findings were biased by variables we did not consider.

Despite the validity and reliability of the instruments used in our study; there is a stigma surrounding mental health conditions, for this reason, it is always possible that there is a bias in our results due to participants' under-reporting levels of PTSD and depression. The stigma against mental health conditions in the military has been described in previous studies and may have resulted in an even stronger bias for veterans to underreport symptoms (Kim, Thomas, Wilk, Castro, & Hoge, 2010). Future research on student veterans should consider measuring these variables using in-person interview or observation.

Finally, we did not study the implications of these psychosocial variables on everyday life activities and thus must assume, drawing from current literature that these mental health issues are related to occupational performance deficits (APA, 2013; Plach & Sells, 2012). Additional studies should further examine the interactions between depression and PTSD and the implications they have for daily life routines of student veterans. This is an area of future research we strongly urge occupational scientists to take on as our study as well as others such as Speicher et al. (2014) imply an incomplete understanding of how mental health disorders impact occupational performance and participation.

Conclusion

Occupational therapists encourage recovery through reintegrating into activities, re-establishing healthy routines, and adapting/ modifying challenging environments and occupations (AOTA, 2014). Our study indicates that, due to higher rates of depression and PTSD than their peers, student veterans could benefit from interdisciplinary support provided by post-secondary school-based mental health professionals including occupational therapists. While some research informs likely directions for occupational therapy, additional evidence on effectiveness of occupation-based interventions on the level of increased academic performance

and social participation is necessary in order to substantiate the value of occupational therapy in this emerging practice field.

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