

DISSERTATION

THE PROCESS BY WHICH COMBAT-EXPOSED STUDENT VETERANS ACHIEVE A
MEANINGFUL AND PURPOSEFUL LIFE

Submitted by

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ABSTRACT

Background: Studies investigating risk and resilience among combat-exposed student Veterans emphasize the impact of combat exposure upon negative health-related outcomes (e.g., depression or posttraumatic stress disorder [PTSD]). Little is known regarding the risk that combat exposure poses to positive outcomes, such as meaning in life, and protective factors that promote such outcomes despite combat exposure. In particular, there is a lack of research investigating whether activity engagement promotes student Veterans' resilience.

Objective: The purpose of this dissertation was to test a series of theoretical propositions that explain the process by which student Veterans achieve resilience. First, I investigated whether combat exposure poses an indirect risk to student Veterans' sense of meaning and purpose in life, through its association with health-related symptoms. Second, I investigated whether protective factors, including indicators of activity engagement, promoted student Veterans' sense of meaning and purpose in life despite combat exposure and health-related symptoms (combat-related risk). Protective factors were considered to operate in two models of resilience: 1) a *compensatory model*, whereby protective factors promote life meaning independently of combat-related risk, or 2) a *moderator model*, whereby the protective factors weaken the effect of combat exposure upon life meaning.

Method: This dissertation is composed of three studies, each of which analyzed data obtained through an online survey of 153 combat-exposed student Veterans at two time points. The online survey contained psychometrically sound assessments of: *combat exposure*, *health status* (PTSD; depressive; somatic symptoms), *meaning in life*, and six protective factors (*social support*;

instructor autonomy support, coping ability; academic self-efficacy; social and community participation; and meaningful activity).

In study one, I considered meaning and purpose in life as an inferential construct, whereby a meaningful life was operationalized as high levels of composite indicators of belonging (*social support; instructor autonomy support*), self-understanding (*coping ability; academic self-efficacy*) and doing (*social and community participation; meaningful activity*). I used path analysis to explore whether baseline health status mediated the relationship between combat exposure and belonging, self-understanding, and doing at follow-up.

In study two, I considered meaning in life as student Veterans' self-appraisal of their lives as meaningful and purposeful. I used path analysis to: 1) explore whether baseline health status and life meaning mediated the relationship between combat and follow-up life meaning, and 2) test whether protective factors operated in compensatory and/or moderator models of resilience.

In study three, I classified student Veterans by level of combat exposure (high/low) and self-reported meaning in life (high/low) at follow-up, which yielded four possible classifications (e.g., resilient group: high combat exposure and high life meaning). I fit linear mixed models to obtain adjusted means for the six protective factors and the health-related conditions for each classification. I used independent samples *t* tests to examine differences between classifications with respect to adjusted levels of protective factors and health-related conditions. Patterns of differences between groups provided insight into whether the protective factors operated in a compensatory or moderator model of resilience, and whether health-related symptoms influence student Veterans' adaptive response to combat exposure.

Results: All three studies revealed that health-related symptoms help explain the risk posed by combat exposure to student Veterans' sense of meaning and purpose in life. Specifically, greater combat exposure was associated with more severe health-related symptoms, which in turn was associated with less meaning and purpose in student Veterans' lives. Studies two and three provided evidence that coping ability and meaningful activity operate in compensatory models of resilience, and that social support operates in a moderator model of resilience. Study two also provided evidence that instructor autonomy support, coping ability, and academic self-efficacy operate in moderator models of resilience.

Conclusion: This dissertation supported my initial theoretical propositions. This dissertation revealed that health-related symptoms help explain the risk posed by combat exposure to student Veterans' sense of meaning in life. Thus, this dissertation supports an expanded conception of combat-related risk, in which the effect of combat exposure upon positive outcomes, such as a sense of meaning in life, is emphasized. This dissertation also revealed that the majority of the proposed protective factors, including personally meaningful activity engagement, fostered student Veterans' sense of meaning in life despite combat-related risk. I 1) expand upon these findings, 2) discuss implications for research and practice, and 3) explain how these findings advance occupational science and rehabilitation science.

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DEDICATION

I dedicate this dissertation to my wife, and partner-in-life, Hannah (Worthley) Kinney.

TABLE OF CONTENTS

ABSTRACT.....	ii
ACKNOWLEDGEMENTS.....	v
DEDICATION.....	vii
INTRODUCTION	1
OVERVIEW OF RESILIENCE	2
LITERATURE ON RESILIENCE AMONG STUDENT VETERANS.....	4
COMBAT EXPOSURE AS A RISK FACTOR.....	4
PROTECTIVE FACTORS RELEVANT TO STUDENT VETERANS.....	5
GAPS IN CURRENT KNOWLEDGE.....	8
THEORETICAL MODEL.....	10
MEANING AND PURPOSE IN LIFE.....	10
COMBAT EXPOSURE INDIRECTLY UNDERMINES MEANING IN LIFE	12
PROTECTIVE FACTORS	14
METHODOLOGICAL APPROACHES TO UNDERSTANDING STUDENT VETERANS’ RESILIENCE.....	16
COMBAT EXPOSURE UNDERMINES STUDENT VETERANS’ ACHIEVEMENT OF A MEANINGFUL LIFE THROUGH ITS ASSOCIATION WITH HEALTH-RELATED SYMPTOMS: A LONGITUDINAL STUDY	20
A MEANINGFUL AND PURPOSEFUL LIFE	21
METHOD	24
PARTICIPANTS AND PROCEDURES.....	24
INSTRUMENTS	25
DATA ANALYSIS.....	27
RESULTS	28
SIMPLE MEDIATION MODEL	30
SERIAL MEDIATION MODEL.....	34
DISCUSSION.....	34
LIMITATIONS.....	36
CONCLUSIONS AND IMPLICATIONS.....	37
PROTECTIVE FACTORS THAT MITIGATE THE INDIRECT RISK OF COMBAT EXPOSURE UPON MEANING IN LIFE: A LONGITUDINAL STUDY OF STUDENT VETERANS.....	39
OVERVIEW OF RESILIENCE	39
COMBAT EXPOSURE MAY POSE AN INDIRECT RISK TO MEANING AND PURPOSE IN LIFE	40
PROTECTIVE FACTORS	41
METHOD	43
PARTICIPANTS AND PROCEDURES.....	43
INSTRUMENTS INCLUDED IN THE SURVEY	43
DATA ANALYSIS.....	46
RESULTS	48
HYPOTHESIS 1: THE INDIRECT EFFECT OF COMBAT UPON MEANING IN LIFE	50

HYPOTHESIS 2: COMPENSATORY MODELS OF RESILIENCE.....	50
HYPOTHESIS 3: MODERATOR MODELS OF RESILIENCE	55
DISCUSSION.....	56
LIMITATIONS.....	60
CONCLUSION.....	60
PROTECTIVE AND HEALTH-RELATED FACTORS CONTRIBUTING TO RESILIENCE AMONG STUDENT VETERANS: A CLASSIFICATION APPROACH	61
RESILIENCE AMONG STUDENT VETERANS	61
PROTECTIVE FACTORS	62
METHOD	65
PARTICIPANTS AND PROCEDURES.....	65
INSTRUMENTS	66
RESULTS	68
HYPOTHESIS 1: COMPENSATORY MODEL OF RESILIENCE	73
HYPOTHESIS 2: MODERATOR MODEL OF RESILIENCE	73
HYPOTHESIS 3: LEVELS OF COMBAT-RELATED HEALTH CONDITIONS.....	73
DISCUSSION.....	74
LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH.....	76
IMPLICATIONS FOR OCCUPATIONAL THERAPY PRACTICE.....	77
CONCLUSION.....	77
DISCUSSION.....	78
COMBAT EXPOSURE AS A RISK TO STUDENT VETERANS' SENSE OF MEANING IN LIFE.....	79
EVIDENCE OF PROTECTIVE FACTORS.....	81
BELONGING	83
SELF-UNDERSTANDING.....	85
DOING.....	87
CLINICAL IMPLICATIONS.....	88
PROMOTING A SENSE OF BELONGING	88
PROMOTING A SENSE OF SELF-UNDERSTANDING.....	89
PROMOTING A SENSE OF DOING.....	90
ADDRESSING HEALTH-RELATED SYMPTOMS.....	90
RELATION TO OCCUPATIONAL SCIENCE AND REHABILITATION SCIENCE.....	92
OCCUPATIONAL SCIENCE.....	92
REHABILITATION SCIENCE	93
LIMITATIONS AND FUTURE RESEARCH.....	96
CONCLUSION.....	98
REFERENCES	100

INTRODUCTION

Turning points are significant events or experiences that open up opportunities for personal growth, and represent a shift in the purpose or direction of one's life (King, Cathers, Brown, & MacKinnon, 2003; Rutter, 1987). As 2.77 million service members deployed in support of Operation Enduring Freedom, Operation Iraqi Freedom, and Operation New Dawn (post-9/11 Veterans) detach from their roles in the United States military and begin their reintegration into civilian society (Wenger, O'Connell, & Cottrell, 2018), they experience a pivotal juncture, one where the direction of their life shifts. The Post 9/11 Veterans Educational Assistance Act of 2008 (Post 9/11 GI Bill; Pub. L. 110–252) was enacted to afford educational benefits to post-9/11 Veterans to support their transition to civilian life, thereby generating an influx of student Veterans on college campuses. The educational setting serves as a context capable of propelling post-9/11 Veterans on a positive life trajectory during this turning point (Eakman, Schelly, & Henry, 2016).

Student Veterans' successful transition to the civilian community can be characterized by a sense of meaning and purpose in their lives (Fritz, Lysack, Luborsky, & Messinger, 2015). However, some Veterans report that the transition to civilian life is inherently less meaningful compared to their military service (Brenner et al., 2008). Further, the traumatic experiences potentially encountered by some student Veterans in combat threaten to undermine their experience of life meaning and overall psychological wellbeing (Barry, Whiteman, & Wadsworth, 2014; Bryan et al., 2013a). A *resilience* perspective offers a lens with which to understand the forces contributing to combat-exposed student Veterans' experience of meaning and purpose in life, and can inform efforts that optimize their lives following military service.

OVERVIEW OF RESILIENCE

Definitions of resilience tend to vary, but most definitions share two characteristics: 1) exposure to adversity, and 2) the achievement of positive outcomes, or adaptive responses (Southwick, Bonanno, Masten, Panter-Brick, & Yehuda, 2014). Conceptualizations of resilience also tend to vary, with it being considered in terms of a trait or process (Mancini & Bonanno, 2010). Trait, or psychological, resilience tends to reflect a set of perceived attributes concerning resourcefulness and coping ability in response to adversity (Luthar, Cicchetti, & Becker, 2000).

The studies comprising this dissertation will employ a process-oriented conception of resilience. Specifically, resilience will be defined as the multidimensional and dynamic process by which humans achieve wellbeing despite adversity (Masten, 2001; Ryff, Singer, Love, & Essex, 1998). In contrast to a trait perspective on resilience, which is often captured via self-report measures, a process-oriented conception considers resilience to be an inferential construct. Specifically, resilience must be inferred through the observation of positive outcomes despite exposure to a risk factor, and cannot be captured via self-report measures of resilience (Rutter, 2006, 2012). *Risk factors* are forces that pose a threat to the achievement of positive life outcomes (Kraemer et al., 1997; Smith-Osborne, 2007). Risk factors may directly encourage negative outcomes, or may operate in an indirect model of risk, whereby the risk influences negative outcomes by undermining key resources (Masten, 2014).

Observing variation in outcomes following risk exposure provides insight into protective factors that support resilience (Rutter, 2006, 2012). *Protective factors* mitigate the negative influence of risk exposure and promote adaptive responses (Rutter, 1987). Broadly speaking, protective factors operate in two predominant models of resilience: 1) compensatory models and 2) moderator models (Masten, 2001, 2014). *Compensatory models of resilience* describe how

protective factors contribute to adaptive outcomes independently of the risk; a positive outcome is achieved when protective resources overwhelm the influence of risk exposure. *Moderator models of resilience* describe how protective factors contribute to adaptive responses by weakening the negative influence of the risk.

Understanding human resilience requires an embrace of its dynamic and multidimensional nature. The process of achieving resilience is dynamic and multidimensional in the sense that myriad forces influence positive outcomes (e.g., life meaning) among at-risk populations (e.g., combat-exposed student Veterans), and operate in a mutually-influencing fashion (King, 2003). Responses to risk are influenced by the unique and interactive effects of biological, psychological, and sociocultural factors (Southwick et al., 2014). Further, what constitutes an adaptive response to risk is similarly multidimensional. *Internal adaptation* refers to outcomes reflecting the perceived wellbeing of the individual (e.g., self-appraisal of life meaning), whereas *external adaptation* refers to the observable aspects of response to risk (e.g., engagement in meaningful life pursuits; Masten & Wright, 2010). Both perspectives on adaptive responses emphasize the importance of considering response to adversity in terms of positive human functioning (e.g., meaning in life), rather than the absence of health-related symptoms (Almedom & Glandon, 2007; Zautra, Hall, & Murray, 2010).

Resilience can be investigated by using both variable and person-focused approaches (Masten, 2001, 2014). A *variable-focused approach* examines relationships between indicators capturing variability in risk exposure, outcomes, and protective factors. Statistical methods can be used to establish the presence of a risk (i.e., a risk explains a maladaptive outcome), and investigate whether protective factors promote an adaptive response. A *person-focused approach* emphasizes qualities of the at-risk individuals, rather than relations between constructs (Masten,

2001, 2014). A person-focused approach may involve classifying individuals according to their concurrent level of risk exposure and outcome achievement, and observing patterns that reveal influences upon individuals' attainment of particular responses to risk.

I will now review literature reflecting current approaches to understanding resilience among student Veterans. Given the paucity of studies applying a resilience perspective among student Veterans, I will also include the most germane studies of post-9/11 Veterans.

LITERATURE ON RESILIENCE AMONG STUDENT VETERANS

Combat Exposure as a Risk Factor

Combat exposure is the most prominent risk factor in studies of resilience relevant to student Veterans. Combat exposure is a multi-dimensional phenomenon, whereby the degree of exposure to combat experiences, perceived threat, and the aftermath of battle reflect the severity of potentially traumatic experiences (King, King, Vogt, Knight, & Samper, 2006). *Combat experiences* refer to circumstances representing stereotypical warfare events (i.e., firing a weapon to kill an enemy combatant). *Perceived threat* captures the subjective appraisal of combat experiences (e.g., fear for one's safety). The *aftermath of battle* includes the experience of common consequences of war, such as witnessing devastated communities (King et al., 2006).

The psychological and physical trauma incurred during combat exposure has been linked to a host of negative health-related outcomes. Combat exposure is a well-established risk factor for posttraumatic stress disorder (PTSD; Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003); combat exposure and PTSD have been linked in both student Veterans (Borowa, Robitschek, Harmon, & Shigemoto, 2016; Young, 2012) and post-9/11 Veterans (e.g., Bonanno et al., 2012; Hourani et al., 2012). More severe combat exposure has also been linked to increased depressive symptoms (Armistead-Jehle, Johnston, Wade, & Ecklund, 2011;

Armstrong, Bryan, Stephenson, Bryan, & Morrow, 2014), suicidal behavior (Pietrzak et al., 2010; Vanderploeg et al., 2015), traumatic brain injury (TBI; Hoge et al., 2008), and somatic symptoms (e.g., pain or fatigue; Hoge, Terhakopian, Castro, Messer, & Engel, 2007).

Protective Factors Relevant to Student Veterans

Evidence reveals that post-deployment social support may operate in both compensatory and moderator models of resilience among student Veterans. Post-deployment social support (social support) refers to the perceived level of emotional needs fulfillment and instrumental assistance from friends, family, and the surrounding community upon detachment from military service (King et al., 2006). There is a notable amount of evidence supporting the operation of social support in compensatory models of resilience. High levels of social support contribute to low levels of health-related symptoms such as PTSD and depression among both student Veterans (Borowa et al., 2016; Elliott, Gonzalez, & Larsen, 2011) and post-9/11 Veterans (e.g., Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009; Pietrzak et al., 2010). In addition, social support decreases maladaptive outcomes such as suicidal behavior (e.g., Lemaire & Graham, 2011; Pietrzak, Goldstein, Southwick, & Grant, 2011), substance abuse (Eisen et al., 2014), and physical aggression (Elbogen et al., 2012). Lastly, social support has been associated with decreased functional impairments (Hourani et al., 2012) and increased psychosocial functioning (Eisen et al., 2014; Pietrzak et al., 2010; Tsai et al., 2012).

Evidence reveals that social support may also operate within moderator models of resilience among student Veterans. DeBeer and colleagues (2014) found that the combined severity of PTSD and depression symptoms contributed to suicidal ideation among post-9/11 Veterans, but that this relationship was diminished among those with high levels of social support. Further, instrumental support (i.e., the provision of a good or service; Thoits, 1982) may

operate within a moderator model of resilience among student Veterans; financial resources (e.g., the post-9/11 GI Bill) tend to mitigate the negative influence of health-related symptoms upon academic outcomes (Smith-Osborne, 2009, 2012).

The protective advantage conferred by social support among student Veterans has also been revealed using person-focused approaches. Pietrzak and Cook (2013) found that post-9/11 Veterans classified as resilient (i.e., severe exposure to trauma but few health-related symptoms) reported high levels of social support. A study using a similar approach found that post-9/11 Veterans classified as resilient (i.e., high levels of combat exposure but low levels of PTSD) perceived that family and friends understand their experiences, which reflects a critical element of social support (Pietrzak & Southwick, 2011).

Psychological (or trait) resilience also contributes to positive outcomes among student Veterans and post-9/11 Veterans, indicating its role in compensatory models of resilience. Psychological resilience refers to perceived attributes that facilitate a successful response to adversity (Luthar et al., 2000). Higher levels of psychological resilience has been associated with decreased symptoms associated with PTSD, depression, and TBI among post-9/11 Veterans (e.g., Merritt, Lange, & French, 2015; Pietrzak et al., 2010), as well as fewer depressive symptoms among student Veterans (Young, 2012). Among post-9/11 Veterans, psychological resilience contributes to a decreased likelihood of suicidal behavior (e.g., Green et al., 2010; Pietrzak, Russo, Ling, & Southwick, 2011), higher levels of psychosocial functioning (e.g., Pietrzak et al., 2010; Wingo et al., 2017), and decreased alcohol abuse (e.g., Eisen et al., 2014; Green et al., 2010). Among student Veterans, psychological resilience also fosters educational attainment and campus integration (Smith-Osborne, 2012; Young, 2012).

Evidence indicates that psychological resilience may operate within moderator models of resilience among student Veterans. Researchers have discovered that among post-9/11 Veterans with high levels of psychological resilience, the relationship between combat exposure and symptoms of both PTSD (Blackburn & Owens, 2016; Green et al., 2010) and depression (Youssef et al., 2013) is weakened. Person-focused approaches to understanding resilience among post-9/11 Veterans also support the importance of psychological resilience. Post-9/11 Veterans with higher levels of psychological resilience tend to achieve resilient outcomes (i.e., severe combat exposure but few health-related symptoms; Pietrzak & Southwick, 2011).

There is an emerging recognition of the importance of activity engagement in promoting resilience in student Veterans, although evidence is limited. For instance, Pietrzak and Cook (2013) employed a person-focused approach and found that post-9/11 Veterans who achieved a resilient outcome participated in community-based activities. In addition, post-9/11 Veterans expressed that engagement in purposeful activity (e.g., volunteering or household tasks) helped mitigate suicidal thoughts (Brenner, Homaifar, Adler, Wolfman, & Kemp, 2009). Engagement in meaningful activity (i.e., activity that aligns with values and interests; Eakman, 2013) has also been proposed as an important protective factor among student Veterans (Eakman et al., 2016), and student Veterans with fewer activity limitations experience greater campus and community integration (Elliott et al., 2011; Young, 2012).

Self-efficacy, or one's confidence in their ability to achieve a desired outcome (Bandura, 1997), may also support student Veterans' resilience. Researchers testing the role of self-efficacy in compensatory models of resilience among post-9/11 Veterans found that greater self-efficacy contributed to decreased PTSD and depressive symptoms (Blackburn & Owens, 2015). In addition, interviews with female post-9/11 Veterans revealed that a sense of mastery prevented

suicidal behavior (Gutierrez et al., 2013). Self-efficacy may also operate in moderator models of resilience among post-9/11 Veterans. Among post-9/11 Veterans who report high levels of self-efficacy, the deleterious influence of combat exposure upon PTSD was weakened (Blackburn & Owens, 2015). Finally, student Veterans' perceived ability to achieve academic-related outcomes (i.e., academic self-efficacy; Schunk, 1991) has been associated with academic achievement despite health-related adversity (Eakman, Kinney, & Schierl, in press).

Evidence indicates that student Veterans' sense of control over life events may also promote resilience. Researchers testing compensatory models of resilience among post-9/11 Veterans found that those who have a greater sense of control experience less suicidal (Elbogen et al., 2017; Pietrzak et al., 2010) and violent behavior (Elbogen et al., 2012), as well as fewer PTSD symptoms (Pietrzak et al., 2009). Additionally, researchers employing a person-focused approach found that post-9/11 Veterans who endorse a greater sense of control tended to achieve a resilient outcome (Pietrzak & Southwick, 2011). Further, the presence of instructors who facilitate student Veterans' sense of intrinsic control in the classroom promotes academic achievement despite health-related adversity, in part through its promotion of academic self-efficacy and adaptive academic behaviors (Eakman et al., in press).

GAPS IN CURRENT KNOWLEDGE

There remains a need to expand and strengthen the knowledge summarized within the above synthesis of literature concerning student Veterans' resilience. Studies of resilience relevant to student Veterans disproportionately consider successful adaptation to combat exposure in terms of the absence of negative health-related outcomes (e.g., PTSD symptoms). Accordingly, evidence supporting the presence of protective factors among student Veterans tends to be established by linking the protective factor to reduced health-related symptoms.

However, the World Health Organization (2004) asserts that health is a state of complete wellbeing, and not the absence of health-related symptoms. Similarly, adaptive responses to risk are best conceptualized as positive aspects of human functioning (e.g., meaning and purpose in life), rather than the absence of negative health-related outcomes (Masten & Wright, 2010; Zautra et al., 2010). As such, there is a need to expand beyond our current understanding of the link between combat exposure and health-related symptoms. Specifically, there is a need to understand the risk posed by combat exposure to student Veterans' sense of meaning and purpose in life, and protective factors capable of fostering their life meaning despite combat-related risk. Such an understanding may alter current conceptions of combat-related risk, and can inform efforts seeking to support the health and wellbeing of combat-exposed student Veterans.

An important means by which humans transcend adversity and achieve meaning and purpose in life is through successful and meaningful engagement in activity (King, 2004). Unfortunately, with few exceptions (e.g., Eakman et al., 2016; Pietrzak & Cook, 2013), studies of resilience relevant to student Veterans tend to neglect the protective role of activity engagement. In effect, neglecting the role of activity engagement overlooks a potentially important, and modifiable, dimension of the process by which student Veterans achieve resilience. Activity engagement is considered to be the principal means by which humans garner important protective resources (e.g., sense of mastery; Christiansen, 2007; Eakman, 2013; Law, 2002), and fosters resilience in other populations (e.g., Masten & Coatsworth, 1998; Palen & Coatsworth, 2007). Evidence supporting the role of activity engagement in fostering student Veterans' resilience would provide a novel target for resilience-promoting intervention.

In this dissertation, I sought to address the above limitations of the current literature by testing a series of theoretical propositions that explain the process by which student Veterans

achieve resilience (see Figure 1.1). What follows is an elucidation of these propositions, and a description of how this dissertation will investigate them. I proposed that combat exposure poses an indirect risk to student Veterans' sense of meaning in life by contributing to the depletion of psychological and physical health (Figure 1.1-A), in turn limiting a meaningful and purposeful life (Figure 1.1-B). Further, I proposed that six protective factors were capable of fostering student Veterans' life meaning despite combat-related risk. Protective factors were thought to operate in two models of resilience: 1) a compensatory model, whereby protective factors promote life meaning independently of combat-related risk (Figure 1.1-C), or 2) a moderator model, whereby the protective factors weaken the negative and indirect effect of combat exposure upon life meaning (Figure 1.1-D; 1.1-E).

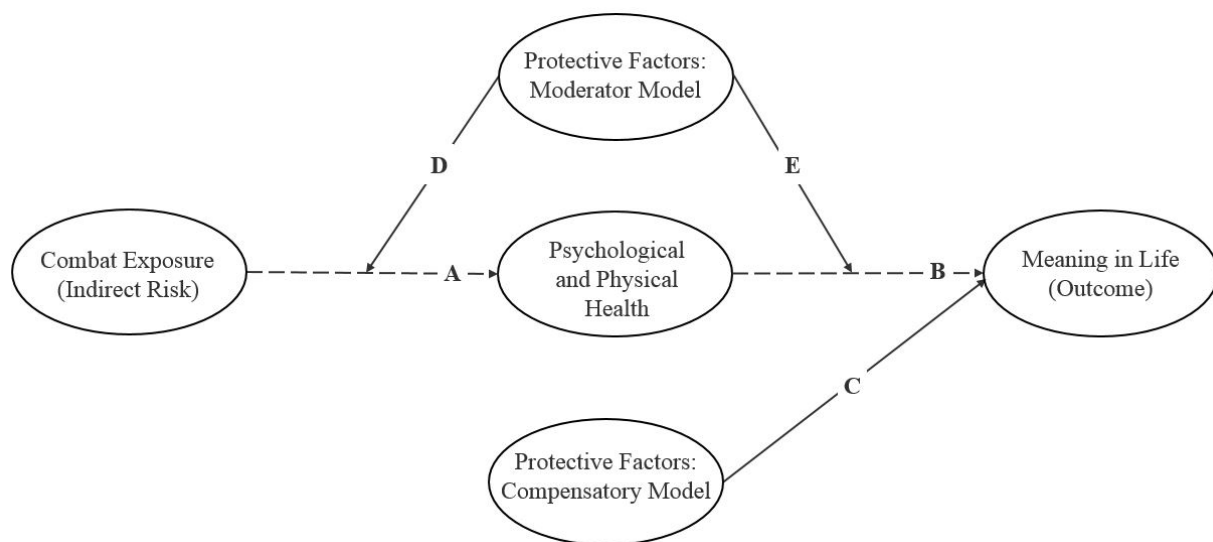


Figure 1.1. Theorized process by which student Veterans achieve resilience. Dashed lines represent a negative influence; solid lines represent a positive influence.

THEORETICAL MODEL

Meaning and Purpose in Life

A sense of *meaning and purpose in life* emerges from life experiences which afford 1) a coherent and predictable structure to existence, 2) an evaluation of life as significant and valuable, and 3) the pursuit of a valued future (Martela & Steger, 2016). Humans have an innate

need to imbue their existence with meaning and purpose (Frankl, 1963); when this drive is thwarted, overall wellbeing suffers (Keyes, Shmotkin, & Ryff, 2002).

The Model of Meaning of Life Experiences (King's Model; King, 2004) is a motivational model explaining that meaning in life and resilience are fostered through engagement in life experiences that offer the following sources of meaning: a sense of 1) belonging, 2) self-understanding, and 3) doing. A sense of *belonging* refers to the perception of positive and supportive relationships with others (King, 2004). A sense of meaning in life emerges from relations with others as a result of feeling understood, valued, and supported; such appraisals of social bonds fulfill fundamental human needs (e.g., Deci & Ryan, 2000) and bolster resources from which humans draw to overcome adversity (King et al., 2003; King, 2004). A sense of *self-understanding* reflects ongoing efforts to understand oneself and one's relationship with the world (King, 2004). Positive appraisals of oneself (e.g., self-efficacy) contribute to life meaning (e.g., Baumeister, 1991) and reflect inner resources that emerge from, and contribute to, resilience (Masten, 2001; Willoughby, Brown, King, Specht, & Smith, 2003). A sense of *doing* refers to activity engagement that elicits a sense of purpose, control, connection to others, and other positive subjective experiences, which facilitate the extraction of meaning from daily life and successful adaptation to adversity (Eakman, 2013; Fine, 1991; King et al., 2003).

King's Model (King, 2004) recognizes that meaning in life can, and should, be understood using multiple approaches. Accordingly, I proposed that a sense of meaning and purpose in life can be considered in two ways. First, student Veterans' meaning and purpose in life can be inferred through high levels of belonging, self-understanding, and doing. For example, a student Veteran would achieve a meaningful life if they endorsed the presence of healthy interpersonal relationships (belonging), a positive self-appraisal of their ability to

navigate the world (self-understanding), and a sense of meaningful engagement in activity (doing; King, 2004). Second, a sense of meaning and purpose in life can be considered student Veterans' appraisal of the extent to which they interpret their life as meaningful. Each approach offers a complementary perspective on understanding life meaning and resilience. I will discuss the unique advantages of each perspective in more detail later in this chapter.

Combat Exposure Indirectly Undermines Meaning in Life

Evidence indicates that combat exposure poses a risk to student Veterans' sense of meaning and purpose in life. Combat-exposed Veterans report 1) difficulty with establishing healthy bonds with others (Daggett, Bakas, Buelow, Habermann, & Murray, 2013), 2) negative appraisals of their ability to navigate the world (e.g., self-efficacy; Eakman et al., 2016), and 3) barriers to activity engagement (Resnik & Allen, 2007), thereby threatening life meaning by undermining their ability to experience a sense of belonging, self-understanding, and doing, respectively. Further, evidence indicates that Veterans with more severe combat exposure tend to appraise their lives as less meaningful (Bryan et al., 2013a; Steger, Owens, & Park, 2015). Health-related symptoms tend to accompany combat exposure, however, and may explain the risk that combat poses to student Veterans' life meaning.

In this dissertation, I proposed that combat exposure operates in an indirect model of risk to student Veterans' life meaning (Masten, 2014). Specifically, I proposed that combat exposure results in potentially traumatic experiences that contribute to poor psychological and physical health (Figure 1.1-A), in turn depleting student Veterans' sense of meaning and purpose in life (Figure 1.1-B). As previously mentioned, combat exposure is consistently linked to negative health-related outcomes such as PTSD (Ozer et al., 2003), depression (Armstrong et al., 2014), and somatic symptoms (Hoge et al., 2007). Service-related health conditions tend to co-occur,

and produce a constellation of impairments of cognitive, emotional, and physical bodily functions (Brenner, Vanderploeg, & Terrio, 2009) that threaten life meaning.

Impairments associated with health-related conditions may threaten student Veterans' sense of meaning in life by undermining their sense of belonging, self-understanding, and doing. Student Veterans with health-related conditions tend to perceive difficulty with establishing healthy and supportive relationships, thereby threatening life meaning by undermining their sense of belonging (DiRamio, Ackerman, & Mitchell, 2008; Elliott et al., 2011). Evidence also indicates that health-related symptoms may undermine student Veterans' self-appraised ability to effectively navigate life, thereby limiting their sense of self-understanding. For example, student Veterans with health-related conditions report a negative appraisal of their capacity to cope with adverse events (Brenner et al., 2009) and achieve mastery in academic-related tasks (Eakman et al., in press). Student Veterans with health-related conditions also report limited engagement in valued activity (Eakman et al., 2016), indicating that health-related symptoms may limit life meaning by obstructing a sense of doing.

Further, health-related conditions may encourage student Veterans to negatively appraise their overall meaning in life. Student Veterans with more severe health-related conditions tend to interpret their lives as less meaningful (Dutra, Eakman, & Schelly, 2016; Sinclair, Bryan, & Bryan, 2016). Health-related conditions such as depression and PTSD may diminish student Veterans' life meaning by undermining their capacity to apply positive appraisals of ongoing life experiences that they typically consider meaningful (Hart et al., 2011; Pietrzak et al., 2015). Thus, health-related symptoms may limit student Veterans' overall assignment of value and purpose to their lives (Southwick et al., 2006).

Protective Factors

I proposed that six constructs serve as protective factors capable of mitigating combat-related risk among student Veterans. The proposed protective factors, guided by King's Model (King, 2004), reflect student Veterans' sense of belonging (post-deployment social support; instructor autonomy support), self-understanding (coping ability; academic self-efficacy), and doing (social and community participation; meaningful activity). Importantly, the protective factors are highly relevant to student Veterans, but are not intended as an exhaustive list of indicators reflecting each source of meaning.

I proposed that the selected protective factors operate in two models of resilience. First, protective factors (with one exception) operate in compensatory models of resilience by promoting student Veterans' life meaning, irrespective of combat-related risk (Figure 5.1-C). Second, protective factors operate in moderator models of resilience, weakening the indirect risk of combat upon life meaning by mitigating: 1) the influence of combat exposure upon health-related symptoms (Figure 5.1-D), and 2) the influence of health-related symptoms upon life meaning (Figure 5.1-E). What follows is a discussion of how each indicator of belonging, self-understanding, and doing is capable of fostering student Veterans' life meaning and resilience.

Belonging. A sense of belonging emerges from healthy social bonds (i.e., feeling supported and valued) that imbue life with meaning and foster resilience (King, 2004). Post-deployment social support (social support) and instructor autonomy support are relevant indicators of belonging among student Veterans, and may operate as protective factors. *Social support* is the extent to which student Veterans perceive the fulfillment of their emotional needs and the receipt of instrumental assistance from others upon return from deployment (King et al., 2006). *Instructor autonomy support* is the extent to which one perceives that their instructors

validate and value their perspective, and promote their self-determined action in the classroom (Black & Deci, 2000). Both indicators of belonging reflect healthy social bonds, and instructor autonomy support reflects a social context that fosters an internal locus of control. Healthy social bonds and a sense of control reflect satisfaction of the psychological needs of relatedness and autonomy, respectively (Deci & Ryan, 2000). Psychological needs fulfillment has been linked to both life meaning (Martela, Ryan, & Steger, 2017) and resilience (Vansteenkiste & Ryan, 2013). Evidence indicates that Veterans who perceive high levels of social support and autonomy tend to overcome severe combat exposure (Pietrzak & Cook, 2013; Pietrzak & Southwick, 2011).

Self-understanding. Self-understanding captures the self-referential aspect of the process by which humans realize life meaning and resilience, including positive appraisals of one's ability to achieve mastery and successfully navigate adversity (King, 2004; Masten, 2014). Student Veterans' sense of self-understanding can be understood in terms of academic self-efficacy and coping ability. *Academic self-efficacy* reflects students' appraisal of their academic ability (Schunk, 1991), and represents perceived mastery that contributes to both meaning in life (Martela et al., 2017) and resilience (Masten & Coatsworth, 1998; Rutter, 1987). *Coping ability* has been defined as the ability to "effectively use cognitive appraisal skills in a flexible, committed approach to active problem solving despite stressful circumstances" (Sinclair & Wallston, 2004, p. 95). Coping ability directly alters the impact of risk (Rutter, 1987), and as such, likely operates solely within a moderator model of resilience. Evidence indicates that self-efficacy (Blackburn & Owens, 2015) and coping ability (e.g., Pietrzak, Harpaz-Rotem, & Southwick, 2011) both promote resilience among combat-exposed Veterans.

Doing. A sense of doing refers to engagement in valued and purposeful activity that imbues our lives with meaning (Eakman, 2013) and facilitates the transcendence of adversity

(King, 2004). Social and community participation and meaningful activity both capture a sense of doing, and may foster student Veterans' resilience. *Social and community participation* reflects activity engagement that enables social interaction and satisfaction of nondomestic roles (Chang, Coster, & Helfrich, 2013; Levasseur, Richard, Gauvin, & Raymond, 2010). *Meaningful activity* aligns with one's values and interests, and generates a constellation of positive subjective experiences (e.g., competence; Eakman et al., 2018). These complementary indicators of doing reflect active and purposeful pursuit of one's interests, which has been identified as a fruitful path to garnering protective resources (e.g., a sense of competence or autonomy; Eakman, 2013; Vansteenkiste & Ryan, 2013). Evidence indicates that community-based activity (Pietrzak & Cook, 2013) and meaningful activity (Eakman et al., 2016) both confer a protective advantage for combat-exposed Veterans.

METHODOLOGICAL APPROACHES TO UNDERSTANDING STUDENT VETERANS' RESILIENCE

This dissertation tested the above theoretical propositions using multiple methodological approaches. Specifically, I used 1) complementary approaches to understand student Veterans' life meaning, 2) both variable and person-focused approaches to investigate protective factors, and 3) longitudinal methods to strengthen our understanding of observed relationships.

First, I used two complementary approaches to understand meaning in life in order to investigate whether combat exposure poses an indirect risk to student Veterans' life meaning. Study one inferred meaning and purpose in life through high levels of belonging, self-understanding, and doing. Studies two and three considered a sense of meaning and purpose in life to be student Veterans' global appraisal of their life's meaning. Inferring student Veterans' meaning and purpose in life through their sense of belonging, self-understanding, and doing

captures the notion that a meaningful life is created through active involvement in rich life experiences (King, 2003). Inferring the presence of life meaning through adaptive levels of each source of meaning is consistent with other established perspectives on psychological wellbeing (e.g., Ryff, 1995), which consider wellbeing to be a multidimensional phenomenon, fostered through engagement with one's surroundings in order to pursue personal growth (Ryff & Singer, 1998). Similarly, high levels of belonging, self-understanding, and doing reflect successful life engagement that fosters personal growth (King, 2003). In addition, considering life meaning as adaptive levels of each source of meaning offers insight into student Veterans' external adaptation to combat-related risk. Specifically, this approach provides insight into whether combat exposure influence their ability to successfully fulfill life pursuits, and whether health-related symptoms explain that influence (Masten & Wright, 2010).

Considering student Veterans' sense of meaning in life as a self-appraisal of their life's meaning captures humans' unique ability to contemplate their experiences. That is, this approach to understanding life meaning reflects one's interpretation of their ongoing life experiences as predictable, valuable, and organized in pursuit of a coveted future (Martela & Steger, 2016). Understanding student Veterans' self-appraisal of their life meaning facilitates the investigation of forces (i.e., a sense of belonging, self-understanding, and doing) capable of fostering combat-exposed student Veterans' subjective appraisal of their life as meaningful. Thus, it captures student Veterans' internal adaptation to combat-related risk. Specifically, this approach sheds light on whether combat exposure poses a risk to student Veterans' perceived wellbeing, and whether health-related symptoms explain that risk (Masten & Wright, 2010).

Second, I employed both variable and person-focused approaches to investigate whether the proposed protective factors operate in compensatory and/or moderator models of resilience

(Masten, 2001, 2014). Study two employed a variable-focused approach, investigating linkages between indicators of combat exposure, health-related symptoms, meaning in life, and the proposed protective factors. Study three employed a person-focused approach, classifying student Veterans with respect to their level of combat exposure and life meaning, and comparing levels of protective factors and health-related symptoms across different classifications.

Both the variable and person-focused approaches offer distinct and complementary advantages. By employing both approaches, I gained a stronger understanding of the forces which influence student Veterans' resilience, relative to the use of one approach in isolation (Masten, 2014). Variable-focused approaches capture the variation in constructs necessary to understand specific relations between the components which comprise processes of resilience (e.g., protective factors; adaptive response). As such, the variable-focused approach can offer precise guidance for developing resilience-promoting intervention (Masten, 2001). However, using a variable-focused approach requires disassembling meaningful patterns of resilience-related phenomena (Bergman & Magnusson, 1997). The person-focused approach retains the meaningful configuration of defining dimensions of resilience within the individuals themselves (i.e., level of risk factors and outcome achievement), thereby providing insight into patterns of risk response and the forces that give rise to certain patterns (Bergman & Magnusson; Masten, 2001).

Finally, all three studies which comprise this dissertation employed a prospective longitudinal panel design, collecting data on two occasions for the same student Veterans (Menard, 2002). This design offers distinct advantages over purely cross-sectional designs, including investigation of the temporal ordering of relationships, which is one criteria for establishing causality (Asher, 1983). As such, this dissertation employed designs capable of

establishing strong evidence for the theorized propositions explaining the process by which student Veterans achieve resilience. For example, in studies one and two, the longitudinal design enabled the investigation of two separate mechanisms by which combat poses a risk to life meaning. The first mechanism included a lagged effect of health-related symptoms upon meaning in life, which facilitated the investigation of the theorized temporal ordering of this relationship (i.e., health-related symptoms precede diminished life meaning; Menard, 2002). The second mechanism included an instantaneous effect of health-related symptoms upon life meaning (Menard, 2002). Testing both mechanisms provided a more nuanced understanding of combat-related risk, and was possible due to the use of a longitudinal design.

The following three chapters summarize three studies that tested the aforementioned propositions (Figure 1.1). Across the three studies, I investigated whether health-related symptoms help explain the risk that combat exposure poses to student Veterans' sense of meaning and purpose in life. Additionally, studies two and three investigated whether protective factors, including indicators of activity engagement, promoted combat-exposed student Veterans' sense of meaning in life. In chapter five, I discuss whether the studies supported my initial propositions, and present a theoretical model that was refined in light of the dissertation findings. Further, I discuss implications of the dissertation findings for both research and practice, and explain how the findings advance both occupational and rehabilitation science.

COMBAT EXPOSURE UNDERMINES STUDENT VETERANS' ACHIEVEMENT OF A MEANINGFUL LIFE THROUGH ITS ASSOCIATION WITH HEALTH-RELATED SYMPTOMS: A LONGITUDINAL STUDY

Risk factors are forces or experiences that pose a threat to the achievement of positive life outcomes (Kraemer et al., 1997). Combat exposure is a significant risk factor for student Veterans, and consists of 1) *combat experiences* (circumstances reflecting common warfare events such as firing a weapon to kill an enemy combatant), 2) *perceived threat* (fear for one's safety), and 3) *exposure to the aftermath of battle* (exposure to common consequences of war such as devastated communities; King et al., 2006). A greater degree of exposure to the above potentially traumatic combat-related events has been linked to negative health outcomes, including posttraumatic stress disorder (PTSD; Barry, Whiteman, & Wadsworth, 2012), depression (Armstrong et al., 2014), and somatic symptoms (e.g., pain; Hoge et al., 2007).

Veterans are enrolling in college at high rates upon their return to the civilian community (Church, 2009), making it critical that postsecondary institutions understand how combat impacts student Veterans' health (Barry et al., 2014). While the World Health Organization (2004) asserts that health is a state of complete wellbeing, and not the absence of health-related symptoms, studies disproportionately consider the consequences of combat in terms of the development of such symptoms (Umucu et al., 2019). As such, the nature of combat exposure's influence on the *positive* aspects of student Veterans' wellbeing (e.g., a meaningful and purposeful life) is poorly understood. The purpose of this study was to test whether combat exposure threatens a meaningful and purposeful life indirectly, through its association with symptoms of health-related conditions (e.g., PTSD) that, in turn, limit meaningful life

experiences. Investigating this indirect relationship will offer insight into a mechanism by which combat exposure influences student Veterans' achievement of a meaningful and purposeful life, and will inform campus and community-based efforts seeking to support student Veterans' health and wellbeing.

A Meaningful and Purposeful Life

Meaning and purpose in life is a critical component of psychological health and wellbeing (Ryff, 1989). Life meaning is acquired through experiences that foster one's appraisal of their existence as valuable and comprised of efforts devoted to the pursuit of a coveted future (Stege, Frazier, Oishi, & Kaler, 2006). The Model of Meaning of Life Experiences (King, 2004) explains that life experiences which imbue life with meaning afford a sense of: 1) *belonging* (healthy relations with others), 2) *self-understanding* (positive appraisal of oneself and one's relationship with the world), and 3) *doing* (meaningful activity).

Evidence indicates that combat exposure may limit student Veterans' experiences that imbue life with meaning. Combat-exposed Veterans report 1) difficulty with establishing healthy bonds with others (Daggett et al., 2013), 2) negative appraisals of their ability to navigate the world (e.g., diminished self-efficacy; Eakman et al., 2016), and 3) difficulty performing valued activities (Resnik & Allen, 2007). However, to the best of our knowledge, no study has sought empirical links between severity of combat and these sources of meaning. We propose that more severe combat exposure limits these sources of meaning, in part because of health-related symptoms (e.g., PTSD) that tend to accompany combat exposure. We will now discuss constructs reflecting each source of meaning among student Veterans and literature indicating that health-related symptoms may undermine access to each source.

Belonging. A sense of belonging represents a fundamental human need (Baumeister & Leary, 1995), and provides a rich source of meaning in life by reflecting the perception that one is valued, understood, and assisted by others (King, 2004). Belonging among student Veterans is reflected in post-deployment social support (social support) and instructor autonomy support. *Social support* is the extent to which one perceives the satisfaction of emotional needs and the receipt of instrumental assistance from others (King et al., 2006). *Instructor autonomy support* is the extent to which one perceives that instructors value their perspective and promote autonomous behavior in the classroom (Black & Deci, 2000). Both social and instructor autonomy support reflect validation from others; a critical source of life meaning and psychological wellbeing (Lambert et al., 2013; Ryff, 1989). Additionally, instructor autonomy support reflects a social environment supporting self-determination, an important ingredient for life meaning (Martela et al., 2017). Unfortunately, symptoms of health conditions may diminish student Veterans' ability to secure supportive relationships with faculty and others in the community, thereby undermining their sense of belonging (Barry et al., 2014; Eakman et al., 2016).

Self-understanding. Meaning in life is partially derived from one's positive appraisal of the self; including the perception of one's ability to successfully navigate adverse conditions and pursue valued outcomes (Willoughby et al., 2003). Coping ability and academic self-efficacy reflect important perspectives on a sense of self-understanding among student Veterans. Perceived *coping ability* includes one's appraisal of their capacity to use cognitive appraisal skills to reframe conditions of adversity and to actively address underlying sources of adversity (Sinclair & Wallston, 2004). These skills may affirm existing sources of meaning or stimulate new sources (e.g., newfound appreciation for loved ones) in response to adversity, and have been

associated with life meaning and psychological wellbeing (Jim, Richardson, Golden-Kreutz, & Andersen, 2006; Park, Malone, Suresh, Bliss, & Rosen, 2008). *Academic self-efficacy* refers to students' perception of their ability to succeed in academic tasks (Schunk, 1991). Academic self-efficacy therefore reflects a sense of mastery in the context of academic-related action that is integral to a meaningful life and psychological wellbeing (Martela et al., 2017; Ryff, 1989). Health-related conditions, however, have been associated with decreased coping ability (Resnik & Allen, 2007) and academic self-efficacy (Eakman et al., in press), potentially diminishing student Veterans' sense of self-understanding.

Doing. Engagement in activity can be an expression of personal values, beliefs, and goals as a means of achieving a coveted version of oneself (Eakman, 2015; Hammell, 2004); the devotion of time and effort in pursuit of such personal growth affords an abundant source of meaning and fosters psychological wellbeing (Reker & Wong, 1988; Ryff, 1989). Activities that are social, community-based, and personally-valued may reflect student Veterans' sense of doing. *Social and community participation* refers to engagement in activities that enable interactions with others and occur outside the home or otherwise fulfill a nondomestic role (Chang et al., 2013; Levasseur et al., 2010). *Meaningful activity* refers to positive subjective experiences emergent from activity consistent with one's values or interests, including a sense of pleasure, connection with others, competence, control, and goal progress (Eakman et al., 2018). Evidence suggests that engagement in activity contributes to student Veterans' sense of meaning in life, in part by eliciting these positive subjective experiences (Kinney, Eakman, & Graham, under review). However, studies indicate that health conditions may limit student Veterans' sense of doing by inhibiting engagement in social, community-based, and meaningful activities

(Eakman et al., 2016; Kinney, Eakman, & Graham, under review; Resnik, Gray, & Borgia, 2011).

We hypothesize that health status will mediate the negative relationship between combat exposure and a meaningful life. In this study, we operationalize a meaningful life by reported levels of 1) belonging (social support; instructor autonomy support), 2) self-understanding (coping ability; academic self-efficacy), and 3) doing (social and community participation; meaningful activity).

METHOD

Participants and Procedures

This was a prospective longitudinal panel study of two time periods. The sample consisted of student Veterans attending Colorado State University (CSU) who were deployed to a combat zone prior to enrolling. A portion of our sample received supported education services through a program entitled New Start for Student Veterans (NSSV). Following approval by CSU's Human Subjects Review Board, NSSV recipients were contacted by providers; others were contacted through the CSU Veterans' benefits office. Participants were invited to complete an informed consent prior to initiating an electronic survey hosted by Qualtrics. Invitations were sent biannually from November 2013 to April 2018. NSSV participants were eligible to complete a survey upon entry into the program, often between planned measurement occasions. Participants received a \$10 Amazon gift card upon survey completion. The initial response rate was 19.6%. Participants were excluded if they had not deployed to a combat zone; this yielded a sample size of $N = 226$ at baseline, with $N = 153$ (68.58%) completing a follow-up assessment. Time between measurements ranged from .72 to 29.16 months ($M = 6.92$, $SD = 4.24$).

Instruments

Combat exposure. Severity of combat exposure was assessed using the five-item *Indicator of Combat Exposure* (ICE). Rasch analysis was used to inform modification of scaling to optimize category functioning. Items were summed to construct a composite score, with a higher score indicating more severe combat exposure. The ICE had good internal consistency reliability in this sample ($\alpha = 0.82$).

Health status composite. We constructed a composite index of health status using indicators of health-related symptoms (PTSD, depression, and somatic symptoms). The *Posttraumatic Stress Disorder Patient Checklist – Civilian Version* (PCL-C) is a well-validated 17-item assessment of the severity of symptoms associated with the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 2000) criteria for PTSD ($\alpha = .94$ in sample; Blanchard, Jones-Alexander, Buckley, & Forneris, 1996). The *Patient Health Questionnaire Depression Scale* (PHQ-9) is a psychometrically sound nine-item self-report assessment of depressive symptoms ($\alpha = .88$ in sample; Kroenke, Spitzer, & Williams, 2001). The *Patient Health Questionnaire Somatic Symptoms Scale* (PHQ-15) is a valid and reliable 15-item assessment of somatic symptom severity ($\alpha = .84$ in sample; Kroenke, Spitzer, & Williams, 2002). Using the total scores for the PCL-C, PHQ-9, and PHQ-15, we constructed a *health status composite* at baseline using principal components analysis (PCA); scores loaded on a single factor (eigenvalue = 2.45, 81.53% of variance explained). Factor loadings were .91 for the PCL-C, .92 for the PHQ-9, and .88 for the PHQ-15.

Belonging composite. We constructed a composite indicator of belonging using indicators of social support and instructor autonomy support. The *Post-deployment Support Questionnaire* (PSQ) is a valid and reliable 10-item self-report scale assessing perceived social

support from the civilian community ($\alpha = .86$ in sample; Vogt, Proctor, King, King, & Vasterling, 2008). We used the six-item version (Shen, McCaughtry, Martin, & Fahlman, 2009) of the 15-item *Learning Climate Questionnaire* (LCQ; Black & Deci, 2000) to assess perceived instructor autonomy support ($\alpha = .91$ in sample). We constructed a *belonging composite* score at baseline and follow-up using PCA of total scores for each indicator. The scores loaded on a single factor at baseline (eigenvalue = 1.37, 68.28% of variance explained) and follow-up (eigenvalue = 1.36, 68.01% of variance explained). For both indicators, factor loadings were .83 at baseline and .83 at follow-up.

Self-understanding composite. We constructed a composite index of self-understanding using indicators of coping ability and academic self-efficacy. The *Brief Resilient Coping Scale* (BRCS) is a psychometrically sound four-item indicator of adaptive coping ability ($\alpha = .69$ in sample; Sinclair & Wallston, 2004). We employed the *Academic Self-efficacy Scale* (ASE), a well-validated eight-item assessment of academic self-efficacy ($\alpha = .89$ in sample), to assess participants' beliefs regarding their academic-related abilities (Chemers, Hu, & Garcia, 2001). We similarly used PCA of total BRCS and ASE scores to construct a *self-understanding composite* at baseline and follow-up. Scores loaded on a single factor at baseline (eigenvalue = 1.26, 62.75% of variance explained) and follow-up (eigenvalue = 1.44, 71.90% of variance explained). For both indicators, factor loadings were .79 at baseline and .85 at follow-up.

Doing composite. We constructed a composite indicator of doing using assessments of social and community participation and meaningful activity. The *Veterans' Social and Community Participation Assessment* (VSCPA) is a valid and reliable 5-item assessment of the frequency of Veterans' social and community participation ($\alpha = .69$ in sample; Eakman et al., 2019; Kinney, Eakman, & Graham, under review). The *Engagement in Meaningful Activities*

Survey (EMAS) is a psychometrically sound 12-item assessment of meaningful activity ($\alpha = .93$ in sample; Eakman, 2012; Goldberg, Brintnell, & Goldberg, 2002). We used PCA to construct a *doing composite* score at baseline and follow-up. Scores loaded on a single factor at baseline (eigenvalue = 1.39, 69.60% of variance explained) and follow-up (eigenvalue = 1.43, 71.30% of variance explained); factor loadings for both indicators were .83 at baseline and .84 at follow-up.

Data Analysis

Attrition may bias estimates in longitudinal analyses (Menard, 2002). To address this, we used independent samples *t* tests and chi-square tests to compare those who completed a follow-up (stayers) to those who did not (leavers) with respect to continuous and dichotomous variables, respectively. We generated descriptive statistics and zero-order correlations for all study variables; variables met assumptions for univariate and multivariate normality.

To test hypotheses, we used path analysis to estimate a just-identified model (CFI = 1.00, TLI = 1.00, RMSEA = .00) using a robust maximum likelihood estimator with Mplus (Version 8.1; Muthén & Muthén, 1998-2017). We investigated two mechanisms by which combat may pose an indirect risk to each source of meaning (belonging; self-understanding; doing) at follow-up through health status. First, we tested a simple mediation model by estimating the path 1) from combat to baseline health status, and 2) from baseline health status to each source of meaning at follow-up. Paths predicting each source of meaning at follow-up were estimated while controlling for the baseline value of each corresponding source of meaning, allowing us to investigate the theorized temporal ordering of variables (i.e., health status precedes sources of meaning; Menard, 2002).

Second, we tested a serial mediation model, which included baseline values of each source of meaning as additional variables linking combat exposure to meaning sources at follow-

up (combat exposure → baseline health status → baseline meaning sources → follow-up meaning sources). Investigating this serial mediation model allowed us to investigate whether combat, in part, was negatively associated with each source of meaning at follow-up through the instantaneous effect of health status on each source of meaning (Menard, 2002). By testing the simple and serial mediation models, we gain a more comprehensive understanding of the potential mechanisms by which combat influences each source of meaning at follow-up. Estimates in both models were adjusted for baseline age, gender (0 = female, 1 = male), marital status (0 = unmarried, 1 = married), and time between measurements. We used the product of coefficients method to test all indirect effects (Preacher, Rucker, & Hayes, 2007), and employed a level of significance of $\alpha = .05$ to evaluate significance.

RESULTS

The average age at baseline was 31.32 years ($SD = 7.34$). The majority of participants were male (86.3%) and 45.1% were married. At baseline, stayers ($M = 14.73$, $SD = 2.85$) had significantly less coping ability than leavers ($M = 15.85$, $SD = 2.83$; $t(224) = 2.77$, $p = .006$); participants did not differ with respect to other variables. See Table 2.1 for descriptive statistics and zero-order correlations.

Table 2.1
Zero-Order Correlations between Study Variables ($N = 153$)

Variable	M (SD) [†]	1	2	3	4	5	6	7	8
1. Combat exposure	7.99 (3.29)	—							
2. Health status (T1)	0.01 (0.96)	.28**	—						
3. Belonging (T1)	-0.03 (1.03)	-.23**	-.42**	—					
4. Belonging (T2)	-0.06 (0.98)	-.10	-.37**	.70**	—				
5. Self-understanding (T1)	-0.04 (1.06)	-.06	-.40**	.36**	.32**	—			
6. Self-understanding (T2)	-0.12 (1.02)	-.01	-.38**	.21*	.37**	.66**	—		
7. Doing (T1)	-0.01 (1.01)	.09	-.33**	.30**	.35**	.37**	.28**	—	
8. Doing (T2)	-0.08 (0.97)	.09	-.35**	.20*	.43**	.40**	.47**	.68**	—

Note. [†]Descriptive statistics for original variables used to construct composite indices are available from the first author upon request; T1 = baseline; T2 = follow-up; * = $p < .05$, ** = $p < .01$.

Simple Mediation Model

The simple mediation model supported our hypotheses, including the theorized direction of the relationship between health status and each source of meaning (i.e., health status preceded reported levels of meaning sources). Combat exposure was not associated with a sense of belonging ($b = 0.03$, $SE = 0.02$, $p = .138$), self-understanding ($b = 0.02$, $SE = 0.02$, $p = .410$), or doing ($b = 0.02$, $SE = 0.02$, $p = .277$) at follow-up, independently of baseline health status. More severe combat exposure was associated with worse baseline health status. In turn, worse baseline health status was associated with a lesser sense of belonging, self-understanding, and doing at follow-up, even after controlling for the baseline value of each respective source of meaning. See Table 2.2 for estimates of direct paths. Indirect effects indicate that more severe combat exposure was associated with a lesser sense of belonging, self-understanding, and doing at follow-up, as mediated by baseline health status. See Table 2.3 for estimates of indirect paths. See Figure 2.1 for a visual of the overall model.

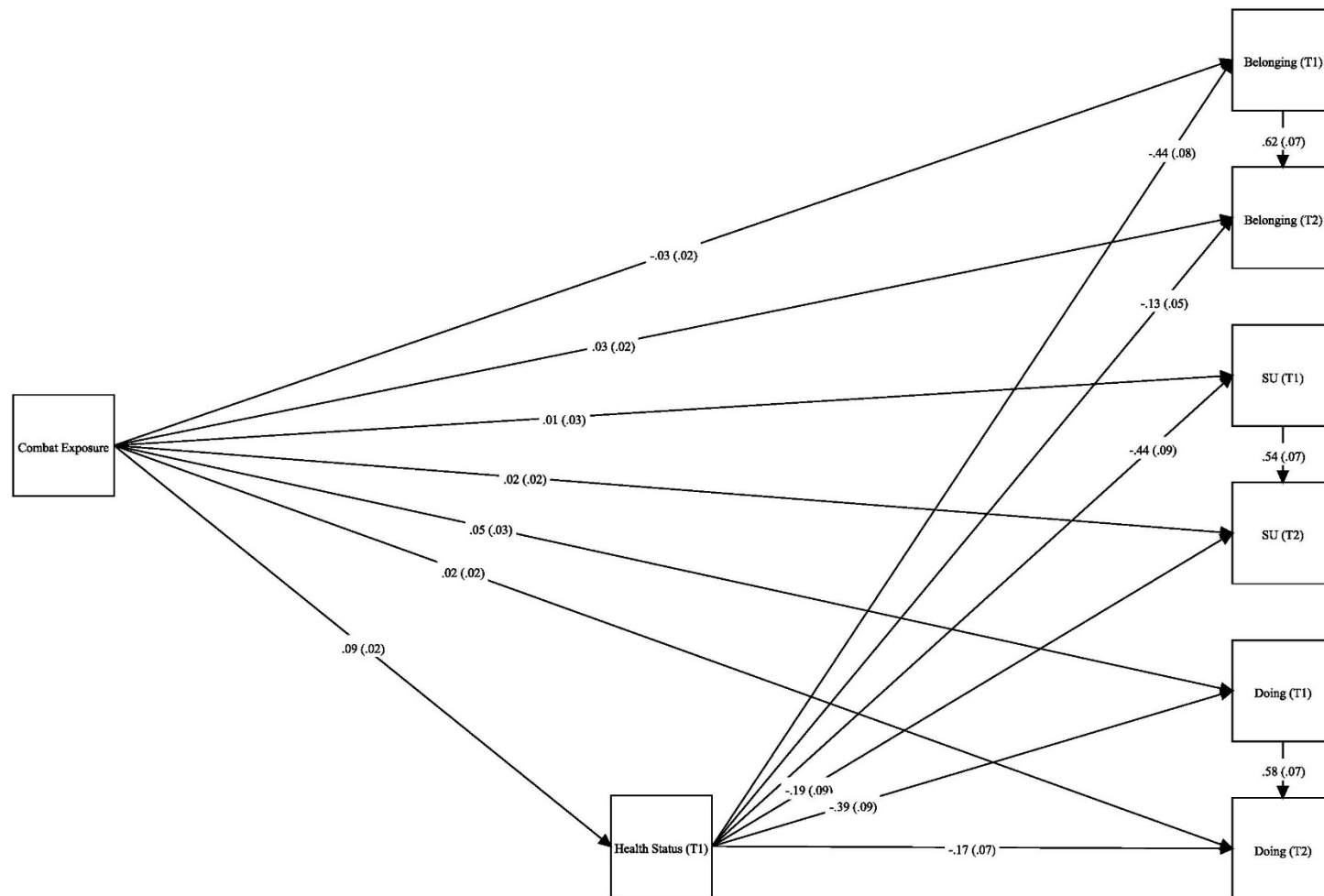


Figure 2.1. Visual of path model tested. Values reflect unstandardized estimates with standard errors in parentheses; all estimates adjusted for age, gender, marital status, and time between measurements; T1 = baseline, T2 = follow-up; SU = self-understanding

Table 2.2
Results of Path Analysis – Direct Paths (N = 153)

Direct Path	Unstandardized Estimates		Standardized Estimates	
	Estimate (SE)	95% CI	Estimate (SE)	95% CI
Combat exposure → Health status (T1)	0.09 (0.02)***	0.05 – 0.14	0.32 (0.07)***	0.18 – 0.46
Health status (T1) → Source of meaning (T1 & T2)				
Health status (T1) → Belonging (T1)	-0.44 (0.08)***	-0.60 – -0.27	-0.41 (0.07)***	-0.55 – -0.27
Health status (T1) → Belonging (T2)	-0.13 (0.05)**	-0.24 – -0.03	-0.13 (0.05)**	-0.23 – -0.02
Health status (T1) → SU (T1)	-0.44 (0.09)***	-0.63 – -0.26	-0.40 (0.08)***	-0.55 – -0.26
Health status (T1) → SU (T2)	-0.19 (0.09)*	-0.36 – -0.02	-0.18 (0.08)*	-0.34 – -0.02
Health status (T1) → Doing (T1)	-0.39 (0.09)***	-0.56 – -0.22	-0.37 (0.07)***	-0.52 – -0.23
Health status (T1) → Doing (T2)	-0.18 (0.07)**	-0.31 – -0.04	-0.17 (0.07)**	-0.31 – -0.04
Combat exposure → Source of meaning (T1 & T2)				
Combat exposure → Belonging (T1)	-0.03 (0.02)	-0.08 – 0.02	-0.09 (0.08)	-0.25 – 0.07
Combat exposure → Belonging (T2)	0.03 (0.02)	-0.01 – 0.06	0.09 (0.06)	-0.03 – 0.22
Combat exposure → SU (T1)	0.01 (0.03)	-0.04 – 0.07	0.04 (0.08)	-0.12 – 0.21
Combat exposure → SU (T2)	0.02 (0.02)	-0.02 – 0.06	0.06 (0.07)	-0.08 – 0.18
Combat exposure → Doing (T1)	0.05 (0.03)*	0.00 – 0.10	0.17 (0.08)*	0.01 – 0.33
Combat exposure → Doing (T2)	0.02 (0.02)	-0.02 – 0.06	0.07 (0.07)	-0.06 – 0.21
Source of meaning (T1) → Source of meaning (T2)				
Belonging (T1) → Belonging (T2)	0.62 (0.07)***	0.49 – 0.76	0.65 (0.07)***	0.53 – 0.78
SU (T1) → SU (T2)	0.54 (0.07)***	0.40 – 0.68	0.56 (0.08)***	0.41 – 0.71
Doing (T1) → Doing (T2)	0.58 (0.07)***	0.45 – 0.71	0.60 (0.06)***	0.50 – 0.71
Covariance between sources of meaning (T1 & T2)				
Belonging (T1) ↔ SU (T1)	0.19 (0.09)*	0.02 – 0.37	0.23 (0.09)*	0.04 – 0.41
Belonging (T1) ↔ SU (T2)	-0.09 (0.04)*	-0.17 – -0.01	-0.15 (0.06)*	-0.27 – -0.02
Belonging (T1) ↔ Doing (T2)	-0.03 (0.05)	-0.13 – 0.07	-0.05 (0.08)	-0.22 – 0.11

SU (T1) ↔ Doing (T2)	0.10 (0.05)*	0.01 – 0.20	0.16 (0.07)*	0.01 – 0.30
SU (T1) ↔ Belonging (T2)	0.05 (0.06)	-0.06 – 0.16	0.08 (0.09)	-0.09 – 0.24
Doing (T1) ↔ SU (T1)	0.24 (0.07)***	0.10 – 0.38	0.27 (0.08)***	0.12 – 0.42
Doing (T1) ↔ Belonging (T1)	0.21 (0.07)**	0.07 – 0.34	0.25 (0.08)***	0.10 – 0.40
Doing (T1) ↔ SU (T2)	0.01 (0.05)	-0.10 – 0.11	0.01 (0.08)	-0.15 – 0.16
Doing (T1) ↔ Belonging (T2)	0.12 (0.05)*	0.02 – 0.22	0.19 (0.08)*	0.04 – 0.34
Doing (T2) ↔ SU (T2)	0.16 (0.05)**	0.06 – 0.26	0.32 (0.09)***	0.14 – 0.49
Doing (T1) ↔ Belonging (T2)	0.19 (0.05)***	0.10 – 0.27	0.40 (0.07)***	0.27 – 0.54
SU (T2) ↔ Belonging (T2)	0.16 (0.04)***	0.08 – 0.24	0.33 (0.07)***	0.20 – 0.47

Note. T1 = baseline; T2 = follow-up; SE = standard error; 95% CI = 95% confidence interval; SU = self-understanding; * $p \leq .05$, ** = $p \leq .01$, *** $p \leq .001$.

Table 2.3
Results of Path Analysis – Indirect Paths (N = 153)

Indirect Path	Unstandardized Indirect Effect		Standardized Indirect Effect	
	Estimate (SE)	95% CI	Estimate (SE)	95% CI
Simple mediation models				
Combat exposure → Health status (T1) → Belonging (T2)	-0.01 (0.01)*	-0.02 – -0.00	-0.04 (0.02)*	-0.08 – -0.00
Combat exposure → Health status (T1) → SU (T2)	-0.02 (0.01)*	-0.04 – -0.00	-0.06 (0.03)*	-0.11 – -0.00
Combat exposure → Health status (T1) → Doing (T2)	-0.02 (0.01)*	-0.03 – -0.00	-0.06 (0.03)*	-0.11 – -0.01
Serial mediation models				
Combat exposure → Health status (T1) → Belonging (T1) → Belonging (T2)	-0.03 (0.01)**	-0.04 – -0.01	-0.09 (0.03)**	-0.14 – -0.03
Combat exposure → Health status (T1) → SU (T1) → SU (T2)	-0.02 (0.01)**	-0.04 – -0.01	-0.07 (0.03)**	-0.12 – -0.02
Combat exposure → Health status (T1) → Doing (T1) → Doing (T2)	-0.02 (0.01)**	-0.04 – -0.01	-0.07 (0.03)**	-0.12 – -0.02

Note. T1 = baseline; T2 = follow-up; SE = standard error; 95% CI = 95% confidence interval; SU = self-understanding; * $p \leq .05$, ** = $p \leq .01$, *** $p \leq .001$.

Serial Mediation Model

Investigation of the serial mediation model provided additional support for our hypotheses, and suggested that health status may also influence meaning sources at follow-up through its instantaneous effect upon each source of meaning. To test the serial mediation model, we additionally estimated the relationship between 1) baseline health status and the baseline value of each meaning source, and 2) the baseline and follow-up values of the meaning sources. Worse baseline health status was associated with lower baseline levels of belonging, self-understanding, and doing. Baseline and follow-up levels of belonging, self-understanding, and doing were positively associated. Indirect effects indicate that more severe combat exposure was associated with a decreased sense of belonging, self-understanding, and doing at follow-up, as mediated by baseline levels of health status and baseline meaning sources.

DISCUSSION

This was the first study to test whether combat exposure, through its association with health-related symptoms, posed a risk to student Veterans' achievement of a meaningful and purposeful life (i.e., a sense of belonging, self-understanding, and doing). Current conceptions of combat as a risk tend to emphasize its direct link to health-related symptoms (e.g., PTSD). Our findings, however, indicate that knowledge of the link between combat and health-related symptoms may be necessary, yet insufficient, for understanding the broader implications of combat-related risk. Specifically, longitudinal findings supported the directionality of our hypotheses, uncovering strong evidence that health-related symptoms associated with combat contribute to a decreased sense of belonging, self-understanding, and doing. By adopting an expanded view of the risk posed by combat, our study may provide additional targets for clinicians seeking to foster student Veterans' health and wellbeing.

More severe combat exposure was associated with more severe health-related symptoms, in turn decreasing student Veterans' sense of belonging. This is the first study to offer empirical support for the risk that combat poses to student Veterans' sense of belonging, a critical ingredient for life meaning and psychological wellbeing (King, 2004; Ryff, 1989). Health conditions (e.g., PTSD) are associated with cognitive and emotional impairments that diminish interpersonal skills, thereby limiting student Veterans' ability to secure social support (Sayers, Farrow, Ross, & Oslin, 2009; Shallcross, Arbisi, Polusny, Kramer, & Erbes, 2016) and healthy relationships with faculty (Church, 2009; Kinney & Eakman, 2017). For example, Veterans with health conditions report that increased social isolation, irritability, and emotional dysregulation undermines their ability to initiate and maintain relationships (Daggett et al., 2013; Resnik & Allen, 2007). Combat-exposed student Veterans with associated health conditions may therefore experience difficulty with extracting meaning from social bonds within the campus and surrounding communities.

Health-related symptoms associated with combat also limited student Veterans' experience of self-understanding (e.g., perceived coping ability). Veterans report that effective coping ability is a critical component of a successful transition to the civilian community (Hawkins, McGuire, Linder, & Britt, 2015). Unfortunately, health conditions generate cognitive and emotional impairments that make it difficult to employ effective coping skills (Resnik & Allen, 2007). With respect to academic self-efficacy, health conditions tend to predict more negative appraisals of academic-related abilities among student Veterans (Eakman et al., in press). Health conditions may diminish student Veterans' academic self-efficacy through impaired cognition (e.g., attention), thereby limiting academic performance and fostering a negative appraisal of ability (Barry et al., 2012; Resnik & Allen, 2007). Combat-exposed student

Veterans with health conditions are therefore entering campus at risk of possessing a depleted sense of self-understanding, undermining their experience of meaning in life and psychological wellbeing.

Finally, student Veterans' sense of doing was undermined by health-related symptoms associated with combat experiences. Our findings indicate that past combat exposure may indirectly limit student Veterans' current engagement in social, community-based, and personally valued activities; an important source of meaning and psychological wellbeing in this population (Eakman et al., 2019; King, 2004; Kinney, Eakman, & Graham, under review). Veterans report that conditions such as PTSD and depression foster a tendency to avoid activities involving others and that physical symptoms (e.g., pain) disrupt typical activities (Daggett et al., 2013; Resnik & Allen, 2007). Further, Veterans with health conditions report less pleasure associated with activities they once found enjoyable, suggesting a limitation in extracting meaning from doing (Resnik & Allen, 2007). Perhaps this is due to the tendency of psychiatric conditions (e.g., depression) to dampen individuals' capacity for positive experiences such as pleasure (Hart et al., 2011; Pietrzak et al., 2015). In sum, combat-exposed student Veterans may enter college with elevated health-related symptoms, which in turn threatens their ability to engage in activity that fosters meaning in life and psychological wellbeing.

Limitations

Those included in analyses had lesser coping ability than those who were omitted due to the completion of only one survey, suggesting that findings may not generalize to all student Veterans. Additionally, our use of a convenience sample derived from one university may further limit the generalizability of findings. We encourage efforts to replicate the current study with larger, more geographically diverse samples. While our longitudinal design compares favorably

to cross-sectional designs, it did not completely satisfy criteria for establishing causality. Future research should employ methods capable of fully supporting assertions of causality (e.g., experimental designs; Menard, 2002). While we cannot assert causality, our findings do support the covariation and temporal ordering of constructs relevant to theoretical development for efforts supporting student Veterans. Theory development could further benefit from understanding the mechanisms by which these relationships occur. Future research should employ designs capable of providing empirical support for mechanisms explaining observed relationships, thereby providing more precise guidance for intervention efforts supporting student Veterans.

Conclusions and Implications

Our findings indicate that combat exposure poses an indirect risk to a meaningful and purposeful life by contributing to elevated levels of health conditions, which in turn limit a sense of belonging, self-understanding, and doing. Considering combat exposure as an indirect risk to a meaningful life has important implications for campus and community-based efforts supporting the student Veteran population. First, we echo previous calls to expand student Veterans' access to healthcare by increasing outreach to Veterans on campus, implementing screening for health conditions, and improving partnerships with local Veterans Affairs Medical Centers or other community-based systems of care (Bonar, Bohnert, Walters, Ganoczy, & Valenstein, 2015; Borsari et al., 2017; Currier, McDermott, & Sims, 2018). Evidence indicates that student Veterans tend to access care at reduced rates, in part due to perceived stigma (Bonar et al., 2015; Currier et al., 2018). Educational campaigns should be implemented to reduce stigma by addressing barriers to access. Such efforts may result in improved management of symptoms,

thereby limiting the deleterious influence of health-related symptoms upon meaningful life experiences.

Second, we encourage the systematic development and testing of interventions that facilitate meaningful life experiences (e.g., belonging) among combat-exposed student Veterans *despite* the presence of health-related symptoms. Campus institutions devoted to student Veterans may offer a physical space for those with varying levels of health-related symptoms to experience a sense of belonging through the provision of opportunities to interact with peers who share similar life experiences (Borsari et al., 2017; Williston & Roemer, 2017). Similarly, efforts could enhance student Veterans' self-understanding by promoting skills necessary for acquiring academic accommodations (i.e., self-advocacy skills), in turn facilitating academic success and academic self-efficacy (Kinney & Eakman, 2017). The experience of academic success may foster student Veterans' academic self-efficacy and overall sense of self-understanding, thereby facilitating a more meaningful and purposeful existence. Lastly, institutions could enhance student Veterans' sense of doing by affording opportunities for them to experience active community engagement. For example, institutions have implemented adapted sports programs to facilitate student Veterans' participation despite the presence of health-related symptoms (Kraus & Rattray, 2013).

PROTECTIVE FACTORS THAT MITIGATE THE INDIRECT RISK OF COMBAT EXPOSURE UPON MEANING IN LIFE: A LONGITUDINAL STUDY OF STUDENT VETERANS

Meaning and purpose in life is a central component of psychological wellbeing (Ryff, 1989), and refers to one's interpretation of their existence as valuable and devoted to a coveted future (Steger et al., 2006). Combat exposure may result in traumatic experiences that undermine student Veterans' life meaning (Bryan et al., 2013; Steger et al., 2015), but a resilience perspective can facilitate an understanding of forces that foster student Veterans' meaning in life *despite* combat exposure.

Overview of Resilience

Resilience has been defined as the multidimensional process by which humans sustain positive outcomes despite exposure to risk (Masten, 2001). *Risk factors* are forces that impede the achievement of positive outcomes (Kraemer et al., 1997). Successful adaptation to risk should be considered in terms of achieving positive outcomes, such as meaning and purpose in life (Zautra et al., 2010), rather than avoiding negative outcomes like health-related symptoms (e.g., posttraumatic stress disorder [PTSD]; Bergmann, Renshaw, & Paige, 2018). *Protective factors* mitigate the negative influence of risk and promote positive adaptation (Rutter, 1987). Protective factors operate in two models of resilience: 1) compensatory and 2) moderator models (Masten, 2001). Protective factors operating in *compensatory models* of resilience promote positive outcomes independently of the risk, while protective factors operating in *moderator models* of resilience buffer against the influence of the risk itself.

The purpose of this study is twofold. First, we seek to investigate whether combat exposure poses an indirect risk to student Veterans' meaning in life. Specifically, we will test whether combat is associated with symptoms of health-related conditions, which in turn undermine student Veterans' life meaning. Second, this study will investigate whether protective factors foster student Veterans' life meaning despite combat exposure and health-related symptoms (i.e., combat-related risk). Understanding the indirect risk of combat upon life meaning, as well as protective factors that mitigate this risk, will inform efforts seeking to promote a meaningful and fulfilling life among combat-exposed student Veterans.

Combat Exposure May Pose an Indirect Risk to Meaning and Purpose in Life

Current studies of combat among Veterans tend to emphasize its direct link to health-related symptoms, and links to positive indicators such as life meaning are overlooked (Bergmann et al., 2018). Combat exposure includes 1) *combat experiences* (events common in warfare such as being fired upon), 2) *perceived threat* (fear for one's safety), and 3) *exposure to the aftermath of battle* (experiencing consequences of war), which manifest as potentially traumatic events (King et al., 2006). More severe combat exposure has been linked to negative health-related symptoms such as PTSD (Ozer et al., 2003), depression (Hoge et al., 2004), and somatic symptoms (e.g., fatigue; Hoge et al., 2007). Additionally, Bryan et al. (2013b) and Steger et al. (2015) found that more severe combat exposure was associated with less life meaning, suggesting that combat exposure threatens positive life outcomes. Health-related symptoms tend to accompany combat exposure, and may explain the link between combat exposure and life meaning. Indeed, student Veterans with more severe health-related conditions report lesser life meaning (Sinclair et al., 2016). To the best of our knowledge, however, no

study has explored health-related symptoms as a potential mechanism by which combat negatively influences life meaning.

Protective Factors

We investigated six protective factors for this study. Our selections were guided by the Model of Meaning of Life Experiences (King's Model; King, 2004). King's model proposes that resilience and life meaning are fostered by the following sources of meaning: 1) *belonging* (positive and supportive relationships), 2) *self-understanding* (understanding oneself and one's relationship with the world), and 3) *doing* (engaging in personally meaningful activity).

Belonging. A sense of belonging emerges from healthy social bonds (i.e., feeling supported and valued) that imbue life with meaning and foster resilience (King, 2004). Post-deployment social support (social support) and instructor autonomy support may be important protective factors among student Veterans. *Social support* captures the perception of tangible assistance and emotional needs fulfillment (King et al., 2006). *Instructor autonomy support* is the extent to which one perceives that the instructor values their perspective while fostering self-determined behavior in the classroom (Black & Deci, 2000). Veterans who endorse high levels of perceived social support and autonomy are more likely to overcome severe combat exposure (Pietrzak & Cook, 2013; Pietrzak & Southwick, 2011).

Self-understanding. Self-understanding captures the self-referential aspect of life meaning, including positive appraisals of one's ability to achieve mastery and navigate challenges, that promotes life meaning and resilience (King, 2004). Coping ability and academic self-efficacy are self-referential constructs that may foster student Veterans' resilience. Perceived *coping ability* refers to appraisals of one's capacity to "effectively use cognitive appraisal skills in a flexible, committed approach to active problem solving despite stressful circumstances"

(Sinclair & Wallston, 2004, p. 95). Adaptive coping ability has been linked to greater life meaning among combat-exposed student Veterans (Kinney, Eakman, Henry, Coatsworth, & Schmid, under review). *Academic self-efficacy* is students' perception of their ability to succeed in academic-related tasks (Schunk, 1991), thereby reflecting a sense of mastery that is a critical ingredient for both life meaning (Church et al., 2013) and resilience (Rutter, 1987).

Doing. A sense of doing refers to engagement in valued and purposeful activity that imbues our lives with meaning (Eakman, 2013) and facilitates the transcendence of adversity (King, 2004). Social and community participation and meaningful activity both capture a sense of doing capable of fostering student Veterans' resilience. *Social and community participation* reflects social activity that satisfies nondomestic roles (Chang et al., 2013; Levasseur et al., 2010). *Meaningful activity* aligns with one's values and interests, and generates a constellation of positive subjective experiences (e.g., competence; Eakman et al., 2018). Community-based activity (Pietrzak & Cook, 2013) and meaningful activity (Kinney, Eakman, Henry, et al., under review) both confer a protective advantage for combat-exposed Veterans.

We propose three hypotheses. First, we hypothesize that 1) baseline levels of health-related symptoms will explain the negative effect of combat exposure upon follow-up meaning in life. Second, we hypothesize that 2) higher levels of each of the six protective factors will be associated with greater life meaning, irrespective of combat and health-related symptoms, thereby supporting a compensatory model of resilience. Finally, we hypothesize that 3) in the presence of high levels of each of the protective factors, the indirect effect of combat upon follow-up life meaning will be weakened, thereby supporting a moderator model of resilience.

METHOD

Participants and Procedures

This was a prospective longitudinal panel study of two time periods. We used a convenience sample derived from Veterans enrolled at Colorado State University (CSU) who had been deployed to a combat zone. A portion of the sample received New Start for Student Veterans (NSSV) services, a supported education program for student Veterans with service-related injuries. Following approval by CSU's Human Subjects Review Board, NSSV participants were contacted by providers and others were accessed through the Veterans' benefits office. Participants were sent an invitation to an online survey hosted by Qualtrics, and consented prior to survey completion. Participants received a \$10 gift card upon survey completion. Participants received an invitation biannually between November 2013 and April 2018. NSSV participants were eligible to complete a survey upon entry into NSSV, sometimes between planned measurements. The response rate was 19.6%. Participants who did not deploy to a combat zone were excluded, yielding $N = 226$ at baseline and $N = 153$ (68.6%) at follow-up. Time between measurements averaged 6.92 months ($SD = 4.24$, min – max: 0.72 – 29.16).

Instruments Included in the Survey

Combat exposure. Combat exposure was assessed using the five-item *Indicator of Combat Exposure* (ICE; $\alpha = 0.82$ in sample). We used Rasch analysis to evaluate and revise the rating scale design according to procedures outlined by Bond and Fox (2007). A composite score was derived from summing the items; higher scores indicates more severe combat exposure.

Health-related symptoms. We constructed a health status composite by employing three indicators of health-related symptoms at baseline (PTSD, depression, and somatic symptoms). We assessed PTSD symptoms using the *Posttraumatic Stress Disorder Patient Checklist* –

Civilian Version (PCL-C), a well-validated 17-item assessment of PTSD symptom severity ($\alpha = .94$ in sample; Blanchard et al., 1996). We assessed depressive symptoms using the *Patient Health Questionnaire Depression Scale* (PHQ-9), a psychometrically sound nine-item assessment of depressive symptom severity ($\alpha = .88$ in sample; Kroenke et al., 2001). We assessed somatic symptoms using the *Patient Health Questionnaire Somatic Symptoms Scale* (PHQ-15), a valid and reliable 15-item assessment of somatic symptom severity ($\alpha = .84$ in sample; Kroenke et al., 2002). We constructed a *health status composite* using principal components analysis of total scores for the PCL-C, PHQ-9, and PHQ-15. Scores loaded on a single factor (eigenvalue = 2.45, 81.53% of variance explained); factor loadings were .91 for the PCL-C, .92 for the PHQ-9, and .88 for the PHQ-15. Higher scores indicate more severe health-related symptoms.

Meaning and purpose in life. We assessed meaning in life at baseline and follow-up using *The Meaning in Life Questionnaire – Presence Subscale* (MLQ-P). The MLQ-P is a well-validated five-item assessment of meaning and purpose in life ($\alpha = .92$ in sample; Steger et al., 2006). Participants rate items on a scale ranging from 1 (absolutely untrue) to 7 (absolutely true). We summed the items to create a composite; higher scores reflect greater life meaning.

Protective factors. Veterans completed assessments of six protective factors at baseline: 1) social support; 2) instructor autonomy support; 3) coping ability; 4) academic self-efficacy; 5) social and community participation; and 6) meaningful activity.

Belonging. We assessed social support using the *Post-deployment Support Questionnaire* (PSQ), a valid and reliable assessment of post-deployment social support ($\alpha = .86$ in sample; Vogt et al., 2008). Participants rate items on a scale of 1 (strongly disagree) to 5 (strongly agree); items were summed to create a composite, with higher scores reflecting greater perceived social

support. We assessed instructor autonomy support using the six-item version (Shen et al., 2009) of the *Learning Climate Questionnaire* (LCQ; Black & Deci, 2000). The LCQ is a psychometrically sound assessment of perceived instructor autonomy support ($\alpha = .91$ in sample). Participants rate items on a scale of ranging from 1 (strongly disagree) to 7 (strongly agree). A composite score was constructed by summing the six items; higher scores reflect greater perceived instructor autonomy support.

Self-understanding. Coping ability was assessed using the *Brief Resilient Coping Scale* (BRCS), a well-validated four-item indicator of adaptive coping ability ($\alpha = .69$ in sample; Sinclair & Wallston, 2004). Participants rate items on a scale ranging from 1 (does not describe me at all) to 5 (describes me very well); items are summed to create a composite score, with higher scores reflecting more adaptive coping ability. Academic self-efficacy was assessed using the *Academic Self-efficacy Scale* (ASE), a valid and reliable eight-item indicator of academic self-efficacy ($\alpha = .89$; Chemers et al., 2001). Participants rate items according to a scale that ranges from 1 (very untrue) to 7 (very true). A composite score was creating by averaging all items, and higher scores reflect greater perceived academic self-efficacy.

Doing. We assessed social and community participation using the five-item *Veterans' Social and Community Participation Assessment* (VSCPA), a valid assessment of the frequency of Veterans' social and community participation ($\alpha = .69$ in sample; Eakman, Kinney, & Reinhardt, 2019; Kinney, Eakman, & Graham, under review). Participants rate items ranging from 0 (did not occur) to 6 (every day of the week). We created a composite by summing the items; higher scores reflect more frequent social and community participation. We assessed meaningful activity using the 12-item *Engagement in Meaningful Activities Survey* (EMAS), a psychometrically sound 12-item assessment of positive subjective experiences associated with

daily activity ($\alpha = .93$ in sample; Eakman, 2012; Goldberg et al., 2002). Participants rate items on a scale ranging from 1 (rarely) to 4 (always). A composite score was constructed by summing the items; higher scores reflect more meaningful activity.

Data Analysis

Because attrition may bias estimates in longitudinal studies (Menard, 2002), we tested differences in variables between those who completed both measurements (stayers) and those who did not (leavers). We used independent samples *t* tests and chi-square tests to compare the groups on continuous and categorical variables, respectively. We calculated descriptive statistics and zero-order correlations for variables; data met assumptions for normality. We specified a just-identified model (CFI = 1.00, TLI = 1.00, RMSEA = .00) using a robust maximum likelihood estimator in Version 8.1 of Mplus (Muthén & Muthén, 1998-2017). All estimates were adjusted for the following control variables: baseline age, gender (0 = female, 1 = male), marital status (0 = unmarried, 1 = married), and time between measurements. We employed a level of significance of $\alpha = .05$ to evaluate all effects.

The indirect effect of combat upon meaning in life. We investigated two mechanisms by which combat may indirectly influence life meaning at follow-up. First, we specified a simple mediation model that estimated the path 1) from combat exposure to baseline health status, and 2) from baseline health status to follow-up life meaning. Path estimates explaining follow-up life meaning were adjusted for baseline life meaning, allowing us to test the theorized temporal ordering of variables (i.e., health status precedes life meaning; Menard, 2002).

Second, we tested a serial mediation model, which considered baseline life meaning as an additional variable linking combat exposure to follow-up life meaning (combat → baseline health status → baseline life meaning → follow-up life meaning). We specified the serial

mediation model to investigate whether combat was negatively associated with follow-up life meaning, in part through the instantaneous effect of health status upon life meaning (Menard, 2002). We tested the simple and serial mediation models to explore potential mechanisms by which combat influences meaning in life. We used the product of coefficients method to test all indirect effects (Preacher et al., 2007).

Compensatory models of resilience. We regressed baseline life meaning and follow-up life meaning on baseline levels of each of the six protective factors to test compensatory models of resilience. Evidence of a compensatory model was established by observing a statistically significant positive association between protective factors and life meaning, while controlling for combat exposure and health status. Significant estimates of paths from protective factors to baseline life meaning indicate their instantaneous effect upon life meaning; significant paths to follow-up life meaning indicate that the protective factors precede life meaning in time.

Moderator models of resilience. We tested six moderated-mediation models to investigate whether the protective factors alter the path from: 1) combat exposure to baseline health status, 2) health status to baseline life meaning, and/or 3) health status to follow-up life meaning. We constructed interaction terms using mean-centered versions of the variables. We probed statistically significant interaction terms by examining a Johnson-Neyman regions of significance (J-N) graph, which uncovers how the indirect effect of combat upon follow-up life meaning changes across observed values of the protective factor (Preacher, Curran, & Bauer, 2006). A moderator model of resilience was supported if the indirect effect of combat upon follow-up life meaning was weakened in the presence of high levels of the protective factor.

RESULTS

Participants' average age at baseline was 31.32 years ($SD = 7.34$). Most were male (86.3%) and 45.1% were married. At baseline, stayers had less coping ability ($M = 14.73$, $SD = 2.85$) than leavers ($M = 15.85$, $SD = 2.83$; $t(224) = 2.77$, $p = .006$); participants did not differ according to other variables. See Table 3.1 for descriptive statistics and zero-order correlations.

Table 3.1
Zero-Order Correlations between Study Variables ($N = 153$)

Variable	<i>M</i> (<i>SD</i>)	1	2	3	4	5	6	7	8	9	10
1. Combat exposure	7.99 (3.29)	—									
2. Health status (T1) [†]	0.01 (0.96)	.28***	—								
3. Meaning in life (T1)	24.35 (6.70)	.07	-.48***	—							
4. Meaning in life (T2)	23.50 (6.98)	-.01	-.36***	.70***	—						
5. Social support (T1)	37.57 (7.70)	-.19*	-.40***	.34***	.25**	—					
6. IAS (T1)	28.95 (7.31)	-.21**	-.32***	.22**	.17*	.45***	—				
7. Coping ability (T1)	14.73 (2.85)	-.10	-.28***	.45***	.45***	.16	.30***	—			
8. ASE (T1)	5.15 (1.03)	.00	-.39***	.40***	.36***	.22**	.35***	.41***	—		
9. SCP (T1)	8.19 (4.96)	.09	-.19*	.14	.14	.13	.05	.14	.08	—	
10. Meaningful activity (T1)	31.95 (6.84)	.07	-.36***	.60***	.48***	.40***	.27***	.46***	.36***	.43***	—

Note. [†]Descriptive statistics and zero-order correlations for original variables used to construct health status composite available from the first author upon request; T1 = baseline; T2 = follow-up; IAS = instructor autonomy support; ASE = academic self-efficacy; SCP = social and community participation; * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Hypothesis 1: The Indirect Effect of Combat upon Meaning in Life

The simple mediation model failed to support our first hypothesis. The indirect effect of combat exposure upon follow-up life meaning, through baseline health status, was not statistically significant ($b = -0.01$, $SE = 0.05$, $p = .926$, 95% confidence interval [CI]: $-0.11 - 0.10$). More severe combat was associated with worse baseline health status, though baseline health status was not associated with follow-up life meaning (after controlling for baseline life meaning). See Table 3.2 for estimates of direct paths and Figure 3.1 for a visual of the path model.

The serial mediation model supported our first hypothesis, indicating that combat exposure may negatively influence follow-up life meaning through the instantaneous effect of health status upon life meaning. Combat exposure was not associated with follow-up life meaning, independently of baseline health status and baseline life meaning. To test the serial mediation model, we estimated the path 1) from baseline health status to baseline life meaning and 2) from baseline life meaning to follow-up life meaning. Worse baseline health status was associated with lesser meaning in life at baseline. Baseline life meaning was positively associated with follow-up life meaning. The indirect effect indicated that more severe combat exposure was associated with less life meaning at follow-up, as mediated by baseline health status and baseline life meaning ($b = -0.11$, $SE = 0.05$, $p = .013$, 95% CI: $-0.21 - -0.02$).

Hypothesis 2: Compensatory Models of Resilience

Results partially supported our second hypothesis, indicating that coping ability and meaningful activity operate in compensatory models of resilience in our sample. Greater baseline meaningful activity was associated with greater baseline life meaning, irrespective of combat exposure and baseline health status. This result indicates that meaningful activity may afford an

instantaneous, and positive, effect upon life meaning. Greater baseline coping ability was associated with greater life meaning at follow-up while controlling for baseline life meaning, indicating that more adaptive coping ability precedes a greater sense of life meaning in time.

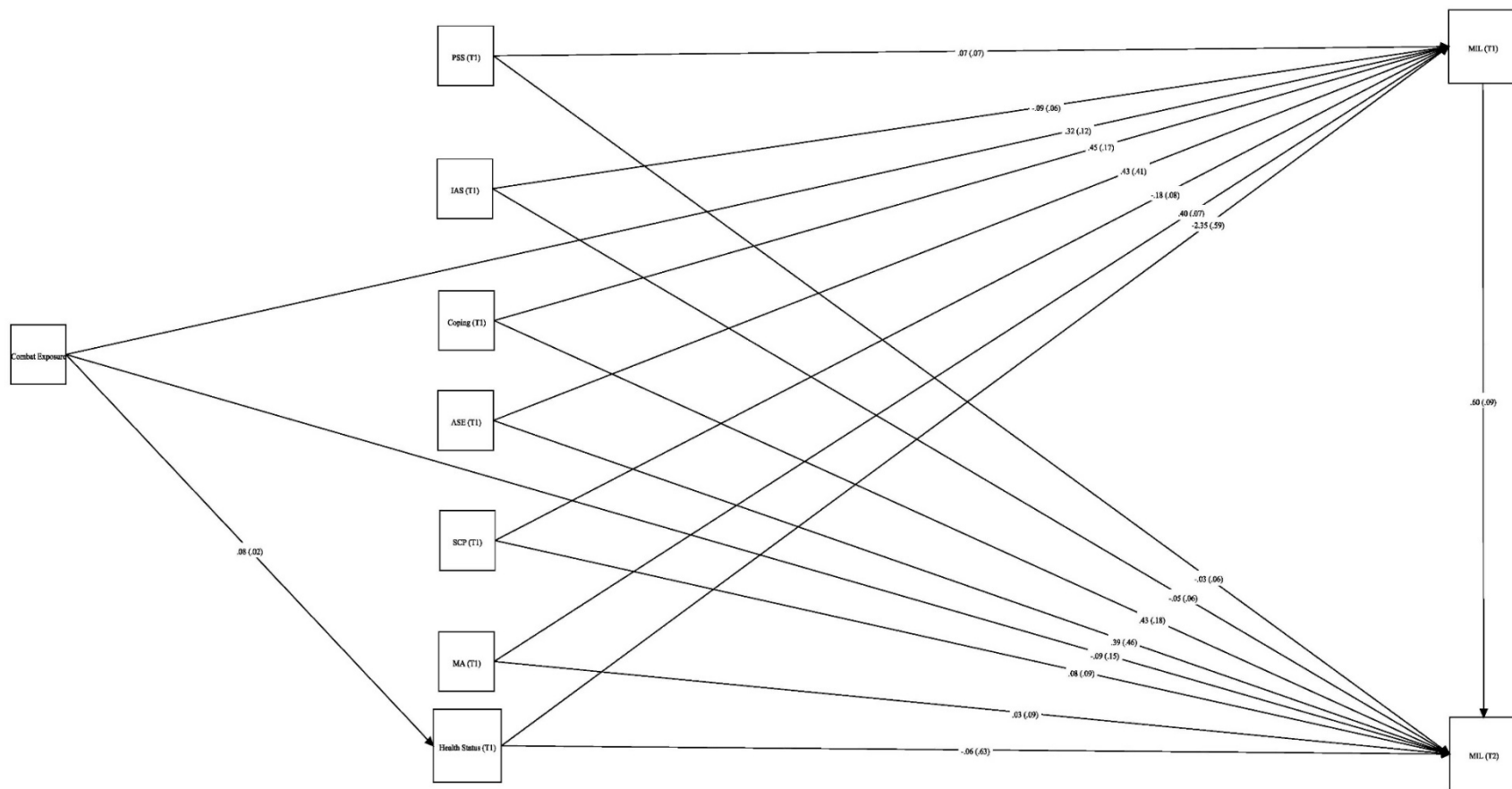


Figure 3.1. Visual of initial path model tested. Values reflect unstandardized estimates with standard errors in parentheses; all estimates adjusted for age, gender, marital status, and time between measurements; T1 = baseline, T2 = follow-up; ASE = academic self-efficacy; MA = meaningful activity; SCP = social and community participation; IAS = instructor autonomy support; PSS = post-deployment social support; MIL = meaning in life.

Table 3.2
Results of Path Analysis (*N* = 153)

Direct Path	Parameter Estimates			
	Unstandardized		Standardized	
	Estimate (SE)	95% CI	Estimate (SE)	95% CI
Combat exposure → Health status (T1)	0.08 (0.02)***	0.04 – 0.12	0.28 (0.07)***	0.15 – 0.40
Health status (T1) → Meaning in life (T1 & T2)				
Health status (T1) → Meaning in life (T1)	-2.35 (0.59)***	-3.51 – -1.19	-0.34 (0.09)***	-0.51 – -0.17
Health status (T1) → Meaning in life (T2)	-0.06 (0.63)	-1.30 – 1.18	-0.01 (0.09)	-0.18 – 0.16
Combat exposure → Meaning in life (T1 & T2)				
Combat exposure → Meaning in life (T1)	0.32 (0.12)**	0.08 – 0.56	0.16 (0.06)**	0.04 – 0.28
Combat exposure → Meaning in life (T2)	-0.09 (0.15)	-0.38 – 0.20	-0.04 (0.07)	-0.18 – 0.09
Protective factors (T1) → Meaning in life (T1)				
Social support (T1) → Meaning in life (T1)	0.07 (0.07)	-0.07 – 0.21	0.08 (0.08)	-0.08 – 0.24
IAS (T1) → Meaning in life (T1)	-0.09 (0.06)	-0.21 – 0.03	-0.10 (0.07)	-0.22 – 0.03
Coping ability (T1) → Meaning in life (T1)	0.45 (0.18)**	0.11 – 0.79	0.19 (0.07)**	0.05 – 0.34
ASE (T1) → Meaning in life (T1)	0.43 (0.41)	-0.38 – 1.23	0.07 (0.06)	-0.06 – 0.19
SCP (T1) → Meaning in life (T1)	-0.18 (0.08)*	-0.34 – -0.03	-0.14 (0.06)*	-0.25 – -0.02
Meaningful activity (T1) → Meaning in life (T1)	0.40 (0.07)***	0.26 – 0.53	0.40 (0.07)***	0.27 – 0.54
Protective factors (T1) → Meaning in life (T2)				
Social support (T1) → Meaning in life (T2)	-0.03 (0.06)	-0.15 – 0.10	-0.03 (0.07)	-0.17 – 0.11
IAS (T1) → Meaning in life (T2)	-0.05 (0.06)	-0.17 – 0.07	-0.05 (0.06)	-0.18 – 0.07
Coping ability (T1) → Meaning in life (T2)	0.43 (0.18)*	0.08 – 0.78	0.17 (0.07)*	0.03 – 0.32
ASE (T1) → Meaning in life (T2)	0.39 (0.46)	-0.52 – 1.29	0.06 (0.07)	-0.08 – 0.19
SCP (T1) → Meaning in life (T2)	0.08 (0.09)	-0.09 – 0.26	0.06 (0.06)	-0.07 – 0.19
Meaningful activity (T1) → Meaning in life (T2)	0.03 (0.09)	-0.14 – 0.20	0.03 (0.09)	-0.13 – 0.20
Meaning in life (T1) → Meaning in life (T2)	0.60 (0.09)***	0.43 – 0.77	0.58 (0.07)***	0.44 – 0.72

Note. T1 = baseline; T2 = follow-up; IAS = instructor autonomy support; ASE = academic self-efficacy; SCP = social and community participation; SE = standard error; 95% CI = 95% confidence interval; * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Hypothesis 3: Moderator Models of Resilience

Results indicated that social support, instructor autonomy support, coping ability, and academic self-efficacy operated in moderator models of resilience, thereby partially supporting our third hypothesis. We first examined whether the following paths differed across varying levels of the protective factors: 1) combat exposure to baseline health status, 2) health status to baseline life meaning, and 3) health status to follow-up life meaning. Statistically significant interaction terms indicated that the relationship between combat exposure and baseline health status differed across varying levels of social support ($b = -0.01$, $SE = 0.002$, $p = .012$, 95% CI: $-0.009 - -0.001$), instructor autonomy support ($b = -0.01$, $SE = 0.002$, $p = .001$, 95% CI: $-0.011 - -0.003$), coping ability ($b = -0.01$, $SE = 0.006$, $p = .025$, 95% CI: $-0.026 - -0.002$), and academic self-efficacy ($b = -0.03$, $SE = 0.016$, $p = .041$, 95% CI: $-0.065 - -0.001$). The protective factors did not moderate the path 2) from health status to baseline life meaning, or 3) from health status to follow-up life meaning. Optimal model fit persisted after including interaction terms.

We then probed the above statistically significant interaction terms by examining separate J-N graphs for each. This procedure allowed us to observe the effect of combat upon follow-up life meaning, via baseline health status and baseline life meaning, across the observed values of each protective factor. The J-N graphs revealed that when levels of the protective factors were high, the negative effect of combat upon follow-up life meaning was no longer evident. Specifically, the indirect effect of combat upon follow-up life meaning was no longer statistically significant when: 1) social support was 0.52 standard deviations (SDs) above the mean; 2) instructor autonomy support was 0.55 SDs above the mean; 3) coping ability was 0.44 SDs above the mean; and 4) academic self-efficacy was 0.73 SDs above the mean.

DISCUSSION

This longitudinal study of student Veterans broadened typical conceptions of combat exposure as a risk, revealing that combat poses an indirect risk to student Veterans' meaning in life, through its association with health-related symptoms. Further, we found that greater meaningful activity and adaptive coping ability were associated with greater life meaning, irrespective of combat exposure and health-related symptoms, thereby supporting their role in compensatory models of resilience. High levels of social support, instructor autonomy support, coping ability, and academic self-efficacy buffered against the negative effect of combat exposure upon life meaning, thereby supporting their roles in moderator models of resilience.

Our study indicated that more severe combat exposure is associated with greater health-related symptoms, which in turn exert an instantaneous and negative effect upon student Veterans' meaning in life. Research investigating combat emphasizes the direct impact of combat upon negative health-related outcomes such as PTSD (Ozer et al., 2003), depression (Hoge et al., 2004), and somatic symptoms (Hoge et al., 2007). Our study substantiated this link between combat and health-related symptoms, but additionally established that health-related symptoms may in turn threaten student Veterans' sense of meaning in their lives. This finding bolsters an emerging perspective emphasizing Veterans' achievement of positive outcomes such as a meaningful life, rather than merely avoiding negative outcomes such as PTSD (e.g., Bergmann et al., 2018). Further, our study uncovered protective factors capable of mitigating the risk posed by combat, thereby fostering student Veterans' meaning in life.

Adaptive coping ability may be an especially important protective factor among student Veterans; it was supported in both compensatory and moderator models of resilience. Findings revealed that irrespective of combat-related risk, more adaptive coping ability at baseline was

associated with, and preceded in time, greater follow-up life meaning. Effective coping ability includes the capacity to reappraise events positively, thereby transforming adversity into sources of meaning (Southwick, Pietrzak, Tsai, Krystal, & Charney, 2015). Coping ability may therefore operate in a compensatory model of resilience by reflecting student Veterans' capacity to reappraise combat-related risk, irrespective of its severity, in a manner that infuses life with meaning. For example, Veterans report that combat experiences resulted in changing priorities and a healthier appreciation for each day (Pietrzak et al., 2011).

Our findings also revealed that among student Veterans reporting adaptive coping ability, the negative impact of combat upon life meaning was weakened. This finding substantiates previous research indicating that Veterans' employment of adaptive coping strategies mitigates the experience of health-related outcomes such as PTSD (Pietrzak, Harpaz-Rotem, et al., 2011). Effective coping ability may mitigate the negative influence of combat exposure by fostering the capacity to actively alter the source of adversity (e.g., obtaining necessary information/skills), rather than passively manage negative emotions associated with adversity (e.g., avoidance; Southwick et al., 2015). Findings may eventually inform the development and testing of interventions seeking to promote combat-exposed student Veterans' resilience. For example, interventions could include psychoeducational and cognitive behavioral components to bolster coping abilities (Joyce et al., 2018; Pietrzak, Harpaz-Rotem, et al., 2011).

A greater sense of meaning associated with student Veterans' daily activity was associated with greater meaning in life, irrespective of combat-related risk. In contrast, findings did not indicate that frequency of social and community participation influenced student Veteran' resilience. The combination of these findings supports the importance of the subjective experience of valued activity, rather than the observable aspects (e.g., frequency), in fostering

student Veterans' resilience. These findings align with previous studies of student Veterans indicating that meaningfulness is a dimension of activity that promotes wellbeing (Kinney, Eakman, & Graham, under review) and resilience (Kinney, Eakman, Henry, et al., under review). Findings may eventually inform the development of resilience-promoting intervention among student Veterans. For example, intervention could include the principles of Acceptance and Commitment Therapy (ACT) pertaining to supporting: 1) the identification of values and motivating outcomes and 2) action that expresses those values (Lang et al., 2012). Sustained expression of values through engagement in meaningful activity may generate positive subjective experiences (e.g., competence) that imbue life with meaning (Eakman, 2013), regardless of student Veterans' experience of combat-related risk.

Our findings indicate that among student Veterans who perceive high levels of social support, the relationship between combat exposure and life meaning was weakened. This bolsters existing literature indicating that social support mitigates health-related symptoms among combat-exposed Veterans (Pietrzak & Southwick, 2011). Our findings expand on this literature, however, by demonstrating that social support dampens the indirect effect of combat upon student Veterans' sense of meaning in life. Student Veterans' perception of social support may produce an appraisal of combat-related experiences as less threatening, thereby weakening their influence (Thoits, 1995). Resilience-promoting intervention for student Veterans may eventually target social support by integrating principles of established approaches such as the education of loved ones on Veterans' needs (Sherman et al., 2009) and cognitive behavioral strategies that foster Veterans' positive appraisal of relationships (Pietrzak, Harpaz-Rotem, et al., 2011). Additionally, Veterans' engagement in shared activities has been linked to greater perceived social support (Eakman et al., 2019); intervention supporting Veterans' engagement in activities

which enable interaction with others should be investigated as a potential pathway to enhanced social support.

High levels of perceived instructor autonomy support similarly buffered against the negative influence of combat upon life meaning. This finding supports assertions that the college environment fosters Veterans' resilience during their community reintegration (Eakman et al., 2016). However, instructor autonomy support is understudied in the Veteran population. Only one study (Eakman et al., in press) investigated instructor autonomy support among Veterans, and found that it may foster academic success. A classroom that fosters a sense of valuation by others and control may satisfy the psychological needs of healthy relations with others and autonomy, respectively (Ryan & Deci, 2000). Psychological needs fulfillment buffers against adversity (Weinstein & Ryan, 2011), and may therefore explain the role of instructor autonomy in processes of resilience. Continued research is warranted given the underdeveloped nature of literature concerning this construct among student Veterans.

Our findings indicated that among student Veterans who perceived high levels of academic self-efficacy, the negative effect of combat upon meaning in life was diminished. This finding aligns with research indicating that self-efficacy buffers against the influence of combat upon PTSD in Veterans (Blackburn & Owens, 2015). Confidence in one's abilities may mitigate risk by providing a sense that one can successfully navigate challenges (Rutter, 1987). Our study indicates that student Veterans' confidence in their academic-related abilities may foster resilience to combat exposure. Continued research is warranted to replicate current findings and to better understand how academic self-efficacy may foster student Veterans' resilience.

Limitations

Student Veterans included in longitudinal analyses (i.e., those who completed both measurements) had lesser coping ability compared to those who were excluded, potentially undermining claims of generalizability. In addition, this study analyzed a convenience sample of student Veterans from a single university, further limiting generalizability. We call for replication of this study with alternative sampling strategies. Our findings did not satisfy criteria for causality, and should therefore be interpreted with caution. However, our longitudinal design compares favorably to cross-sectional designs (Menard, 2002). As such, results can meaningfully inform the development of treatment theories underlying intervention efforts, which should be tested using methods capable of supporting causality. In addition, researchers should propose and test mechanisms explaining *why* salient protective factors foster resilience. For example, psychological needs fulfillment may explain why meaningful activity fosters life meaning (Eakman, 2013). Testing such mechanisms among combat-exposed Veterans may advance theoretical development for intervention promoting resilience in student Veterans.

Conclusion

This longitudinal study of student Veterans provided support for a novel conception of combat as a risk factor, in which it negatively influences meaning in life, through its association with health-related symptoms. Further, greater perceived coping ability and meaningful activity were positively associated with life meaning, irrespective of combat and associated health-related symptoms. In the presence of high levels of social support, instructor autonomy support, coping ability, and academic self-efficacy, the negative effect of combat upon life meaning was weakened.

PROTECTIVE AND HEALTH-RELATED FACTORS CONTRIBUTING TO RESILIENCE AMONG STUDENT VETERANS: A CLASSIFICATION APPROACH

Veterans of Operation Iraqi Freedom, Operation Enduring Freedom, and Operation New Dawn may have incurred psychological and physical trauma during combat that disrupts their daily lives (Tanielian et al., 2008). As Veterans detach from the military, many are pursuing a college education (Radford, 2011). It is critical to understand factors that promote student Veterans' achievement of positive outcomes, despite combat exposure.

Occupational therapists can adopt a resilience perspective to understand the process by which student Veterans achieve positive outcomes despite combat exposure (Eakman et al., 2016). *Resilience* is the process by which humans adapt to adversity and achieve wellbeing (Masten, 2014; Ryff et al., 1998). Occupational therapists can foster student Veterans' psychological wellbeing following combat-related trauma (American Occupational Therapy Association, 2018), but targets for occupational therapy intervention seeking to promote resilience must be further developed (Eakman et al., 2016). The purpose of this study is to uncover modifiable factors which influence student Veterans' adaptation to past combat exposure. Establishing support for targets germane to occupational therapy will inform the role of practitioners addressing resilience among combat-exposed student Veterans.

Resilience among Student Veterans

Overcoming adversity extends beyond avoiding negative outcomes (e.g., psychopathology); it includes achieving positive outcomes such as meaning and purpose in life (Zautra et al., 2010). *Meaning and purpose in life* is the interpretation of one's existence as predictable, valuable, and organized around coveted pursuits (Steger et al., 2006). Life meaning

is a critical component of psychological wellbeing (Ryff, 1989). Psychological wellbeing is a key indicator of successful adaptation to adversity (Ryff et al., 1998), and is central to occupational therapy (Eakman, 2013). Veterans' successful adaptation to risk factors such as combat exposure can be considered in terms of achieving life meaning.

Risk factors are forces that threaten positive outcomes such as life meaning (Masten, 2014). Combat exposure is a risk factor among student Veterans; potentially traumatic qualities of combat include exposure to warfare events (e.g., firing a weapon to kill an enemy combatant) or fearing for one's safety (King et al., 2006). Risk factors such as combat exposure may operate in an *indirect model of risk* by depleting assets necessary to achieve positive outcomes (Masten, 2014). Combat exposure may pose an indirect risk to life meaning by producing health-related symptoms, in turn threatening life meaning. Combat exposure has been linked to posttraumatic stress disorder (PTSD; Ozer et al., 2003), depression (Hoge et al., 2004), and somatic symptoms (e.g., pain; Hoge et al., 2007). In turn, health conditions have been linked to lesser life meaning among student Veterans (Dutra et al., 2016). A *person-focused approach* to investigating resilience can be used to understand how successful adaptation to risk factors such as combat exposure is achieved (Masten, 2014). This approach involves classifying individuals based on levels of risk exposure and life outcomes achieved in response to risk. Identifying characteristics associated with these classifications can uncover processes influencing adaptation to risk.

Protective Factors

Protective factors are forces that promote adaptive responses to risk exposure, and their operation can be understood within differing models of resilience (Rutter, 1987). A protective factor operates in a *compensatory model of resilience* when it promotes positive outcomes independently of the risk, and operates in a *moderator model* when it alters the influence of the

risk itself (Masten, 2014). We identified protective factors for this study using The Model of Meaning of Life Experiences (King, 2004), which posits that life meaning and resilience are fostered by three sources of meaning: 1) *belonging* (healthy relationships), 2) *self-understanding* (knowledge of oneself and one's relationship with the world), and 3) *doing* (meaningful activity). For this study, we identified six protective factors (two reflecting each source of meaning).

Belonging. A sense of belonging emerges from feeling understood, valued, and supported; these social bonds are understood to foster life meaning and resilience (King, 2004). Post-deployment social support (social support) and instructor autonomy support reflect belonging among student Veterans. *Social support* is perceived emotional needs fulfillment and instrumental assistance from others (King et al., 2006). *Instructor autonomy support* is the perception that instructors support self-determined action in the classroom (Black & Deci, 2000). Both indicators reflect healthy social bonds, and instructor autonomy support reflects a social context fostering an internal locus of control. Veterans who secure social support and experience autonomy successfully adapt to combat exposure (Pietrzak & Cook, 2013).

Self-understanding. Self-understanding includes positive appraisals of one's ability to successfully navigate the world; such appraisals bolster inner resources that promote life meaning and resilience (King, 2004; Masten, 2014). Student Veterans' sense of self-understanding can be understood in terms of academic self-efficacy and coping ability. *Academic self-efficacy* reflects students' appraisal of their academic ability (Schunk, 1991), and represents perceived mastery that contributes to the sense that one can persist despite challenges (Rutter, 1987). *Coping ability* has been defined as the ability to "effectively use cognitive appraisal skills in a flexible, committed approach to active problem solving despite stressful circumstances" (Sinclair & Wallston, 2004, p. 95). Coping ability directly alters the impact of risk (Rutter,

1987), and as such, likely operates solely within a moderator model of resilience. Self-efficacy (Blackburn & Owens, 2015) and coping ability (e.g., Pietrzak, Harpaz-Rotem, et al., 2011) tend to promote successful responses to combat exposure among Veterans.

Doing. Student Veterans' sense of doing can be captured by activity engagement that fulfills social roles and aligns with one's values and interests; such engagement fosters meaning in life and resilience (Eakman, 2013; King, 2004). *Social and community participation* reflects activity engagement that is social and fulfills nondomestic roles (Chang et al., 2013; Levasseur et al., 2010). *Meaningful activity* is activity that aligns with one's values and interests, thereby generating positive subjective experiences (e.g., competence and connection with others; Eakman et al., 2018). Both indicators reflect student Veterans' sense of doing; meaningful activity is considered a critical protective factor among student Veterans (Eakman et al., 2016), and Veterans who report engagement in community-based activity achieve adaptive responses to combat exposure (Pietrzak & Cook, 2013).

This study employed a person-focused approach to understanding resilience, classifying student Veterans using their levels of combat exposure and life meaning. Consistent with a compensatory model of resilience, we hypothesize that 1) student Veterans with high life meaning will have higher levels of protective factors (excluding coping ability) compared to those with low life meaning, irrespective of their level of combat exposure. Alternatively, consistent with a moderator model, we hypothesize that 2) among student Veterans with high combat exposure, those with high life meaning will have higher levels of protective factors compared to those with low life meaning; among student Veterans with low combat exposure, the beneficial effect of the protective factors will be smaller. With respect to combat-related

health conditions, we hypothesize that 3) student Veterans with low life meaning will have higher levels of health conditions compared to those with high life meaning.

METHOD

Participants and Procedures

This was a prospective longitudinal panel study that collected data on two occasions for the same set of participants (Menard, 2002). This design allowed us to determine whether baseline levels of protective factors and health conditions were associated with adaptation to combat exposure at follow-up (i.e., meaning in life). We used a convenience sample of Veterans enrolled in college; 21.7% of which received New Start for Student Veterans (NSSV) services, a supported education program for student Veterans. Following the study's approval by the university's Institutional Review Board, participants completed an informed consent and were emailed an invitation to an online survey containing measures of study variables. Service providers contacted NSSV participants; other Veterans were reached via the university's Veterans' benefits office. Invitations were sent biannually from November 2013 to April 2018. Additionally, NSSV participants were sent a survey upon entry into the program, occasionally between planned measurements. 8.9% of baseline responses for NSSV participants occurred between planned measurements. Participants received a \$10 Amazon gift card for completing each survey. 6614 surveys were sent and we achieved a response rate of 19.6%. Participants were included if they were Veterans that had previously deployed to a combat zone. This yielded a sample size of $N = 226$ at baseline and $N = 153$ at follow-up. Time between measurements ranged from .72 to 29.16 months ($M = 6.92$ months, $SD = 4.24$). The wide range of time between measurements can be attributed to the inclusion of follow-up data from participants who missed planned measurements, but completed subsequent occasions.

Instruments

Instruments used to classify sample. The *Indicator of Combat Exposure* (ICE) is a five-item assessment of combat exposure. We employed Rasch analysis to evaluate the rating scale design of the ICE according to procedures outlined by Bond and Fox (2007), and modified the scale to optimize category functioning. We calculated a separation ratio to detect the number of statistically significant strata by which the sample is portioned, thereby facilitating meaningful classification of our sample (Wright & Masters, 2002). Person separation was 1.7, thus dividing the sample into 2.6 strata and indicating that the ICE detects two statistically distinct classifications. Accordingly, we split the sample into high ($ICE > 8$) and low ($ICE \leq 8$) combat exposure by evenly dividing the possible range of ICE scores (3 – 14).

The *Meaning in Life Questionnaire – Presence Subscale* (MLQ-P) is a well-validated five-item assessment of meaning and purpose in life (Steger et al., 2006). Using the average MLQ-P value ($M = 22.43$, $SD = 7.31$) from a study of student Veterans (Dutra et al., 2016), we established two groups reflecting high ($MLQ-P \geq 22.43$) and low life meaning ($MLQ-P < 22.43$) at follow-up. We derived the cut-off using Dutra et al. because their sample had a similar demographic profile to a representative sample of student Veterans (Cate, 2014).

Protective factors. The *Post-deployment Support Questionnaire* is a valid and reliable 10-item scale assessing perceived social support (King et al., 2006). We used the six-item version (Shen et al., 2009) of the *Learning Climate Questionnaire* (Black & Deci, 2000) to assess perceived instructor autonomy support. The *Brief Resilient Coping Scale* is a psychometrically sound four-item indicator of coping ability (Sinclair & Wallston, 2004). The *Academic Self-efficacy Scale* is a well-validated eight-item assessment of academic self-efficacy (Chemers et al., 2001). The *Veterans' Social and Community Participation Assessment* is a

structurally valid five-item assessment of frequency of Veterans' social and community participation (Kinney, Eakman, & Graham, under review). The *Engagement in Meaningful Activities Survey* is a psychometrically sound 12-item assessment of positive subjective experiences associated with activity (Eakman, 2012).

Health conditions. The *PTSD Checklist – Civilian Version* is a well-validated 17-item assessment of PTSD symptoms (Blanchard et al., 1996). The *Patient Health Questionnaire Depression Scale* is a valid and reliable nine-item assessment of depressive symptoms (Kroenke et al., 2001). The *Patient Health Questionnaire Somatic Symptoms Scale* is a well-validated 15-item assessment of somatic symptoms (Kroenke et al., 2002).

Data Analysis

We conducted independent samples *t* tests and chi-square tests to compare those who completed measurements at both time points (stayers) to those who did not (leavers) based on continuous and dichotomous study variables (see above instruments), respectively. In this study, we operationalized risk as the degree of combat (low exposure; high exposure), and adaptation as the level of life meaning (low life meaning; high life meaning). Considering the intersection of these two variables generates four possible classifications: 1) *Adaptive* (low combat exposure, high life meaning), 2) *maladaptive* (low combat exposure, low life meaning), 3) *resilient* (high combat exposure, high life meaning), and 4) *depleted* (high combat exposure, low life meaning). We assert that Veterans who achieve high life meaning successfully adapted to combat exposure. We constructed a classification status variable indicating presence in one of the above groups. We generated descriptive statistics for variables across groups.

Linear mixed models (specified in IBM/SPSS Statistics version 25.0; IBM, 2017) were fit to obtain the adjusted means of all protective factors and health conditions for each of the four

classification groups. We specified linear mixed models because it allowed us to test hypotheses while accommodating unequal variances in protective factors and health conditions across each of the four groups (Weaver & Black, 2015). The means were adjusted for the following control variables: age (held constant at 31.32 years), gender (held constant at 0 = female), marital status (held constant at 0 = unmarried), and time between measurements (held constant at 6.92 months). We tested the interaction between classification status and all control variables to evaluate the assumption of homogeneity of slopes. We used independent samples *t* tests to compare the adjusted means in correspondence with our hypotheses, and evaluated significance using a Bonferroni adjusted alpha of .025. We calculated Cohen's *d* using adjusted means and observed standard deviations to approximate effect size (Field, Miles, & Field, 2012).

RESULTS

86.3% of participants were male, 45.1% were married, and the average age was 31.32 (*SD* = 7.34). At baseline, stayers (*M* = 14.73, *SD* = 2.85) had lesser coping ability than leavers (*M* = 15.85, *SD* = 2.83; $t(224) = 2.77, p = .006$); no other variables differed between stayers and leavers. Classification procedures yielded a relatively even distribution of participants across each of the four groups (see Figure 4.1). See Table 4.1 for descriptive statistics for study variables. Except for social and community participation ($F(3, 79.07) = 1.59, p = .198$), classification status was significantly associated with all protective factors and health conditions. See Table 4.2.

High Meaning in Life	Adaptive Group Risk Exposure: Low levels of combat exposure Adaptive Response: High sense of meaning and purpose in life Proportion of Sample: $n = 56$ (36.6%)	Resilient Group Risk Exposure: High levels of combat exposure Adaptive Response: High sense of meaning and purpose in life Proportion of Sample: $n = 36$ (23.5%)
	Maladaptive Group Risk Exposure: Low levels of combat exposure Adaptive Response: Low sense of meaning and purpose in life Proportion of Sample: $n = 32$ (20.9%)	Depleted Group Risk Exposure: High levels of combat exposure Adaptive Response: Low sense of meaning and purpose in life Proportion of Sample: $n = 29$ (19.0%)
Low Meaning in Life		
Low Combat Exposure		High Combat Exposure

Figure 4.1. Visual of combat exposure by life meaning classification at follow-up ($N = 153$).

Table 4.1

Descriptive Statistics for Study Variables Across Classifications (N = 153)

Variable	Combat Exposure by Life Meaning Classification (T2): <i>M (SD)</i>				Total Sample (<i>N</i> = 153)	
	Classifications with Low Combat Exposure		Classifications with High Combat Exposure			
	Adaptive (<i>n</i> = 56)	Maladaptive (<i>n</i> = 32)	Resilient (<i>n</i> = 36)	Depleted (<i>n</i> = 29)	<i>M (SD)</i>	Cronbach's α
Risk and adaptive response						
Combat exposure	5.84 (1.56)	5.06 (1.95)	11.11 (1.60)	11.52 (1.48)	7.99 (3.29)	.82
Meaning in life (T2)	28.63 (3.50)	15.88 (5.13)	27.50 (2.85)	17.07 (4.28)	23.50 (6.98)	.92
Protective factors						
Social support (T1)	40.16 (6.94)	36.28 (8.27)	37.03 (8.18)	34.69 (6.59)	37.58 (7.70)	.86
IAS (T1)	30.55 (6.87)	29.69 (8.76)	27.72 (6.37)	26.55 (6.95)	28.95 (7.31)	.91
Coping ability (T1)	16.00 (2.35)	13.53 (3.36)	15.08 (2.29)	13.17 (2.56)	14.73 (2.85)	.69
ASE (T1)	5.43 (.94)	4.77 (1.09)	5.31 (.94)	4.84 (1.08)	5.15 (1.03)	.89
SCP (T1)	9.07 (5.47)	6.94 (4.54)	8.06 (3.85)	8.03 (5.49)	8.19 (4.96)	.69
Meaningful activity (T1)	34.38 (5.83)	28.19 (8.18)	33.25 (6.93)	29.83 (4.24)	31.95 (6.84)	.93
Health conditions						
PTSD (T1)	29.59 (12.04)	34.56 (11.26)	38.00 (16.20)	47.45 (15.75)	35.99 (15.03)	.94
Depression (T1)	5.23 (4.88)	8.81 (5.63)	6.28 (5.13)	10.38 (6.65)	7.21 (5.78)	.88
Somatic symptoms (T1)	6.05 (4.59)	8.84 (4.63)	8.31 (4.94)	10.45 (5.17)	8.00 (5.03)	.84

Note. T1 = baseline; T2 = follow-up; IAS = instructor autonomy support; ASE = academic self-efficacy; SCP = social and community participation; PTSD = posttraumatic stress disorder; variables presented in this table are at time points that are consistent with those entered into our statistical models, but please contact the first author for descriptive statistics for each variable at both baseline and follow-up occasions.

Table 4.2

Comparison of Protective Factors and Health Conditions across Combat Exposure by Life Meaning Classifications (N = 153)

Variables at Baseline	Overall Effect of Classification Status	Adjusted Means for Classifications with Low Combat Exposure at Follow-up					Adjusted Means for Classifications with High Combat Exposure at Follow-up				
	<i>F</i> (df)	Adaptive	Maladaptive	Comparison			Resilient	Depleted	Comparison		
		<i>M</i> (<i>SE</i>)	<i>M</i> (<i>SE</i>)	Contrast (<i>SE</i>)	<i>t</i> (df)	<i>d</i>	<i>M</i> (<i>SE</i>)	<i>M</i> (<i>SE</i>)	Contrast (<i>SE</i>)	<i>t</i> (df)	<i>d</i>
Protective factors											
Social support [†]	6.74 (3, 82.06)***	41.09 (1.75)	35.61 (1.89)	5.48 (1.81)	3.02 [‡] (56.87)	0.74	38.73 (2.01)	35.00 (2.19)	3.73 (1.89)	1.98 (61.41)	0.50
IAS	2.95 (3, 78.88)*	28.95 (1.69)	28.96 (1.92)	-0.01 (1.83)	.01 (53.52)	0.00	26.29 (1.76)	24.80 (2.10)	1.49 (1.68)	0.89 (59.42)	0.22
Coping ability	10.52 (3, 83.91)***	15.34 (0.60)	13.03 (0.71)	2.31 (0.68)	3.38 [‡] (52.06)	0.84	14.42 (0.61)	12.39 (0.76)	2.03 (0.60)	3.40 [‡] (56.64)	0.84
ASE	3.67 (3, 78.08)*	4.98 (0.23)	4.44 (0.25)	0.54 (0.24)	2.26 (56.58)	0.54	4.91 (0.24)	4.34 (.31)	0.57 (0.25)	2.22 (56.46)	0.57
SCP	1.59 (3, 79.07)	8.82 (1.17)	6.42 (1.10)	2.40 (1.12)	2.14 (73.25)	0.47	7.53 (1.11)	7.50 (1.46)	0.03 (1.18)	.02 (50.37)	0.01
Meaningful Health conditions	8.65 (3, 69.83)***	31.65 (1.55)	26.02 (1.82)	5.63 (1.70)	3.31 [‡] (50.53)	0.83	30.59 (1.72)	26.62 (1.76)	3.97 (1.41)	2.82 [‡] (61.09)	0.67
PTSD	11.20 (3, 61.57)***	36.09 (2.92)	39.88 (2.69)	-3.79 (2.50)	1.52 (70.30)	0.32	44.51 (3.59)	55.30 (4.17)	-10.79 (4.09)	2.64 [‡] (59.15)	0.67
Depression	6.13 (3, 79.89)**	7.35 (1.24)	10.51 (1.31)	-3.16 (1.23)	2.57 [‡] (58.05)	0.61	8.24 (1.32)	12.79 (1.75)	-4.54 (1.51)	3.00 [‡] (51.93)	0.78
Somatic symptoms	6.77 (3, 70.51)***	8.54 (1.11)	10.93 (1.09)	-2.38 (1.02)	2.34 [‡] (66.87)	0.52	10.82 (1.24)	13.46 (1.46)	-2.64 (1.30)	2.03 (60.30)	0.52

Note. [†]Adjusted mean reflects value with time between measurements held constant at median ($M = 5.39$ months); IAS = instructor autonomy support; ASE = academic self-efficacy; SCP = social and community participation; PTSD = symptoms of posttraumatic stress disorder; * $p < .05$, ** $p < .01$, *** $p < .001$; [‡]significant difference between adjusted means ($p \leq .025$).

Hypothesis 1: Compensatory Model of Resilience

Results supported the role of meaningful activity and coping ability in compensatory models of resilience. Those who reported high meaning in life at follow-up, and both levels of combat exposure (high and low), reported greater baseline meaningful activity and coping ability compared to those with low life meaning at follow-up. See Table 4.2.

Hypothesis 2: Moderator Model of Resilience

Findings indicate that social support afforded a protective advantage only among those low combat exposure, rather than those with high combat exposure, as hypothesized. Further, the interaction between classification status and time between measurements was statistically significant ($F(3, 73.00) = 4.21, p = .008$). We probed this interaction by observing the association between classification status and social support when participants had different lengths of time between measurements. When holding time between measurements constant at the median (5.39 months), those with high life meaning at follow-up and low combat exposure had greater levels of social support than those with low life meaning. When time between measurements was held constant at the 75% percentile (6.67 months), social support did not differ between groups with low ($t(58.58) = 1.93, p = .058, d = 0.44$) or high combat exposure ($t(62.08) = 1.50, p = .139, d = 0.36$).

Hypothesis 3: Levels of Combat-related Health Conditions

Those who endorsed low life meaning at follow-up reported more severe health-related symptoms at baseline. Specifically, those who reported low life meaning at follow-up, and both low and high levels of combat exposure, reported greater baseline depression compared to those with high life meaning. Those with low life meaning at follow-up and low levels of combat exposure had greater baseline somatic symptoms compared to those with high life meaning.

Those with low life meaning at follow-up and high levels of combat exposure had greater baseline PTSD.

DISCUSSION

This longitudinal study classified a sample of student Veterans with respect to levels of combat exposure and life meaning to identify processes influencing adaptation to past combat exposure. Results indicate that meaningful activity and coping ability operate in compensatory models of resilience, contributing to life meaning regardless of the severity of combat exposure. Greater social support explained high life meaning among those with low combat exposure, but not high combat exposure. Health conditions appeared to limit student Veterans' life meaning following combat exposure.

A greater sense of meaningful activity, regardless of the severity of combat exposure, tended to promote life meaning. Literature concerning protective factors among combat Veterans tends to overlook the benefits of activity, with few exceptions (e.g., Pietrzak & Cook, 2013). Our findings indicate that activity may be an important means by which student Veterans achieve a meaningful life despite combat-related risk. While meaningful activity conferred a protective advantage, frequency of social and community participation did not. This suggests that the subjective experience of activity, rather than the observable aspects, may be especially important for fostering successful adaptation to combat exposure. Meaningful activity may afford experiences that engage adaptive mechanisms that promote the transcendence of adversity, such as a sense of mastery, autonomy, and connection with others (Eakman, 2013; Masten, 2014). Researchers should develop and test interventions that facilitate student Veterans' engagement in meaningful activities; thereby eliciting a sense of mastery, autonomy, and connection with others.

Similarly, our findings suggest that coping ability affords a protective advantage to student Veterans, regardless of the severity of combat exposure. This finding was contrary to our hypothesis that coping ability would operate solely in a moderator model of resilience. Successful adaptation to combat exposure may be achieved through reappraising combat-related experiences, regardless of their severity, in a manner that provides a source of meaning. For example, some Veterans report benefits to combat-related trauma, including personal growth and increased valuation of relationships (Pietrzak et al., 2010). Occupational therapists targeting psychological wellbeing among combat-exposed Veterans should work within multidisciplinary teams to bolster coping skills through cognitive behavioral techniques that facilitate positive reappraisal of adversity (Pietrzak, Harpaz-Rotem, et al., 2011).

Interestingly, social support contributed to high life meaning among those with low levels of combat exposure, but not high levels. This finding is consistent with what Luthar (1993) labels a protective/reactive effect, whereby a protective factor is generally an advantage, but less so when risk is high. The protective/reactive effect of social support may be explained by our finding that PTSD was elevated within, and fostered low life meaning in response to, high levels of combat exposure. PTSD may impede student Veterans' ability to secure social support, thereby dampening its protective advantage (e.g., Resnik & Allen, 2007). Researchers should develop and test interventions that facilitate combat-exposed student Veterans' engagement in activity enabling social interactions, thereby promoting social support. Indeed, Veterans' engagement in shared activities is associated with greater social support (Eakman et al., 2019).

Combat-exposed student Veterans who achieved low life meaning reported more severe health-related symptoms compared to those with high life meaning. This expands upon current studies of combat-related risk that consider the absence of health conditions a successful

response to combat exposure. Our findings suggest that health conditions should instead be considered a potential mechanism by which combat exposure threatens student Veterans' life meaning. Depressive symptoms appear to pose a particular threat; they were associated with low life meaning in response to varying levels of combat exposure. This is congruent with evidence supporting the deleterious impact of depression upon student Veterans' psychological wellbeing, despite the emphasis on PTSD in the literature (Bergmann et al., 2018). Occupational therapists promoting student Veterans' resilience should work within multidisciplinary teams to manage symptoms of health conditions, and should compensate for their impact upon occupational performance.

Limitations and Directions for Future Research

Participants included in analyses (i.e., stayers) had lesser coping ability than leavers, indicating that our findings may not generalize to the overall population of student Veterans. Also, the relationship between classification status and social support depended on time between measurement occasions. This may indicate that our finding was an artifact of our specific measurement schedule, and may also not generalize to the student Veteran population. We encourage replication of the current study to validate all findings. While our longitudinal design offers advantages over a cross-sectional design, it still precludes assertions of causality. Nonetheless, our findings offers theoretical support for future studies capable of uncovering causal relationships, and may inform treatment theories underlying intervention targeting student Veterans' resilience. Future research should strengthen treatment theories by uncovering mechanisms by which protective factors confer an adaptive advantage. For example, evidence suggests that meaningful activity fosters life meaning indirectly through psychological needs

fulfillment (Eakman, 2013). Testing such relationships while accounting for combat-related risk would further develop theory underlying resilience-promoting interventions.

Implications for Occupational Therapy Practice

- Interventions should be developed and tested that foster student Veterans' resilience by targeting engagement in meaningful and shared activities.
- Occupational therapists working with student Veterans should work within multidisciplinary teams to bolster coping ability, manage symptoms of combat-related health conditions, and compensate for the influence of health conditions on occupational performance.

Conclusion

This was a longitudinal study which classified a sample of student Veterans based on concurrent levels of combat exposure and life meaning, thereby ascertaining influences upon their adaptation to combat exposure. Findings suggest that engagement in meaningful activity, adaptive coping ability, and social support may promote successful adaptation to combat exposure. Further, combat-related health conditions may contribute to a maladaptive response to combat exposure. Occupational therapists are uniquely situated to foster student Veterans' resilience.

DISCUSSION

In this dissertation, I tested a series of propositions which explained the process by which student Veterans achieve resilience (see Figure 5.1). Specifically, I investigated whether combat exposure poses an indirect risk to student Veterans' sense of meaning and purpose in their lives, and sought evidence of protective factors that foster their life meaning despite combat-related risk. I used complementary methodological approaches to test these propositions over the course of three studies. Generally, these three studies provided empirical support for my initial theoretical propositions. In this section of the dissertation, I will: 1) evaluate the evidence pertaining to my initial propositions and will present a theoretical model that I refined in light of my findings (see Figure 5.2); 2) integrate the findings from across the three studies, 3) elucidate implications for both research and practice; and 4) explain how the dissertation findings advance occupational science and rehabilitation science.

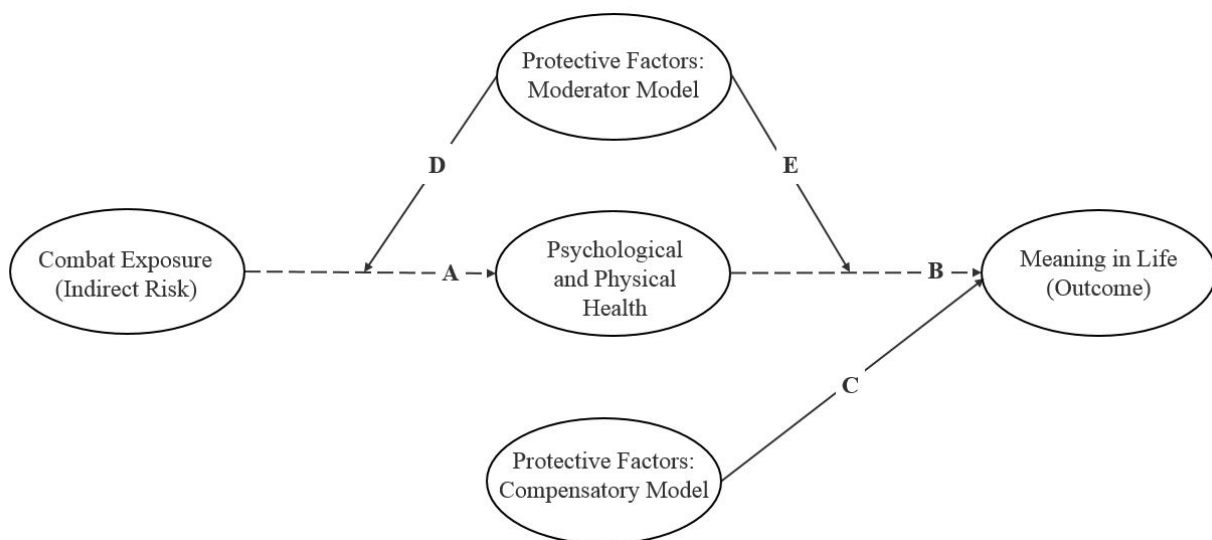


Figure 5.1. The initial theorized process by which student Veterans achieve resilience. Dashed lines represent a negative influence; solid lines represent a positive influence.

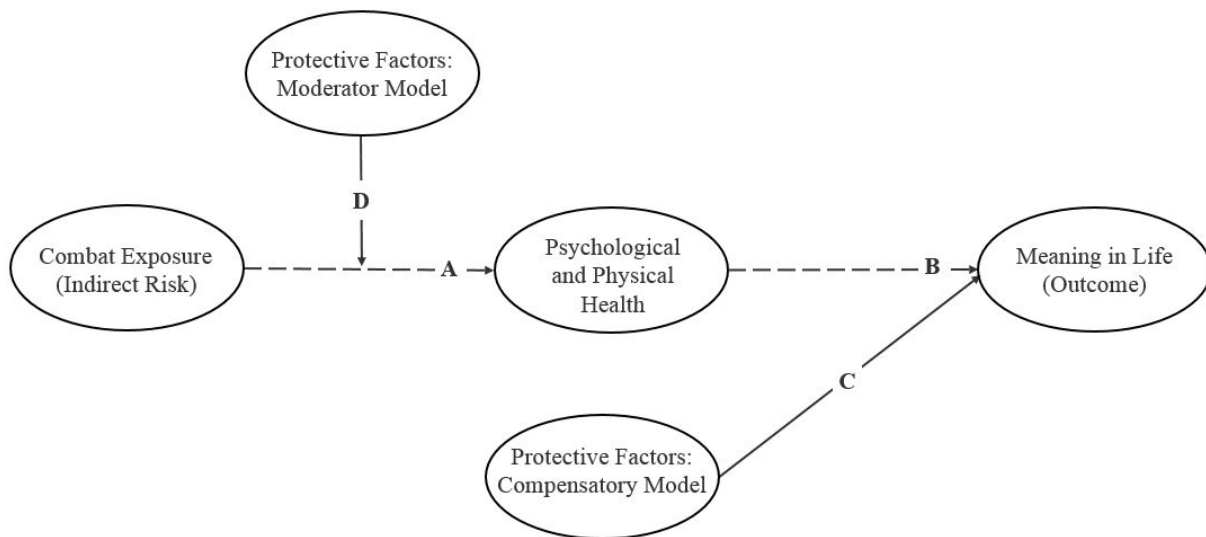


Figure 5.2. The revised process by which student Veterans achieve resilience. Dashed lines represent a negative influence; solid lines represent a positive influence.

COMBAT EXPOSURE AS A RISK TO STUDENT VETERANS' SENSE OF MEANING IN LIFE

This dissertation revealed evidence supporting the proposition that combat exposure poses an indirect risk to student Veterans' meaning in life, whereby more severe combat exposure is associated with greater health-related symptoms (Figure 5.2-A), which in turn diminish life meaning (Figure 5.2-B). I tested this proposition using two complementary approaches to understanding meaning and purpose in life. Chapter two summarized a study (study one) in which a meaningful life was inferred through perceived levels of belonging, self-understanding, and doing (King, 2004). Chapters three and four summarized studies (studies two and three, respectively) that considered life meaning in terms of student Veterans' interpretation of their lives as coherent, valuable, and aimed at a coveted future (Martela & Steger, 2016).

Study one uncovered evidence that baseline health-related symptoms associated with combat exposure contributed to a decreased sense of belonging, self-understanding, and doing at follow-up. Further, the longitudinal analyses supported the theorized temporal ordering of the relationships (i.e., health-related symptoms precede a decreased sense of belonging, self-

understanding, and doing; Menard, 2002). Considering meaning in life as emerging from high levels of each source of meaning (belonging, self-understanding, and doing) revealed that health-related symptoms may thwart student Veterans' external adaptation to combat exposure (i.e., successful engagement in life pursuits; Masten & Wright, 2010). These findings are consistent with existing literature indicating that health-related conditions result in cognitive, emotional, and physical impairments that undermine Veterans' ability to: 1) establish healthy bonds with others (Daggett et al., 2013), 2) positively appraise their ability to navigate the world (Eakman et al., 2016), and 3) engage in valued activities (Resnik & Allen, 2007).

Studies two and three revealed that health-related symptoms associated with combat exposure may similarly diminish student Veterans' interpretation of their lives as meaningful. More specifically, study two revealed that health-related symptoms may exert an instantaneous effect upon student Veterans' interpretation of their life's meaning. By operationalizing student Veterans' life meaning as a global self-appraisal of meaning in their lives, studies two and three indicate that health-related symptoms may undermine student Veterans' internal adaptation to combat exposure (i.e., their subjective appraisal of wellbeing; Masten & Wright, 2010).

Interestingly, findings from study three indicate that depressive symptoms may pose a particular threat to student Veterans' internal adaption, as depression was associated with low life meaning in response to both high and low levels of combat exposure. This finding is congruent with evidence supporting the deleterious impact of depression upon student Veterans' psychological wellbeing, despite the prevailing emphasis on PTSD in the literature (Bergmann et al., 2018). Health-related conditions such as depression and PTSD may diminish student Veterans' life meaning by undermining their capacity to apply positive appraisals of ongoing life experiences

(Hart et al., 2011; Pietrzak et al., 2015), thereby limiting their assignment of value and discernable purpose to their lives (Southwick et al., 2006).

Taken together, the three studies comprising this dissertation revealed that combat exposure, through its association with health-related symptoms, poses a risk to student Veterans' life meaning. These findings indicate that knowledge of the link between combat exposure and health-related symptoms may be necessary, yet insufficient, for understanding the broader implications of combat-related risk. Research investigating Veterans' resilience to combat exposure emphasizes the direct impact of combat upon negative health-related outcomes such as PTSD (Ozer et al., 2003), depression (Hoge et al., 2004), and somatic symptoms (Hoge et al., 2007). This dissertation substantiated the link between combat and health-related symptoms. However, this work further established that health-related symptoms in turn diminish student Veterans' assignment of significance, value, and purpose to their lives (Martela & Steger, 2016), thereby undermining their satisfaction of existential needs (Frankl, 1963). These findings align with, and bolster, an emerging perspective which emphasizes Veterans' achievement of positive outcomes such as a meaningful life, rather than the mere avoidance of negative outcomes such as PTSD (e.g., Bergmann et al., 2018). By adopting an expanded view of the risk posed by combat exposure, this dissertation may provide additional targets for intervention (e.g., protective factors) seeking to foster student Veterans' resilience.

EVIDENCE OF PROTECTIVE FACTORS

In this dissertation, I tested two propositions concerning the operation of protective factors among student Veterans. First, I proposed that protective factors would operate in compensatory models of resilience by promoting student Veterans' life meaning, irrespective of combat-related risk (Figure 5.1-C). Dissertation findings supported this proposition (Figure 5.2-

C); both meaningful activity and coping ability operated in compensatory models of resilience. Second, I proposed that protective factors would operate in moderator models of resilience, weakening combat-related risk through the mitigation of: 1) the influence of combat exposure upon health-related symptoms (Figure 5.1-D), and 2) the influence of health-related symptoms upon life meaning (Figure 5.1-E). Findings partially supported these propositions. Social support, instructor autonomy support, coping ability, and academic self-efficacy weakened the relationship between combat and health-related symptoms, but no protective factors altered the relationship between health-related symptoms and life meaning (Figure 5.2-D).

The lack of support for my proposition that protective factors buffer the negative influence of health-related symptoms upon life meaning may indicate that protective factors' influence is conditional on the source of adversity. Specifically, the proposed protective resources may buffer against the deleterious influence of external sources of adversity such as combat-related experiences, but not internal sources of adversity such as the experience of health-related symptoms. Further, this null finding is consistent with existing literature concerning Veteran resilience to combat exposure. Evidence has supported the ability of protective factors (e.g., psychological resilience) to mitigate the negative influence of combat exposure upon health-related symptoms (e.g., PTSD; Green et al., 2010), but to the best of my knowledge, no evidence has revealed protective factors that mitigate the influence of health-related symptoms upon life meaning. Nonetheless, researchers should attempt to replicate this pattern of findings in order to substantiate, or refute, the refined theoretical model (Figure 5.2).

This dissertation employed complementary methodological approaches to examining protective factors capable of fostering student Veterans' resilience. Study two used a variable-focused approach, capturing variability in combat exposure, health-related symptoms, protective

factors, and life meaning, and examining relationships amongst these constructs. Study three used a person-focused approach, classifying student Veterans in terms of combat exposure and life meaning, and identifying patterns of differences between those with adaptive (high life meaning) and maladaptive (low life meaning) responses to combat. I will now discuss dissertation findings concerning whether the proposed indicators of belonging, self-understanding, and doing operate as protective factors among student Veterans in greater detail.

Belonging

Post-deployment social support. Studies two and three revealed promising evidence for the role of social support in moderator models of resilience among student Veterans. However, the nature of social support's effect differed according to the different methodological approaches. Study two employed a variable-focused approach, revealing a precise understanding of the relations between combat exposure, health-related symptoms, social support, and meaning in life (Masten, 2014). This approach yielded findings indicating that among student Veterans who perceived high levels of social support, the deleterious influence of combat exposure upon health-related symptoms was weakened, thereby buffering the indirect risk of combat exposure upon life meaning. This finding bolsters existing literature indicating that social support mitigates the development of health-related symptoms among combat-exposed Veterans (e.g., Pietrzak & Southwick, 2011). Findings expand on this literature by demonstrating that social support in turn dampens the effect of combat upon student Veterans' sense of meaning and purpose in their lives. Social support may mitigate the development of health-related symptoms by fostering an appraisal of combat-related experiences as less threatening, thereby weakening their negative influence (Thoits, 1995). Additionally, social support may fulfill the basic

psychological need for positive relations with others, thereby bolstering inner resources from which student Veterans can draw to mitigate combat-related risk (Vansteenkiste & Ryan, 2013).

Study three used a person-focused approach to investigate social support as a protective factor, maintaining the meaningful configuration of defining features of resilience (i.e., combat and life meaning). This approach provided insight into whether social support was associated with adaptive responses to different levels of combat exposure, and indicated a slightly different pattern of social support's effect compared to the variable-focused approach. Specifically, findings indicated that among student Veterans with high levels of combat exposure, the perceived level of social support did not confer a protective advantage. However, among student Veterans with low levels of combat exposure, social support was associated with high life meaning. This pattern indicates a protective/reactive effect (Luthar, 1993), whereby a protective factor provides less of a protective advantage when risk is high. The protective/reactive effect of social support may be explained by the additional finding from study three indicating that PTSD symptoms were elevated within, and fostered low life meaning in response to, high levels of combat. PTSD may impede student Veterans' ability to secure social support by impairing interpersonal skills, thereby dampening its protective advantage (e.g., Resnik & Allen, 2007). Researchers should integrate the respective strengths of variable and person-focused approaches in the same study design to reconcile the varying patterns of social support's effect across approaches. For example, studies could retain the meaningful configuration of combat exposure and life meaning, while examining the precise interplay among constructs (e.g., social support and PTSD) that influence those configurations.

Instructor autonomy support. Findings from study two indicated that high levels of instructor autonomy support weakens the indirect effect of combat exposure upon life meaning,

thereby supporting its operation in a moderator model of resilience. This finding bolsters assertions that the college environment is capable of fostering Veterans' resilience during their transition to the civilian community (Eakman et al., 2016). However, instructor autonomy support is understudied in the Veteran population. Only one prior study (Eakman et al., in press) investigated instructor autonomy support among student Veterans, finding that it fosters academic success. A classroom that fosters a sense of valuation by others and internal control may satisfy the psychological needs of relatedness and autonomy, respectively (Ryan & Deci, 2000). Psychological needs fulfillment buffers against adversity (Weinstein & Ryan, 2011), and may explain the role of instructor autonomy in processes of resilience. Continued investigation of instructor autonomy support's impact on student Veterans' resilience is warranted given the scant literature concerning this construct among student Veterans.

Self-understanding

Coping ability. Coping ability was the only proposed protective factor that was supported in both compensatory and moderator models of resilience, indicating that it may be especially capable of fostering student Veterans' resilience. Findings from studies two and three converged to support the role of coping ability in compensatory models of resilience, revealing that student Veterans with more adaptive coping ability achieved greater life meaning, irrespective of combat-related risk. The role of coping ability in compensatory models was a somewhat surprising finding; I had hypothesized that coping ability would solely operate within a moderator model of resilience. Effective coping ability includes the capacity to reappraise events positively, thereby transforming adversity into sources of meaning (Southwick et al., 2015). Coping ability may therefore operate in a compensatory model of resilience by reflecting student Veterans' capacity to reappraise combat-related risk, irrespective of its severity, in a

manner that affords life meaning. For example, Veterans report that combat experiences emerged as beneficial, causing a shift in priorities and an appreciation for each day (Pietrzak et al., 2011).

Findings from study two indicated that coping ability operates in a moderator model of resilience. Among student Veterans who reported adaptive coping ability, the negative and indirect impact of combat exposure upon life meaning was weakened. This finding substantiates previous research indicating that adaptive coping strategies mitigate the experience of negative health-related outcomes such as PTSD (Pietrzak, Harpaz-Rotem, et al., 2011) and depression (Romero, Riggs, & Ruggero, 2015) among combat-exposed Veterans. Findings extend this understanding, however, by indicating that coping ability in turn weakens the relationship between combat and positive outcomes such as student Veterans' sense of life meaning. Effective coping ability may mitigate the negative influence of combat exposure by fostering the capacity to actively alter the source of adversity (e.g., obtaining information/skills; Southwick et al., 2015), thereby buffering against the emergence of health-related symptoms.

Academic self-efficacy. Findings from study three also indicated that among student Veterans with high levels of academic self-efficacy, the negative and indirect effect of combat upon life meaning was diminished, thereby supporting its operation in a moderator model of resilience. This finding bolsters the promising, yet limited, evidence indicating that self-efficacy buffers against the emergence of health-related symptoms (e.g., PTSD) in combat-exposed Veterans (Blackburn & Owens, 2015). Study three builds upon this evidence by indicating that academic self-efficacy in turn mitigates the impact of combat exposure upon student Veterans' sense of meaning in life. Student Veterans' confidence in their abilities may mitigate the influence of combat exposure by providing a sense that they can successfully navigate life challenges (Rutter, 1987). Experiencing success in college-related tasks may provide student

Veterans with a source of confidence that bolster inner resources capable of fostering resilience to combat. However, due to the limited literature concerning the protective advantage of academic self-efficacy, continued research is warranted to understand the impact of academic self-efficacy upon student Veterans' resilience.

Doing

Meaningful activity. Findings from studies two and three converged to support the role of meaningful activity in a compensatory model of resilience. Specifically, student Veterans who reported more meaning in their day-to-day activities endorsed a greater sense of meaning and purpose in their lives, irrespective of combat-related risk. Literature concerning protective factors among combat Veterans tends to overlook the benefits of activity, with few exceptions (e.g., Pietrzak & Cook, 2013). Dissertation findings indicate that the personally construed experience of activity is an important means by which combat-exposed student Veterans achieve resilience. The Meaningful Activity and Life Meaning Model (Eakman, 2013, 2014) proposes that meaningful activity contributes to college students' life meaning both directly and indirectly through the satisfaction of basic psychological needs (e.g., autonomy). Greater meaningful activity may reflect student Veterans' orchestration of activities that satisfy psychological needs through the expression of values, beliefs, and goals as a means of achieving self-actualization (Eakman, 2015; Hammell, 2004). Devotion of time and effort to personal growth affords a rich source of meaning (Reker & Wong, 1988), and may facilitate student Veterans' achievement of a meaningful and purposeful life, regardless of past combat-related experiences.

Social and community participation. Social and community participation was the only proposed protective factor that was not supported with evidence. This may be due to the assessment used to measure the construct, which included just five items concerning the

frequency with which one engages in social and community-based activity (e.g., outdoor activity). The extraction of meaning from activity is a highly individualized phenomenon (e.g., Hammell, 2009). As such, the relatively narrow set of items may have insufficiently captured the scope and diversity of student Veterans' preferred patterns of engagement in social and community-based activity, thereby precluding evidence that such engagement fosters their life meaning and resilience. Future research should employ indicators that capture student Veterans' engagement in a greater breadth of social and community-based activities, thereby capturing the diverse life experiences capable of imbuing student Veterans' life with meaning (Reker & Wong, 1988).

CLINICAL IMPLICATIONS

Findings from this dissertation may have important implications for intervention targeting combat-exposed student Veterans' resilience. Findings can inform treatment theories underlying multicomponent intervention, thereby shedding light on potential intervention targets. Specifically, intervention can foster student Veterans' resilience by: 1) bolstering protective factors (i.e., belonging, self-understanding, and doing); 2) compensating for the influence of health-related symptoms upon meaningful life experiences; and 3) effectively managing symptom severity.

Promoting a Sense of Belonging

Findings support the protective role of both social and instructor autonomy support among student Veterans, suggesting that these indicators of belonging may be worthy targets of intervention. Multidisciplinary teams can apply psychoeducational approaches to inform student Veterans' social environment (e.g., friends; instructors) of their health-related needs and the value of social and instructor autonomy support (Sherman et al., 2009). Educating student

Veterans' social environment may promote the delivery of social support and instructor autonomy support, thereby fostering resilience. Further, cognitive behavioral approaches can be used to modify student Veterans' appraisals of social and instructor autonomy support, thereby enhancing positive perceptions of social bonds (Pietrzak, Harpaz-Rotem, et al., 2011). Finally, Veterans' engagement in shared activities has been linked to greater perceived social support (Eakman et al., 2019; Hawkins et al., 2015). Intervention may promote student Veterans' resilience by supporting their engagement in activities that enable interaction with others, thereby facilitating the securement of social support.

Promoting a Sense of Self-understanding

Both coping ability and academic self-efficacy conferred a protective advantage among combat-exposed student Veterans, indicating that these indicators of self-understanding may be worthy targets of resilience-promoting intervention. Intervention can promote student Veterans' coping ability using psychoeducational approaches that encourage the implementation of adaptive (e.g., seeking information), rather than maladaptive (e.g., substance use), coping strategies (Joyce et al., 2018; Southwick et al., 2015). Further, cognitive behavioral strategies may facilitate student Veterans' reappraisal of combat-related risk more positively (Pietrzak, Harpaz-Rotem, et al., 2011), thereby mitigating its impact. Practitioners can target academic self-efficacy by supporting student Veterans' construction of self-determined educational goals that reflect improvement in the mastery of skills (e.g., academic writing), rather than performance-based goals (e.g., a particular grade point average; Benita, Roth, & Deci, 2014). Attaining mastery-based goals promotes students' attribution of success to their efforts, thereby fostering student Veterans' academic self-efficacy (Kaplan & Maehr, 2002) and resilience.

Promoting a Sense of Doing

Findings indicate that greater engagement in personally meaningful activity may foster student Veterans' resilience, supporting the subjective experience of doing as a potential target of intervention. Intervention may foster student Veterans' resilience by supporting their engagement in activities that align with personal values and interests, thereby offsetting the deleterious influence of combat exposure upon life meaning. Intervention should insure that student Veterans engage in persistent patterns of activity that elicit positive subjective experiences (e.g., sense of competence or progress toward goals). For example, intervention could include principles of Acceptance and Commitment Therapy that support: 1) the identification of values and motivating outcomes; and 2) action that expresses those values (Lang et al., 2012). Sustained expression of values through engagement in meaningful activity may generate positive subjective experiences that foster student Veterans' life meaning and resilience.

Addressing Health-related Symptoms

Findings indicate that health-related symptoms help explain the risk that combat exposure poses to student Veterans' sense of meaning in life, and should therefore be addressed by intervention. First, findings from study one indicate that health-related symptoms associated with combat exposure undermine student Veterans' sense of belonging, self-understanding, and doing, thereby threatening their ability to achieve meaning in life and resilience (King, 2004). Intervention should seek to foster student Veterans' sense of belonging, self-understanding, and doing *despite* health-related symptoms. For example, campus-based institutions may offer a physical space for student Veterans with varying levels of health-related symptoms, thereby facilitating an experience of belonging by affording opportunities to interact with peers who share life experiences (Borsari et al., 2017; Williston & Roemer, 2017). Similarly, efforts could

enhance student Veterans' self-understanding by promoting skills necessary for acquiring academic accommodations (i.e., self-advocacy skills), in turn facilitating academic success (Kinney & Eakman, 2017). The experience of academic success may foster student Veterans' academic self-efficacy, thereby fostering a positive appraisal of one's self. Lastly, institutions could enhance student Veterans' sense of doing by affording them opportunities to experience active community engagement, and altering the activity or environment if health-related symptoms limit successful performance. For instance, institutions have implemented adapted sports programs to facilitate student Veterans' participation despite physical impairments (Kraus & Rattray, 2013).

In addition, intervention should include the effective management of health-related symptoms, thereby mitigating their influence upon combat-exposed student Veterans' sense of meaning life. Findings support previous calls to expand student Veterans' access to healthcare by increasing outreach to Veterans on campus, implementing screening for health-related conditions, and improving partnerships with local Veterans Affairs Medical Centers or other community-based systems of care (Bonar et al., 2015; Borsari et al., 2017; Currier et al., 2018). Evidence indicates that student Veterans tend to access care at reduced rates, in part due to perceived stigma (Bonar et al., 2015; Currier et al., 2018). Educational campaigns should therefore be implemented to reduce stigma, thereby addressing a significant barrier to access. Such efforts may improve student Veterans' management of health-related symptoms, in turn promoting their resilience.

RELATION TO OCCUPATIONAL SCIENCE AND REHABILITATION SCIENCE

This dissertation was informed by the integration of principles underlying both occupational science and rehabilitation science. What follows is a discussion of how this dissertation was informed by, and advances the knowledge base of, both academic disciplines.

Occupational Science

Occupational science is an academic discipline which considers culturally-informed patterns of daily activity (i.e., occupation) to be an expression of, and fundamental to, human nature (Meyer, 1922; Yerxa et al., 1990). This dynamic is considered to be the legacy of biological and cultural evolution, which endowed humans with the capacity to engage in purposeful activity, and as a result, the innate need to exercise that capacity (Reilly, 1962; Wilcock & Hocking, 2015). Accordingly, occupational science emphasizes that the successful expression of the capacity to engage in meaningful doing optimizes human functioning (Meyer, 1922; Yerxa, 1998), and studies the extent to which activity engagement influences human concerns such as adaptation, health, and wellbeing (Larson, Wood, & Clark, 2003; Yerxa et al., 1990). Similarly, this dissertation aligned with principles of occupational science by investigating whether activity engagement fostered student Veterans' resilience.

By applying an occupational science-based perspective, this dissertation revealed that greater meaning in daily activity, but not more frequent activity engagement, fostered student Veterans' resilience. This indicates that the subjective experience of activity, rather than the observable aspects (e.g., frequency), may be important for fostering combat-exposed student Veterans' life meaning. Occupational science-based knowledge converges with existing understandings of human resilience, and can therefore meaningfully inform inquiry regarding the transcendence of adversity (Christiansen, 2007). Meaningful activity has been shown to elicit

positive subjective experiences that fulfill the psychological needs of competence, autonomy, and healthy relations with others (Eakman, 2013, 2014). Such experiences represent fundamental adaptive mechanisms that promote resilience (Masten, 2007, 2014), and may be engaged through activity engagement. As such, activity may be a fruitful path to overcoming adversity, and future inquiry investigating this phenomenon would benefit from an occupational science perspective.

This dissertation advanced the state of occupational science by establishing empirical support for the resilience-promoting potential of meaningful activity. The investigation of activity engagement as a protective factor capable of promoting resilience is consistent with the underlying principles of occupational science (Christiansen, 2007). However, with the exception of theoretical proposals outlining the capacity of particular patterns of activity to prevent stress (e.g., Christiansen, 2007; Matuska & Christiansen, 2008) or transcend adversity (e.g., Yerxa, 1998), occupational scientists have overlooked this area of inquiry. This dissertation addressed this gap by applying established methodological approaches to understanding resilience (e.g., Masten, 2014), thereby providing empirical support for the protective advantage conferred by activity engagement among combat-exposed student Veterans. Future occupational science-based inquiry could adopt similar methodological approaches to determine whether activity fosters resilience in other at-risk populations (e.g., victims of natural disasters).

Rehabilitation Science

Rehabilitation science is an academic discipline that seeks to understand factors influencing states of healthy and limited functioning (i.e., disability), with the ultimate goal of modifying those factors to promote wellbeing among those with health-related conditions (Brandt & Pope, 1997). This dissertation aligned with underlying principles of rehabilitation science by emphasizing factors that foster student Veterans' wellbeing, despite the risk posed by

health-related symptoms associated with combat exposure. Specifically, this dissertation considered health-related symptoms as an integral component of the risk that combat exposure poses to psychological wellbeing (i.e., a meaningful and purposeful existence), and investigated factors that promote wellbeing among student Veterans, irrespective of that risk.

Rehabilitation science-based knowledge has informed this dissertation by shaping my perspective on what constitutes a successful response to combat-related risk. This dissertation supported the proposition that health-related symptoms help explain the negative influence of combat exposure upon student Veterans' psychological wellbeing (i.e., sense of meaning and purpose in life). This initial proposition was informed by the well-founded assumption of rehabilitation scientists that health-related conditions are integrally linked to human wellbeing (Stucki & Bickenbach, in press). That is, rehabilitation science emphasizes the intersection of health-related symptoms and one's ability to lead a personally meaningful life, rather than the experience of the symptoms themselves. As such, a rehabilitation science perspective has encouraged me to emphasize adaptive responses in terms of optimized functioning and wellbeing, rather than the absence of health-related symptoms. A rehabilitation science perspective can meaningfully inform our understanding of resilience among other at-risk populations by likewise considering optimized wellbeing as successful responses to risk.

This dissertation contributes to rehabilitation science-based knowledge by operationalizing student Veterans' wellbeing (i.e., meaning in life), thereby revealing factors capable of promoting their wellbeing despite health-related symptoms. Despite the assertion that rehabilitation science exists to promote wellbeing among those with health-related conditions (Brandt & Pope, 1997), rehabilitation science-based inquiry does not typically operationalize and measure wellbeing (Stucki & Bickenbach, in press). Overlooking the operationalization and

measurement of wellbeing precludes the advancement of knowledge concerning modifiable factors capable of fostering the overall wellbeing of individuals with health-related conditions. This dissertation advances rehabilitation science by operationalizing student Veterans' wellbeing (i.e., life meaning) and revealing factors capable of promoting their experience of a meaningful life despite the presence of health-related symptoms. Rehabilitation scientists should operationalize and measure wellbeing among other populations experiencing health-related conditions, thereby fulfilling the fundamental objective of rehabilitation science: to promote the wellbeing of individuals with potentially disabling conditions (Brandt & Pope, 1997).

Relatedly, this dissertation contributed to rehabilitation science-based knowledge by revealing that meaningful activity may be a modifiable factor contributing to student Veterans' wellbeing. Rehabilitation scientists have proposed several critiques of the construct of *participation* as understood by the International Classification of Health, Disability, and Functioning (ICF), which defines it as "involvement in a life situation" (World Health Organization, 2001). One such critique asserts that the ICF's definition of participation overlooks the subjective experience of participation, including personal meanings that individuals ascribe to activity engagement (Hammel et al., 2008; Hemmingsson & Jonsson, 2005). This dissertation supports this critique by revealing that meaningful activity, rather than the observable aspects of activity, fosters student Veterans' sense of meaning and purpose in life. Rehabilitation scientists should adopt assessment approaches that capture personal meanings as a dimension of participation, thereby complementing existing approaches that emphasize the observable aspects. As this dissertation indicates, the assessment of meaningful activity could facilitate the evaluation, and modification, of a dimension of participation capable of fostering wellbeing.

LIMITATIONS AND FUTURE RESEARCH

Across the three studies comprising this dissertation, student Veterans who completed both measurements had lesser coping ability compared to those who were excluded, potentially undermining the generalizability of the findings. Additionally, I analyzed a convenience sample of student Veterans from a single university, further limiting generalizability. All analyses should be replicated with larger, more geographically diverse, samples of student Veterans.

Further, the longitudinal designs employed throughout the three studies did not satisfy all criteria for causality, and corresponding findings should therefore be interpreted with caution. However, the longitudinal designs compare favorably to cross-sectional designs (Menard, 2002), and strengthen our understanding of relations between constructs. For example, study one presented evidence in favor of the theorized directionality of relationships (e.g., health status preceded a diminished sense of belonging). Researchers should further advance our understanding of observed relationships by uncovering mechanisms by which protective factors confer an adaptive advantage. For example, evidence suggests that meaningful activity fosters life meaning indirectly through psychological needs fulfillment (Eakman, 2013). Testing such relationships while accounting for combat-related risk would advance treatment theories underlying resilience-promoting intervention among student Veterans.

This dissertation employed longitudinal designs, thereby leveraging time as a tool to strengthen our understanding of observed relationships. However, future research should more explicitly investigate the role of time in the process by which student Veterans achieve resilience. Resilience is considered a dynamic process, whereby adaptive states, and the salience of forces in relation to those adaptive states, are in constant flux (King et al., 2003). For example, upon initial transition to the civilian community from a significantly different social context (i.e.,

military deployment), student Veterans may prioritize their integration into this novel social fabric. As such, a sense of belonging may initially be the most salient source of life meaning and resilience. As time passes and student Veterans look toward the future, however, a sense of doing may emerge as a salient source of meaning. Student Veterans may begin to prioritize self-actualization, and accordingly orchestrate patterns of activity that allow them to achieve a desired version of themselves (Hammell, 2004). Future research should investigate whether the importance of particular sources of meaning varies across different stages of Veterans' life narratives, thereby informing the implementation of supports tailored to their specific needs.

Implicit in the above discussion is a consideration of sources of meaning (belonging, self-understanding, and doing) as distinct entities exerting a unique influence upon student Veterans' life meaning and resilience. However, King's model (King, 2004) posits that a sense of meaning in life does not emerge from the unique and isolated influence of each source of meaning. Rather, a sense of belonging, self-understanding, and doing operate in a synergistic fashion to form a single entity from which a meaningful life emerges. As an example, Veterans' engagement in shared activities (doing) has been linked to their securement of social support (belonging), indicating that Veterans' sense of doing may be inextricably connected to their sense of belonging (Eakman et al., 2019; Hawkins et al., 2015). While a sense of belonging, self-understanding, and doing operate synergistically to promote meaning in life and resilience, the relative importance of each source of meaning is highly individualized (King, 2003). That is, Veterans may have highly personal preferences for the life experiences that they wish to acquire. As such, some Veterans may emphasize the importance of doing in their pursuit of life meaning and resilience, while others may emphasize the importance of belonging or self-understanding. Researchers should employ methods capable of shedding light on the complex and

individualized nature of the process by which student Veterans achieve life meaning and resilience, thereby advancing the development of resilience-promoting intervention.

Finally, future research should adopt the emerging perspective that an individual's capacity to achieve resilience is best understood using a systems framework (Masten & Cicchetti, 2016). This perspective emphasizes that individuals are complex living systems, inextricably connected to other systems (e.g., family units). Further, individuals' capacity to adapt is distributed across these interconnected systems, such that change in one system can permeate the others (Masten, 2018). Veterans' transition to the civilian community is similarly considered to emerge from the complex interplay of factors at the individual (e.g., emotional function), interpersonal (e.g., relationships with friends), community (e.g., access to health care), and societal (e.g., policy) levels (Elnitsky, Blevins, Fisher, & Magruder, 2017). Researchers should investigate how student Veterans' individual, interpersonal, community, and societal-level factors are interconnected, and how these interconnected systems influence their adaptation to combat exposure. An understanding of how these interconnected systems influence student Veterans' resilience will provide additional targets for intervention (e.g., policy change). Further, elements of the economic, political, and social context have a profound influence on institutions' ability to deliver recommended practices (Damschroder et al., 2009). As such, an understanding of how these multiple interconnected systems influence student Veterans' adaptation to combat exposure can allow institutions to effectively address barriers to the implementation of evidence-based intervention targeting student Veterans' resilience.

CONCLUSION

This dissertation supported the majority of my theoretical propositions explaining the process by which student Veterans achieve resilience. Specifically, this dissertation revealed that

health-related symptoms explain the risk that combat exposure poses to student Veterans' sense of meaning and purpose in life. This dissertation also revealed that coping ability and meaningful activity operate in compensatory models of resilience, fostering student Veterans' life meaning irrespective of combat-related risk. Additionally, findings indicate that high levels of social support, instructor autonomy support, coping ability, and academic self-efficacy weaken the influence of combat-related risk, thereby revealing their operation in moderator models of resilience. The above findings can meaningfully inform future research and practice, and advance the academic disciplines of both occupational science and rehabilitation science.

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