

THE IMPACT OF POSTTRAUMATIC GROWTH, TRANSFORMATIONAL LEADERSHIP,
AND SELF-EFFICACY ON PSYCHOLOGICAL SYMPTOMS
AMONG COMBAT VETERANS

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ABSTRACT

Previous research has established self-efficacy and posttraumatic growth as essential to post-deployment adjustment among veterans, and perceived transformational leadership is well known for its positive effects on follower outcomes across contexts. However, little is known regarding how transformational leadership may relate to self-efficacy and posttraumatic growth in fostering psychological wellbeing among combat veterans. The purpose of this dissertation was to examine the role of posttraumatic growth and transformational leadership in predicting PTSD and depression symptoms among combat veterans, as well as how post-deployment coping self-efficacy may mediate these relations. Regression analysis revealed post-deployment coping self-efficacy and perceived transformational leadership as predictors of fewer psychological symptoms. In addition, mediation modeling using bootstrapping resampling revealed that post-deployment coping self-efficacy mediated the relation between transformational leadership and both PTSD and depression. These findings may aid in the prediction of PTSD and depression symptoms among veterans, which may then influence pre-deployment leadership training among military personnel as well as clinical treatment protocols for veterans.

DEDICATION

This dissertation is dedicated to the many people who helped make it possible. It is especially dedicated to the numerous faculty members who guided me through its many challenges, as well as the many veterans who gave their time to further our understanding of the post-deployment experience.

LIST OF ABBREVIATIONS AND SYMBOLS

F	Fisher's ratio of the average explained variability to unexplained variability in a statistical model
f^2	Cohen's f^2
M	Mean
N	Sample size
p	Probability of a Type I error
ΔR^2	R square change
r	Pearson product-moment correlation
β	Standardized regression model coefficient
$<$	Less than
$=$	Equal to

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INTRODUCTION

The recent occurrence of the two prolonged conflicts of Operation Enduring Freedom and Operation Iraqi Freedom have brought the issues of veteran PTSD and depression to the forefront of mental health treatment and research. Among service members deployed to Iraq and Afghanistan, prevalence rates for PTSD and depression may be as high as 18% (Tanielian & Jaycox, 2008). Although it is well established that combat exposure is linked with PTSD (e.g., Institute of Medicine, 2008), many combat veterans find ways of managing stress and do not develop PTSD symptoms (Thomas, Britt, Odle-Dusseau, & Bliese, 2011). For instance, individuals with stable personality traits such as dispositional optimism exhibit more adaptive coping strategies (Tomakowsky, Lumley, Markowitz, & Frank, 2001). For many soldiers, however, adaptive coping strategies must be encouraged and developed. Effective leadership and the finding of meaning in adversity may benefit soldiers in combat, yet more research in this area is needed. This study explores the role of posttraumatic growth, perceived transformational leadership, and post-deployment coping self-efficacy in predicting psychological symptoms among combat veterans.

Risk factors of PTSD include experiencing childhood abuse (e.g., Komarovskaya et al., 2014), anxiety (e.g., Kadak, Nasiroglu, Boysan, & Aydin, 2013), depression (e.g., Grekin & O'Hara, 2014), jobs involving exposure to trauma (e.g., Jaffe, Sasson, Knobler, Aviel, & Goldberg, 2012), poor social support (e.g., Pietrzak et al., 2014) and biological factors (e.g., Bomyea, Risbrough, & Lang, 2012). Although military combat poses a significant risk to

developing PTSD and depression, effective leadership and personal growth are a positive means of coping with adverse circumstances (Wood, Foran, Britt, & Wright, 2012).

Posttraumatic growth refers to positive personal outcomes following a traumatic event (Tedeschi & Calhoun, 1996). It is based on the premise that although traumatic events generate a great deal of psychological distress, they may also give rise to positive changes in perspectives that accompany the recovery from a distressing event. According to Tedeschi and Calhoun, posttraumatic growth consists of three broad categories: changes in self-perception, changes in interpersonal relationships, and changes in philosophy of life. Theory on posttraumatic growth postulates that several variables facilitate psychological growth in the aftermath of trauma. They include cognitive processing, disclosure of concerns associated with traumatic events, others' reactions to self-disclosures, attempts to resolve the trauma, resilience of the trauma survivor, and the extent to which events either permit or suppress the above processes (Calhoun, Cann, & Tedeschi, 2010). Posttraumatic growth is distinguished from the concept of resilience, which refers to the ability to maintain a stable equilibrium following exposure to trauma (Bonanno, 2008). Posttraumatic growth, by contrast, refers to personal growth resulting from one's struggle to deal with trauma and its psychological consequences (Tedeschi & McNally, 2011).

Posttraumatic growth is related to the construct of benefit finding, which is a positive psychological approach to managing stress and trauma through deriving benefits from adverse circumstances such as combat (Wood, Britt, Thomas, Klocko, & Bliese, 2011). Both posttraumatic growth and benefit finding have been shown to relate to lower psychological distress in a variety of contexts. For example, benefit finding predicts reduced suffering among cancer patients (Katz, Flasher, Cacciapaglia, & Nelson, 2001), fewer depressive and anxious symptoms among women with HIV (Updegraff, Taylor, Kemeny, & Wyatt, 2002), and lower

distress and depression among breast cancer patients at four- to seven-year follow-up (Carver & Antoni, 2004). Posttraumatic growth has been found to have a curvilinear relation to depression. Specifically, in a study of assault survivors, Kleim and Ehlers (2009) found that individuals with no or high growth had fewer depressive symptoms than those who reported moderate growth.

Although benefit finding and posttraumatic growth represent largely the same construct, studies of how they relate to PTSD have produced mixed results. On the one hand, Wood, Britt, Thomas, Klocko, and Bliese (2011) found that benefit finding was associated with lower levels of PTSD and depression among soldiers deployed in support of Operation Iraqi Freedom. Their study also revealed that benefit finding during the deployment moderated the combat exposure-PTSD relationship such that the relation was stronger when benefit finding was low. In a related study, Wood, Britt, Wright, Thomas, and Bliese (2012) found that benefit finding was a protective factor against PTSD under high levels of combat exposure early in the deployment, but not during later periods. Wood and colleagues concluded that although benefit finding may help soldiers cope with early-deployment stress, it may be less effective after prolonged combat exposure.

Studies of posttraumatic growth, on the other hand, have found that it positively relates to PTSD symptoms (Dekel, Ein-Dor, & Solomon, 2012; Jahn, Herman, Schuster, Naik, & Moye, 2012; Pietrzak et al., 2010). One possible reason is that those experiencing greater trauma have had more opportunity for growth following the trauma (Tedeschi & McNally, 2011). The link between PTSD and posttraumatic growth may also depend on the circumstances of the trauma. In a meta-analysis of forty-two studies examining the relation between posttraumatic growth and PTSD, Shakespeare-Finch and Lurie-Beck (2014) found a significant positive relation between the two, the strength and linearity of the relation differing by trauma type and age of participant.

This finding suggests that positive and negative outcomes of trauma can occur together. Moreover, given the discrepant findings between benefit finding and posttraumatic growth in predicting PTSD, more research on posttraumatic growth is needed. According to Pietrzak et al. (2010), mediating variables may explain the inconsistent relation between posttraumatic growth and PTSD.

In contrast to the mixed findings in studies of posttraumatic growth and PTSD, effective leadership is linked with positive psychological outcomes. In military settings, Wood, Foran, Britt, and Wright (2012), found that supportive leadership served as a form of social support, meaning that soldiers benefitted from leadership by feeling that they were cared for, valued, and that they had a sense of belonging within a network of people with common goals. In a post-deployment cross-sectional study of the effects of supportive leadership on PTSD symptoms among soldiers in combat, Wood et al. (2012) found that supportive leadership was associated with fewer PTSD symptoms four months after deployment. They also found that benefit finding buffered the relation between combat stress and PTSD symptoms, but only under conditions of supportive leadership. Similarly, in a systematic review of the effect of leadership style on follower wellbeing, Skakon, Nielsen, Borg, and Guzman (2010) found that supportive leadership was related to affective wellbeing and low stress levels among followers.

Beyond serving as social support, leadership may also be understood by the extent to which it is transformational. According to Bass (1985), transformational leadership motivates followers by increasing their awareness of the importance of designated goals, as well as transforming followers' personal values to be in support of the organization's collective vision. A more recent model of transformational leadership consists of five leadership dimensions: idealized attributes, idealized behaviors, inspirational motivation, intellectual stimulation, and

individualized consideration (Bass & Avolio, 2000). Leaders demonstrating idealized attributes and idealized behaviors talk about their values and beliefs, consider followers' needs above their own, and promote ethical decision making. To promote inspirational motivation, leaders provide meaning to their followers' work, while encouraging them to envision attractive future states for the organization. Through intellectual stimulation, leaders encourage followers to be creative in solving problems. Finally, leaders use individualized consideration by attending to followers' needs for achievement and growth, including teaching, coaching, and creating new opportunities for learning.

Researchers have found transformational leadership to be effective in meeting the needs of followers while increasing their engagement in the organization. For example, Kovjanic, Schuh, and Jonas (2013) investigated the mediating effects of basic needs satisfaction and work engagement among participants working on a brainstorming task. Results revealed that compared to non-transformational leaders, transformational leaders inspired greater work engagement, quality and quantity of work, and persistence. This relation was mediated by the satisfaction of followers' basic psychological needs (e.g., competence and a sense of relatedness), suggesting that transformational leadership is also associated with positive psychological outcomes.

Other studies have investigated the role of transformational leadership in inspiring follower satisfaction with their leader and workplace. For example, Hsu and Chen (2011) compared levels of transformational leadership and follower satisfaction between Mainland China and Taiwan. They found that subordinates in Taiwan rated more of their managers as using a transformational leadership style, as well as that employees had greater satisfaction with their managers' leadership style than those in Mainland China. Similarly, Sui, Wang, Yue, and Luthans (2012) found that transformational leadership was associated with greater follower job

performance and satisfaction. They also found that this relation was mediated by positive psychological capacities such as hope, resilience, and self-efficacy.

Transformational leadership has also had important applications in military units. For instance, Ivey and Kline (2010) investigated the levels and implications of transformational leadership in the Canadian military. Over 700 officers and enlisted members rated both their leaders' behaviors and the behaviors they expected of their leaders. Findings revealed that transformational leadership increased with rank, while other leadership styles, such as contingent reward and management-by-exception did not. The authors also found that transformational leadership was prevalent, expected, and effective at all hierarchical levels, and they recommended that the Canadian military continue to encourage transformational leadership due to its positive impact on follower job satisfaction and their attitudes toward their supervisors. Similarly, in a study of military recruits in the United Kingdom, Hardy and colleagues (2010) found that dimensions of transformational leadership such as fostering acceptance of group goals, inspirational motivation, and individualized consideration significantly discriminated between success and failure in the unit.

Transformational leadership has also been examined in terms of its ability to inspire extra effort among military subordinates. In a study of the effects of transformational leadership within the Swiss armed forces militia system, Stadelmann (2010) found that among military professionals, several dimensions of transformational leadership (idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration) among lower-ranking leaders had a positive effect on subordinates' extra effort. Secondly, results supported the augmentation theory of transformational leadership (Bass, 1998), which states that

transformational leadership builds on more basic leadership behaviors to account for unique variance in the prediction of extra effort, effectiveness, and satisfaction.

In addition to findings of extra effort and unit success, research has also revealed that transformational leadership is useful in promoting soldiers' feelings of preparedness for combat missions. Griffith (2010) surveyed over 400 Army National Guard soldiers to examine the relation among nationalism, combat readiness, and intention to remain in military service. Findings revealed that among junior-ranking enlisted soldiers, nationalism was positively associated with readiness and intention to remain in service among followers, with transformational leadership serving as an intervening variable in the relation.

Although posttraumatic growth and effective leadership may benefit individuals across contexts, positive psychological outcomes require that these individuals believe they are capable of applying these benefits to their current lives. Self-efficacy is one's belief in his or her ability to manage functioning or exercise control over situations and events that are important to his or her life (Bandura, 1997; 2001a). In a systematic review of self-efficacy and health-related outcomes of different types of trauma, Luszczynska, Benight, and Cieslak (2009) found that both cross-sectional and longitudinal studies yielded medium to large effect sizes of self-efficacy on general distress, as well as severity and frequency of PTSD.

According to Benight and Bandura (2004), beliefs of self-efficacy work through cognitive, motivational, affective, and decisional processes to regulate human functioning. Although other factors may serve as guides and motivators of traumatic recovery, they are rooted in core beliefs that one's actions will produce desired effects (Benight & Bandura, 2004). Accordingly, recent research has revealed self-efficacy to be a mediator of posttraumatic recovery. For example, Benight and Harper (2002) examined PTSD among a community in the

aftermath of a 12,000-acre wildfire followed by a flood. Residents' perceived coping efficacy, acute distress, and stress-related symptoms were measured at the time of the disaster and a year later. Benight and Harper found that the effect of acute and symptomatic distress on subsequent PTSD was mediated by self-efficacy. Self-efficacy has also been found to be a mediator of distress among combat veterans. In a study of the impact of social support on PTSD and depression (distress severity) among combat veterans, Smith, Benight, and Cieslak (2013) found that post-deployment coping self-efficacy mediated the relation between social support and distress severity. The interpersonal cognitive and motivational processes of self-efficacy also explain its relation to perceived transformational leadership (Morrison, Jones, & Fuller, 1997). Self-efficacy has been found to mediate the relation between perceived transformational leadership and depression. Perko, Kinnunen, and Feldt (2014) found that among municipal employees, higher perceptions of transformational leadership were linked with greater occupational self-efficacy, which in turn was associated with fewer depressive symptoms. These results are consistent with other studies demonstrating role clarity and meaningfulness as a mediator between transformational leadership and employee wellbeing (e.g., Nielsen, Randall, Yarker, & Brenner, 2008; Nielsen, Yarker, Brenner, Randall, & Borg, 2008).

The aim of the current study is to build on the findings of Wood, Foran, Britt, and Wright (2012), as well as those of Smith, Benight, and Cieslak (2013) in examining the role of posttraumatic growth, transformational leadership, and post-deployment coping self-efficacy in predicting psychological distress among combat veterans. Although Wood and colleagues found that leadership and benefit finding reduced the impact of combat on PTSD symptoms, less is known regarding the role of posttraumatic growth in this process. Examining this role would be informative given that benefit finding appears to protect against PTSD (Wood et al.) while the

related construct of posttraumatic growth appears to predict PTSD symptoms (e.g., Shakespeare-Finch & Lurie-Beck, 2014). In line with Smith and colleagues, the current study will also explore the role of post-deployment coping self-efficacy as a mediator of psychological distress following combat.

Research on the relation between transformational leadership and subordinate psychological symptoms is sparse, with no known studies on how transformational leadership relates to PTSD and only one (Perko, Kinnunen, & Feldt, 2014) linking it to depression among followers. However, the related construct of supportive leadership is associated with lower PTSD symptoms among combat veterans (e.g., Wood, Foran, Britt, & Wright, 2012). Moreover, transformational leadership has been synonymous with effective leadership across contexts, giving rise to greater work engagement, quality and quantity of work, and persistence (e.g., Kovjanic, Schuh, & Jonas, 2013), greater follower satisfaction (e.g., Sui, Wang, Yue, & Luthans, 2012), follower extra effort (e.g., Stadelmann, 2010), and soldier readiness and intention to remain in service (e.g., Griffith, 2010). Accordingly, transformational leadership may be seen as instrumental to follower wellbeing, including psychological symptoms, and the following hypotheses are proposed:

H1a: Combat veterans' ratings of transformational leadership of their immediate supervisors during their deployment will be negatively related to current PTSD symptoms.

H1b: Combat veterans' ratings of transformational leadership of their immediate supervisors during their deployment will be negatively related to current depression symptoms.

Unlike the inverse relation predicted between leadership and PTSD symptoms, previous research has established that posttraumatic growth and PTSD symptoms may co-occur (e.g., Shakespeare-Finch & Lurie-Beck, 2014). As such, the following hypothesis is proposed:

H2: Combat veterans' posttraumatic growth will be positively related to PTSD.

Based on the findings of Wood, Foran, Britt, and Wright (2012), posttraumatic growth and transformational leadership may interact in predicting psychological distress. Accordingly, the current study predicts the following interaction:

H3a: Posttraumatic growth will moderate the relation between transformational leadership and PTSD.

H3b: Posttraumatic growth will moderate the relation between transformational leadership and depression.

Finally, previous research has found self-efficacy to be a mediator of distress severity following a trauma (Smith, Benight, and Cieslak, 2013), as well as a mediator between transformational leadership and depression (Perko, Kinnunen, & Feldt, 2014). As such, post-deployment coping self-efficacy is expected to mediate the role of transformational leadership in predicting PTSD and depression symptoms.

H4a: Post-deployment coping self-efficacy will mediate the relation between transformational leadership and PTSD symptoms.

H4b: Post-deployment coping self-efficacy will mediate the relation between transformational leadership and depression.

METHOD

Design

The study is cross-sectional in design with independent variables of combat experience, posttraumatic growth, transformational leadership, and post-deployment coping self-efficacy. The dependent variables of PTSD and depression will each be tested separately for their relation to the independent variables using correlation and multiple regression. Finally, post-deployment coping self-efficacy will be tested as a mediator of the relation between transformational leadership and the dependent variables.

Participants

Participants were combat veterans from the Army, Navy, Marines, Air Force, and Coast Guard who were deployed to a combat zone (e.g., Operation Enduring Freedom, Operation Iraqi Freedom, Operation Desert Storm, Vietnam War, Korean War, and World War II). PTSD and depression were measured on a continuous scale, and participants were included in the study regardless of whether they met diagnostic criteria for these disorders. However, to ensure reliable memory, participants were required to score a 3 on the Mini-Cog test of cognitive function (Borson, Scanlan, Brush, Vitaliano, & Dokmak, 2000).

Previous research (e.g., Wood, Foran, Britt, & Wright, 2012) suggests a medium-to-large effect size in the relation between perceived leadership and psychological distress, as well as between personal growth and distress ($\Delta R^2 = .27$ for the regression model of personal growth, leadership, and combat experiences). In the current study, based on a medium effect size ($f^2 = .15$) and alpha level of .01, a sample size of 130 participants was necessary for a statistical power

level of .80, while a sample size of 110 was sufficient for a large effect size with a power level of .99 (Cohen, 1977).

Measures

Demographics. Participant characteristics were collected using a demographic questionnaire (see Appendix C). Information included race, ethnicity, sex, age, education level, income adequacy, marital status, military branch, deployment location, rank, and duration of service.

Combat experiences. Combat experiences were measured with the Combat Experiences Scale (CES; Guyker et al., 2013), a 33-item measure of deployment-related experiences. Compared to previous measures of combat exposure, the CES includes unique aspects of the recent counterinsurgency wars in Iraq and Afghanistan. Sample items include “I witnessed violence with locals or between ethnic groups”; “I cleared/searched homes or buildings”; and “An improvised explosive device or booby trap exploded near me.” Item responses consist of a 5-point scale ranging from 1 (“never”) to 5 (“10 or more times”). A psychometric analysis of the CES by Guyker et al. (2013) yielded excellent internal reliability (Cronbach’s alpha of .95). In the current study, the Cronbach’s alpha was .96.

Posttraumatic growth. The Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) is a 21-item scale assessing positive outcomes following a traumatic event. Factors of the scale include new possibilities, relating to others, personal strength, spiritual change, and appreciation of life. Item responses consist of a Likert scale ranging from 0 (“I did not experience this change as a result of my crisis”) to 5 (“I experienced this change to a very great degree as a result of my crisis”). Sample items include the following: “My priorities about what is important in life”; “Being able to accept the way things work out”; and “I discovered that

I'm stronger than I thought I was.” In a study of the psychometric properties of the PTGI, Tedeschi and Calhoun (1996) calculated a Cronbach's alpha of .90 and a test-retest reliability of $r = .71$. The Cronbach's alpha in the current study was .94.

Transformational leadership. Perceived leadership was measured using the 45-item Multifactor Leadership Questionnaire (MLQ; Bass & Avolio, 2000). Participants were asked how frequently they perceived various leadership behaviors by their immediate supervisor during their most recent deployment. For participants who had a change in supervisor during their deployment, their immediate supervisor was defined as the one they had for the longest duration during deployment. Item scores range from 0 (“not at all”) to 4 (“frequently, if not always”). The MLQ consists of four-item subscales for five transformational dimensions. Items from the transformational dimension include idealized attributes (e.g., “He/she goes beyond self interest for the good of the group”), idealized behavior (e.g., “He/she considers the moral and ethical consequences of decisions”), inspirational motivation (e.g., “He/she articulates a compelling vision of the future”), intellectual stimulation (e.g., “He/she seeks differing perspectives when solving problems”), and individualized consideration (e.g., “He/she spends time teaching and coaching”).

The MLQ also contains seven subscales measuring leadership behaviors that are not transformational. These include contingent reward (e.g., “He/she provides me with assistance in exchange for my efforts”), management-by-exception (active) (e.g., “He/she focuses attention on irregularities, mistakes, exceptions, and deviations from standards”), management-by-exception (passive) (e.g., “He/she fails to interfere until problems become serious”), laissez-faire leadership (e.g., “He/she avoids getting involved when important issues arise”), extra effort (e.g., “He/she gets me to do more than I expected to do”), effectiveness (e.g., “He/she leads a group that is

effective”), and satisfaction (e.g., “He/she uses methods of leadership that are satisfying”). Transformational leadership was calculated as a mean score of the five transformational dimensions (20 items). The MLQ has adequate reliability. In a study of the psychometric properties of the MLQ among nurses, the Cronbach’s alpha for the leadership subscales ranged from .78 to .94 (Kanste, Miettunen, & Kyngas, 2007). In the current study, the Cronbach’s alpha of the transformational leadership items was .96.

Post-deployment coping self-efficacy. Perceptions of self-efficacy were measured using the Post-Deployment Coping Self-Efficacy (PDCSE) scale (Smith, Benight, & Cieslak, 2013). This scale measures one’s belief in the ability to adapt to the demands of societal reintegration following combat. The scale contains 18 items on a 7-point rating scale, in which respondents rate how capable they believe they are in managing various post-deployment challenges. Sample items include “Get back to a normal routine now that I’m back home” and “Handle frustration over people in my life not understanding what it was like for me during my deployment.” According to Smith and colleagues, the PDCSE scale has good internal consistency (Cronbach’s alpha = .96). It also has good convergent validity ($r = .67$ in relation to the General Self-Efficacy Scale by Chesney, Neilands, Chambers, Taylor, and Folkman (2006)) and construct validity (posttraumatic stress symptom severity, $r = -.76, p < .001$; depression symptom severity, $r = -.58, p < .001$ (Smith, Benight, & Cieslak, 2013)). Smith et al. also conducted an exploratory factor analysis of the scale, which yielded a one-factor solution explaining approximately 61% of the variance. The Cronbach’s alpha of the PDCSE scale in the current study was .97.

PTSD. Symptoms of PTSD were assessed using the PTSD Checklist 5 (PCL-5; Weathers et al., 2013), a revision of the PCL (Weathers, Litz, Herman, Huska, & Keane, 1993) to correspond to PTSD criteria in the Diagnostic and Statistical Manual of Mental Disorders, 5th

Edition (DSM-5; American Psychiatric Association, 2013). The PCL-5 is a 20-item self-report measure that is largely based on the previous PCL, a 17-item self-report measure of PTSD symptoms. Response options for each item range from 0 (“not at all”) to 4 (“extremely”). Scores from each of the items are then summed to a total ranging from 0 to 80. In accordance with the DSM-5, the PCL-5 measures symptoms from Criteria A through H. These include exposure to a real or threatened trauma, intrusion symptoms, avoidance and numbing behaviors, and symptoms of hyperarousal. In a study of the validity of the PCL among combat-exposed National Guard troops, Arbisi et al. (2012) found its internal consistency to be .93. In the current study, the Cronbach’s alpha was .97.

Depression. Depression was measured using the Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2001), a nine-item measure of depression severity. The instrument incorporates depression diagnostic criteria from the DSM, and it rates the frequency of these symptoms to determine the total score. Scores of 5, 10, 15, and 20 represent mild, moderate, moderately severe, and severe depression, respectively. Research on the psychometric properties of the PHQ-9 yielded a Cronbach’s alpha of .89 (Kroenke, Spitzer, & Williams, 2001). The same study also found good test-retest reliability ($r = .84$). The Cronbach’s alpha of the PHQ-9 in the current study was .89.

Cognitive ability. The Mini-Cog (Borson, Scanlan, Brush, Vitaliano, & Dokmak, 2000) was administered to screen for poor cognitive function. The Mini-Cog is a three-minute screener of cognitive impairment, which includes a three-item recall test and a clock-drawing task. It is advantageous in that it is brief, requires minimal training, and is useful in cross-cultural settings (Scanlan & Borson, 2001). Participants who recall three out of three words are considered negative for cognitive impairment. Similarly, those who recall two words but correctly perform

the clock drawing task are considered negative for cognitive impairment. All others are considered to have cognitive impairment. Data from participants with cognitive impairment ($N = 2$) were excluded from analysis because reports of past combat experiences and leadership behaviors may be unreliable among those with impairment. The sensitivity of the Mini-Cog ranges from 76-99% and the specificity ranges from 89-93% (Borson, Scanlan, Brush, Vitaliano, & Dokmak, 2000).

Procedure

Participants were recruited through the University of Alabama (UA), the Tuscaloosa VA Medical Center (TVAMC), and referral sampling. Institutional Review Board approval was obtained from UA (IRB Protocol # 14-022; see Appendix A) and TVAMC (IRB Reference # 00223/16-01; see Appendix B). Participants from UA were recruited through flyers, university announcements, and messages through the UA Veteran and Military Affairs listserv. Participants from TVAMC were recruited through direct patient contacts by the study team. Additional participants were recruited through local veteran organizations, community contacts, and referrals from previous participants. Participants signed an informed consent, completed the cognitive screener, and filled out paper-and-pencil questionnaires of their background, combat experiences, perceived leadership in combat, post-deployment self-efficacy, posttraumatic growth, PTSD, and depression. The order of administration of questionnaires was counterbalanced. Participants received a Wal-Mart gift card valued at \$15 for their participation. Participants also included veterans who lived outside the Tuscaloosa area, including out of state. These participants received an electronic copy of the informed consent form, gave verbal consent over the phone, and entered an ID number into a Qualtrics survey to provide documentation of

consent. Phone participants answered the questionnaires over the phone and received an electronic Wal-Mart gift card valued at \$15.

Statistical Analysis

Relations among variables were tested through correlation, hierarchical regression, and bootstrapped estimates of direct and indirect paths for mediation models. Correlation tested basic relations among main analysis variables and demographic variables. Demographic variables that correlated with PTSD and depression were entered along with main analysis variables into two hierarchical regression models, with one model containing PTSD as the dependent variable and the other model containing depression as the dependent variable. These models tested hypotheses 1 – 3. Hypotheses 4a and 4b were tested via bootstrapping resampling. This analysis was based on Hayes, Preacher, and Myers's (2010) recommendations for mediation modeling. Using Hayes's (2012, 2013) customizable Process macro and SPSS 20.0, simple mediation models were tested using bootstrapping resampling to calculate average confidence intervals through a minimum of 1,000 repeated tests of indirect effects.

RESULTS

Participant Characteristics

The sample consisted of 130 combat veterans from five branches of service (see Table 1 for participant characteristics). Participants included University of Alabama local student or employee veterans ($N = 27$), veterans from the Tuscaloosa VA ($N = 30$), and veterans recruited through veteran organizations, community contacts, and referrals ($N = 73$). A total of 37 veterans participated by phone because they did not live in the local area. One-way ANOVAs revealed significantly higher PTSD ($F(2, 127) = 10.61, p < .001$) and depression scores ($F(2, 127) = 7.22, p < .01$) among VA participants. There were no significant differences between those who participated by phone and in person. The most common deployment locations were Iraq (37.70%), Afghanistan (20.80%), and Vietnam (16.20%). The remainder (25.3%) deployed to a variety of locations, including Europe, Asia, and Africa. The majority of the sample was male (90.80%), and the mean age was 45.28 ($SD = 16.79$). The race/ethnicity breakdown was as follows: Caucasian (75.40%), African American (15.40%), Hispanic (3.10%), Native American (3.10%), Multi-Racial (2.30%), and other (0.80%). Regarding highest education achieved, 1.50% completed some high school, 6.20% earned a high school diploma, 55.40% completed some college, 18.50% earned a bachelor's degree, and 18.50% earned a graduate degree. See Table 2 for mean scores on main analysis variables.

Table 1

Participant Characteristics

Variable	<i>M (SD)</i>
Age	45.28 (16.79)
Self-reported level of health	4.14 (1.13)
Variable	<i>N (%)</i>
Sex	
Men	118 (90.80)
Women	12 (9.20)
Race/ethnicity	
Caucasian	98 (75.40)
African American	20 (15.40)
Hispanic	4 (3.10)
Native American	4 (3.10)
Multi-racial	3 (2.30)
Other	1 (0.80)
Years of education	
Some high school	2 (1.50)
High school diploma	8 (6.20)
Some college	72 (55.40)
Bachelor's degree	24 (18.50)
Graduate degree	24 (18.50)
Income adequacy	
Not Difficult	52 (40.00)
Not Very Difficult	30 (23.10)
Somewhat Difficult	29 (22.30)
Very Difficult	19 (14.60)
Marital status	
Never Married	29 (22.30)
Married	57 (43.80)
Divorced	34 (26.20)
Separated	7 (5.40)
Widowed	3 (2.30)
Branch of Service	
Army	82 (63.10)
Navy	16 (12.30)
Air Force	7 (5.40)
Marines	24 (18.50)
Coast Guard	1 (.80)
Deployment Location	
Iraq	49 (37.70)
Afghanistan	27 (20.80)
Kuwait	3 (2.30)
Vietnam	21 (16.20)
Korea	4 (3.10)
WWII - Pacific	1 (0.80)
Bosnia	2 (1.50)
Saudi Arabia	7 (5.40)
Other	16 (12.30)

Note. *N* = 130. Self-reported level of health: 1 = poor to 6 = excellent.

Table 2

Mean Scores of Main Analysis Variables

Variable	<i>M (SD)</i>
Combat Experiences Scale	76.05 (30.21)
Posttraumatic Growth Inventory	2.82 (1.19)
Transformational Leadership Total	2.37 (0.99)
Idealized Attributes	2.58 (1.10)
Idealized Behaviors	2.34 (1.06)
Inspirational Motivation	2.42 (1.05)
Intellectual Stimulation	2.17 (1.08)
Individualized Consideration	2.32 (1.07)
Post-Deployment Coping Self-Efficacy	86.15 (24.35)
PCL-5	32.57 (21.00)
PHQ-9	9.57 (6.57)

Note. $N = 130$. Combat Experiences Scale is out of 165. Posttraumatic Growth Inventory is a mean score out of 5. Transformational Leadership Total and subscales are a mean score out of 4. Post-Deployment Coping Self-Efficacy is out of 126. PCL-5 = PTSD Checklist 5; out of 80. PHQ-9 = Patient Health Questionnaire - 9 (Depression); out of 27.

Correlation

Table 3 lists correlations among main analysis variables. The following participant characteristics were correlated with the dependent variables of PTSD and depression: group (e.g., university affiliate, VA patient, veteran organization member), marital status, race, education, and self-rated health. No other demographic variables, including age, predicted the dependent variables. Both PTSD and depression were negatively correlated with transformational leadership and its subscales. PTSD and depression were also highly negatively correlated with post-deployment coping self-efficacy. Posttraumatic growth and combat experiences were positively correlated. However, they did not correlate with other variables. Based on these correlations, transformational leadership and post-deployment coping self-efficacy were selected as main predictor variables for the regression model. Despite its lack of correlation with the dependent variables, posttraumatic growth was also selected for the

regression model due to its potential as a moderator of the link between leadership and distress (e.g., Wood, Foran, Britt, & Wright, 2012).

Table 3
Correlations Among Main Analysis Variables

	Combat Experiences Scale	Posttraumatic Growth Inventory	Transformational Leadership Total	Post-Deployment Coping Self-Efficacy	PCL-5
Combat Experiences Scale	-	.23**	.03	-.06	.13
Posttraumatic Growth Inventory	.23**	-	.08	.07	-.07
Transformational Leadership Total	.03	.08	-	.28**	-.36**
Post-Deployment Coping Self-Efficacy	-.06	.07	.28**	-	-.74**
PCL-5	.13	-.07	-.36**	-.74**	-
PHQ-9	.11	-.03	-.28**	-.78**	.81**

Note. * $p < .05$; ** $p < .01$. PCL-5 = PTSD Checklist 5. PHQ-9 = Patient Health Questionnaire - 9 (Depression).

Hierarchical Regression

Prior to regression analysis, the regression assumption of normality was tested on the dependent variables of PTSD and depression. For PTSD, the mean PCL-5 score of the sample was 32.57, and the 5% trimmed mean was 32.19, suggesting no outliers. This was further supported by the absence of outliers in the boxplot. Skewness and kurtosis were .17 and -1.12, respectively. Although the Kolmogorov-Smirnov statistic was significant ($p = .02$), this is common in larger samples (Pallant, 2007). The Normal Q-Q Plot (observed value versus expected value from a normal distribution) consisted of a fairly straight line. In sum, the distribution of PTSD scores was reasonably normal. For depression, the mean PHQ-9 score of the sample was 9.57, and the 5% trimmed mean was 9.41, suggesting no outliers. This was

further supported by the absence of outliers in the boxplot. Skewness and kurtosis were .25 and -1.09, respectively. Although the Kolmogorov-Smirnov statistic was significant ($p = .002$), the Normal Q-Q Plot consisted of a fairly straight line. Thus, the distribution of depression scores was also reasonably normal. In addition to normality and the absence of outliers, the data did not violate the regression assumptions of multicollinearity, singularity, and homoscedasticity.

Separate regression models were created for predictors of PTSD (Table 4) and depression (Table 5). In the PTSD model, the control variables of group, marital status, race, education, and self-rated health were entered into step 1. Post-deployment coping self-efficacy, posttraumatic growth, and transformational leadership were entered into step 2. Post-deployment coping self-efficacy was significant in negatively predicting PTSD ($\Delta R^2 = .31, \beta = -.63, p < .01$). Similarly, transformational leadership was also negatively related to PTSD ($\Delta R^2 = .03, \beta = -.18, p < .01$), supporting *H1a*. Neither posttraumatic growth nor the posttraumatic growth x transformational leadership interaction term were significant in predicting PTSD. Thus, *H2* and *H3a* were not supported. However, the regression model explained 59.60% of the variance ($F(9, 120) = 19.66, p < .001$).

Table 4

Hierarchical Multiple Regression Analysis Predicting PTSD

Predictor	ΔR^2	β
Step 1		
Group	.13**	-.05
Marital Status	.03*	.07
Race	.02	.10
Education	.00	.00
Health	.07**	-.09
Step 2		
PDCSE	.31**	-.63**
PTG	.00	-.03
TL	.03**	-.18**
Step 3		
PTG x TL	.00	.01

Note. * $p < .05$; ** $p < .01$. Group = Participant recruitment source (university, community, or VA); PDCSE = Post-Deployment Coping Self-Efficacy; PTG = Posttraumatic Growth; TL = Transformational Leadership. β values indicate standardized coefficients for complete regression model.

Table 5

Hierarchical Multiple Regression Analysis Predicting Depression

Predictor	ΔR^2	β
Step 1		
Group	.09**	-.16*
Marital Status	.03	.01
Race	.03*	.07
Education	.02	-.11
Health	.07**	-.08
Step 2		
PDCSE	.40**	-.75**
PTG	.00	.01
TL	.01	-.07
Step 3		
PTG x TL	.00	.01

Note. * $p < .05$; ** $p < .01$. Group = Participant recruitment source (university, community, or VA); PDCSE = Post-Deployment Coping Self-Efficacy; PTG = Posttraumatic Growth; TL = Transformational Leadership. β values indicate standardized coefficients for complete regression model.

In the depression model, the control variables of group, marital status, race, education, and self-rated health were entered into step 1. Post-deployment coping self-efficacy, posttraumatic growth, and transformational leadership were entered into step 2. Post-deployment coping self-efficacy was significant in negatively predicting depression ($\Delta R^2 = .40$, $\beta = -.75$, $p < .01$). Transformational leadership, posttraumatic growth, and the posttraumatic growth x transformational leadership interaction term were nonsignificant in predicting depression. As such, *H1b* and *H3b* were not supported. However, the regression model explained 63.90% of the variance ($F(9, 120) = 23.58$, $p < .001$).

Mediation

Hypothesis 4a predicted that post-deployment coping self-efficacy would mediate the relation between transformational leadership and PTSD symptoms. To test this hypothesis, mediation modeling using bootstrapping resampling (Hayes, 2013) was used (see Figure 1). In the current analysis, 5,000 indirect effects were tested. The variables of group, marital status, race, education, and self-rated health were entered as controls. Path coefficients among transformational leadership, post-deployment coping self-efficacy, and PTSD were statistically significant. Transformational leadership was positively related to post-deployment coping self-efficacy (path *a*; $B = 5.67$, $SE = 1.76$, $p < .01$), post-deployment coping self-efficacy was negatively related to PTSD (path *b*; $B = -0.54$, $SE = .06$, $p < .01$), and transformational leadership was negatively related to PTSD (path *c* (total effect of transformational leadership on PTSD); $B = -6.89$, $SE = 1.56$, $p < .01$). The direct effect of transformational leadership on PTSD (path *c'*), although weaker than the total effect, remained significant ($B = -3.83$, $SE = 1.30$, $p < .01$). The indirect effect of transformational leadership on PTSD (i.e., the total effect minus the direct effect, which is the mediator of post-deployment self-efficacy) was significant.

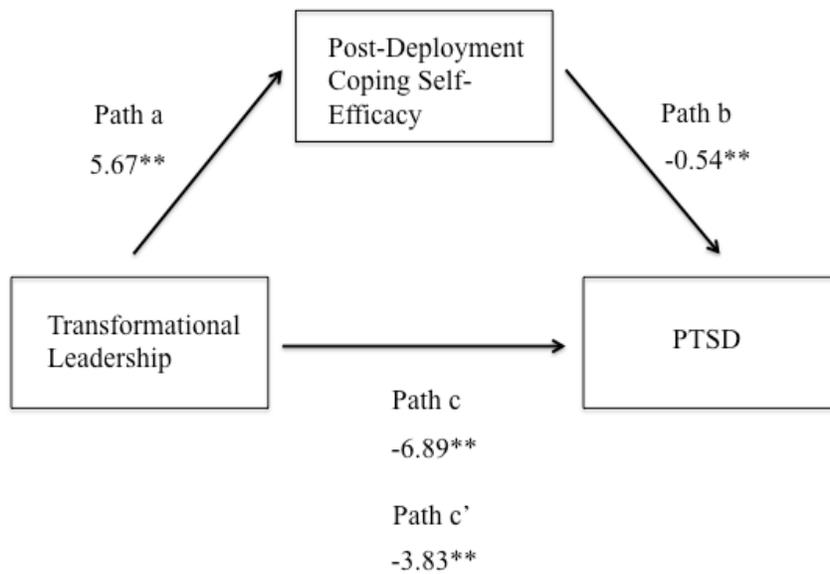


Figure 1. Analysis of post-deployment coping self-efficacy as a partial mediator of the relation between perceived transformational leadership and current PTSD. Numbers are unstandardized regression coefficients. ** $p < .01$

According to Hayes (2012), rather than inferring indirect effects based on statistical significance of path coefficients, asymmetric bootstrap confidence intervals provide a more explicit quantification of the indirect effect along with a statistical test accounting for the non-normality of the sampling distribution of the indirect effect. Using this method, the point estimate of the indirect effect of transformational leadership on PTSD was negative and statistically different from zero, as indicated by the point estimate of -3.05 and the 95% bias-corrected bootstrap confidence interval that was below zero (-5.00 to -1.41). The statistical significance of the total, direct, and indirect effects of transformational leadership on PTSD indicates that post-deployment coping self-efficacy is a partial mediator. Accordingly, through the partial mediator of post-deployment coping self-efficacy, each measured unit of transformational leadership predicted lower PTSD scores by an average of -3.05. As such, *H4a* was partially supported.

Hypothesis 4b predicted that post-deployment coping self-efficacy would mediate the relation between transformational leadership and depression (see Figure 2). Using bootstrapping resampling, the variables of group, marital status, race, education, and self-rated health were entered as controls. Path coefficients among transformational leadership, post-deployment coping self-efficacy, and depression were statistically significant. Transformational leadership was positively related to post-deployment coping self-efficacy (path *a*; $B = 5.67, SE = 1.76, p < .01$), post-deployment coping self-efficacy was negatively related to depression (path *b*; $B = -0.20, SE = .02, p < .01$), and transformational leadership was negatively related to depression (path *c* (total effect of transformational leadership on depression); $B = -1.64, SE = 0.51, p < .01$). The direct effect of transformational leadership on depression (path *c'*) was nonsignificant ($B = -0.49, SE = 0.38, p = .20$). The point estimate of the indirect effect of transformational leadership on depression was negative and statistically different from zero, as indicated by the point estimate of -1.15 and the 95% bias-corrected bootstrap confidence interval that was below zero (-1.77 to -0.53). The statistical significance of the total and indirect effects of transformational leadership on depression, along with the nonsignificance of the direct effect, indicates that post-deployment coping self-efficacy is a full mediator. Through the mediator of post-deployment coping self-efficacy, each measured unit of transformational leadership predicted lower depression scores by an average of -1.15. As such, *H4b* was supported.

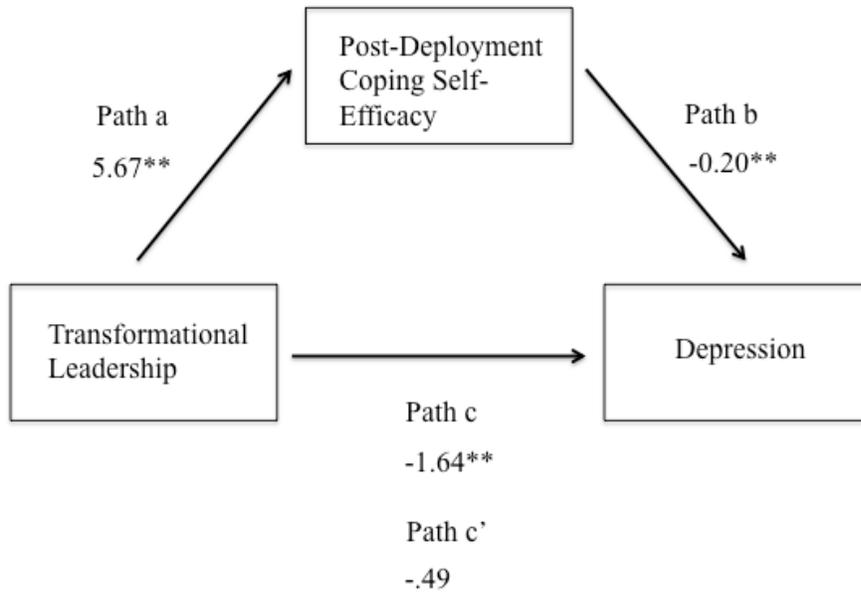


Figure 2. Analysis of post-deployment coping self-efficacy as a mediator of the relation between perceived transformational leadership and current depression. Numbers are unstandardized regression coefficients. ** $p < .01$

DISCUSSION

This study investigated the role of posttraumatic growth, perceived transformational leadership, and self-efficacy on current symptoms of PTSD and depression among combat veterans. Separate regression models revealed post-deployment coping self-efficacy and transformational leadership as predictors of psychological symptoms. In both the PTSD and depression model, post-deployment coping self-efficacy was negatively related to the dependent variable. In addition, transformational leadership significantly predicted fewer symptoms in the PTSD model. In the mediation models, post-deployment coping self-efficacy was found to partially mediate the relation between transformational leadership and PTSD, and it fully mediated the relation between transformational leadership and depression.

Post-deployment coping self-efficacy's robust relation to psychological symptoms is consistent with other self-efficacy research (e.g., Luszczynska, Benight, & Cieslak, 2009; Perko, Kinnunen, & Feldt, 2014). This relation is likely rooted in one's confidence in exercising control over important situations and events (Bandura, 1997; 2001a). According to Benight and Bandura (2004), social cognitive theory suggests that positive beliefs about one's abilities aid in trauma recovery. Specifically, self-efficacy is linked with positive coping strategies (Bandura, 1997). According to Luszczynska et al. (2009), this in turn fosters more action-oriented coping strategies that are appropriate to managing trauma-related difficulties. Accordingly, the cognitive underpinnings of PTSD and depression appear to include low efficacy beliefs. This is underscored by the current study's findings of post-deployment coping self-efficacy relating to fewer PTSD and depression symptoms following the trauma of combat.

The study's findings of perceived transformational leadership relating to fewer PTSD and depression symptoms are consistent with a large body of research linking transformational leadership with positive follower outcomes in a variety of contexts (see Skakon, Nielsen, Borg, & Guzman, 2010 for a systematic review). According to Skakon et al., supportive leadership behaviors give rise to affective wellbeing and low stress levels among followers.

Transformational leaders also foster positive interpretations of experiences, resulting in adaptive cognitions and feelings of hardiness among followers in military units (Bartone, 2006). This is consistent with the current study's mediation results, which suggest that transformational military leaders inspire long-term feelings of post-deployment self-efficacy among followers, which in turn accounts for fewer psychological symptoms among these followers. This interpretation is in line with the findings of Perko, Kinnunen, and Feldt (2014), in which occupational self-efficacy mediated the relation between transformational leadership and depression symptoms. According to Bono and Judge (2003), transformational leaders influence followers by inspiring positive appraisals of themselves in relation to their work. These adaptive work-related cognitions may generalize to positive self-perceptions that act as protective factors against PTSD and depression.

Results regarding posttraumatic growth were nonsignificant. Posttraumatic growth did not directly relate to PTSD or depressive symptoms, nor did it moderate the role of transformational leadership in predicting PTSD or depression. These results may be consistent with the mixed findings regarding posttraumatic growth and benefit finding. Although previous research establishes posttraumatic growth as predictive of PTSD, several items in the Posttraumatic Growth Inventory used in the current study may be more consistent with benefit finding, a construct that negatively relates to PTSD (Wood, Foran, Britt, & Wright, 2012).

Specifically, the Posttraumatic Growth Inventory subscales of personal strength and meaning in life somewhat overlap with several items on the benefit finding scale. Future research investigating how the subscales of the Posttraumatic Growth Inventory relate to psychological symptoms may shed more light on the complex relation between meaning making and distress among veterans.

Similarly, combat experiences were not found to relate to PTSD or depression. However, combat experiences were positively correlated with posttraumatic growth. This is consistent with several studies' findings (e.g., Pietrzak et al., 2010) of posttraumatic growth relating to greater PTSD, in which greater frequency or intensity of difficult experiences is needed to give rise to greater personal growth. Future research should examine types of combat experiences as predictors of psychological outcomes. A psychometric study of combat experiences by Guyker et al. (2013) found three factors (exposure to combat environment, direct engagement, and nearness to death/injury of others) as useful subscales in exploring this relation.

Clinical Implications

Considerations of posttraumatic growth and post-deployment self-efficacy may aid in case conceptualization and treatment planning for veterans with PTSD or depression. For example, Raja (2012) suggests that posttraumatic growth involves thinking about how a difficult experience fits into the larger picture of one's life, and how the experience brings a sense of meaning and purpose. For instance, one may view a deployment as part of a lifelong legacy of selfless service. He or she may then continue this legacy through volunteer work and positive social interactions, which may counteract symptoms of PTSD and depression. Similarly, post-deployment self-efficacy empowers veterans to manage personal and professional role transitions, resulting in more positive affect (Smith, Benight, & Cieslak, 2013). Smith and

colleagues found that perceptions of social support gave rise to feelings of self-efficacy. As an adjunct to evidence-based treatment of PTSD and depression, therapists should encourage veterans to identify ways in which stressful deployments offered opportunities for personal growth, as well as how these changes facilitate post-deployment adjustment (Foa, Hembree, & Rothbaum, 2007).

Perceived transformational leadership characteristics have clinically relevant implications as well. According to Schaubroeck, Walumbwa, Ganster, and Kebes (2007), individuals whose leaders were hostile and with negative affectivity were more likely to have job-related dissatisfaction and anxiety, particularly when these jobs provided little decision latitude. In contrast, Moyle (1998) found that supportive leadership resulted in lower job stress and higher job satisfaction among employees, and this relation was mediated by employee perceptions of control. This is consistent with the mediating role of occupational self-efficacy in the relation between perceptions of transformational leadership and fewer depressive symptoms (Perko, Kinnunen, & Feldt, 2014), as well as the mediating role of post-deployment self-efficacy found in the current study. Leaders may also have a role in mitigating the impact of stressors on followers. Bartone (2006) argued that effective military leaders increase hardy, resilient responses among subordinates during stressful events. These leaders encourage positive interpretations of experiences through the transformational leadership dimension of inspirational motivation. The effects of leadership on psychological symptoms may also be explained by follower coping strategies. Kim, Han, Shaw, McTavish, and Gustafson (2010) found that self-blame diminishes emotional wellbeing when social support is low, while positive framing, to a lesser extent, boosts emotional wellbeing when social support is high. In treating veterans with PTSD or depression, therapists should encourage the processing of leadership perceptions,

explore how they shape current cognitions and self-efficacy, and foster positive reframing over self-blame.

The study's findings may also influence leadership training programs for military personnel. For example, Bartone (2006) analyzed leadership training outcomes among West Point cadets. As future officers in the U.S. Army, these cadets receive military development grades based on leader performance ratings from upperclassmen and an officer supervisor. Bartone found that cadet transformational leadership characteristics predicted higher military development grades. This suggests that transformational leadership is in line with core U.S. Army values, and as such should receive greater emphasis in U.S. service academies. In addition, officer and noncommissioned officer leadership training courses may emphasize transformational leadership components such as individualized consideration and inspirational motivation. These efforts would promote core military values at a tactical level while supporting the long-term psychological wellbeing of armed forces personnel and veterans.

Study Limitations

Based on the cross-sectional design of this study, findings in support of the hypotheses would not necessarily indicate that posttraumatic growth, transformational leadership, or post-deployment coping self-efficacy cause reduced PTSD or depressive symptoms. For instance, lower PTSD symptoms may produce greater self-efficacy. Similarly, links between self-efficacy and psychological symptoms may be bidirectional. According to Bandura (1997), although self-efficacy may give rise to positive affect, positive emotions may also foster greater self-efficacy. Accordingly, findings of self-efficacy as a mediator between transformational leadership and psychological symptoms should be interpreted with caution. Regarding leadership assessment, a critique of the Multifactor Leadership Questionnaire is that its transformational leadership

subscales (i.e., idealized attributes and behaviors, individualized consideration, inspirational motivation, and intellectual stimulation) tend to be highly correlated (Lowe, Kroeck, & Sivasubramaniam, 1996). Replications of the current study may benefit by using a brief, global measure of transformational leadership such as the Global Transformational Leadership Scale (Carless, Wearing, & Mann, 2000). Another limitation in perceived leadership assessment was the potential for participants to rate leadership quality based on their current emotions (e.g., depressed individuals may rate their leaders more poorly), which may confound the relationship found between transformational leadership and current PTSD and depression. However, the items of the Multifactor Leadership Questionnaire are largely objective and behavior-based (e.g., “(He/she) spends time teaching and coaching”), thus minimizing the influence of rater emotions. A statistical limitation is the study’s relatively small sample size. Although the medium-to-large effect sizes found in the main analyses permit a sample size of 130, tests of interactions between posttraumatic growth and transformational leadership require sensitivity to small effect sizes (Wood, Foran, Britt, & Wright, 2012).

Summary and Conclusions

Transformational leadership, posttraumatic growth, and post-deployment coping self-efficacy show promise in explaining the psychological wellbeing of combat veterans from a variety of backgrounds and experiences, with far-reaching implications in military and clinical settings. The current study, combined with future research, may advance knowledge in the fields of psychology, organizational behavior, and the military to better understand the role of perceived leadership vis-à-vis cognitive and affective characteristics and how these variables link to the long-term wellbeing of combat veterans.

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APPENDIX A UA IRB Approval

Office for Research
Institutional Review Board for the
Protection of Human Subjects

January 8, 2015

THE UNIVERSITY OF
ALABAMA
R E S E A R C H

Michael LaRocca
Dept. of Psychology
College of Arts & Sciences
Box 870348

Re: IRB Protocol # 14-022
"The Impact of Posttraumatic Growth and Transformational Leadership
on Psychological Symptoms among Combat Veterans"

Dear Mr. LaRocca:

The University of Alabama IRB has received the revisions requested by the full board on 11/14/14. The board has reviewed the revisions and your protocol is now approved for a one-year period. Please be advised that your protocol will expire one year from the date of approval, 11/14/14.

If your research will continue beyond this date, complete the IRB Renewal Application by the 15th of the month prior to project expiration. If you need to modify the study, please submit the Modification of An Approved Protocol Form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, please complete the Request for Study Closure Form.

Please use reproductions of the IRB approved stamped consent form to provide to your participants.

Should you need to submit any further correspondence regarding this proposal, please include the assigned IRB application number.

Good luck with your research.

Sincerely,



Stuart Usdan, PhD.
Chair, Non- Medical Institutional Review Board

358 Rose Administration Building
Box 870127
Tuscaloosa, Alabama 35487-0127
(205) 348-8461
FAX (205) 348-7189
TOLL FREE (877) 820-3066

APPENDIX B
TVAMC IRB Approval



Subcommittee on Human Studies (IRB)
Department of Veterans Affairs
VA Medical Center, Tuscaloosa, Alabama 35404
(679)

DATE: April 28, 2016

TO: Michelle Hilgeman, PH.D.
FROM: Tuscaloosa VAMC IRB

PROJECT TITLE: [831884-3] The Impact of Posttraumatic Growth, Transformational Leadership, and Self-efficacy on Psychological Symptoms among Combat Veterans

IRB REFERENCE #: 00223/16-01
SUBMISSION TYPE: Amendment/Modification

ACTION: APPROVED
APPROVAL DATE: April 28, 2016
EXPIRATION DATE: December 2, 2016
REVIEW TYPE: Expedited Review

REVIEW CATEGORY: Expedited review category # 2E (2) *Minor changes in previously approved research during the period (of 1 year or less) for which approval is authorized (38 CFR 16.110(b)(2)).*

e. Collected Materials (Expedited Review Category Number 5, see subpar. 65dd).

RISK LEVEL: Minimal Risk

Thank you for your submission of **Amendment/Modification materials** for this research study. The Tuscaloosa VAMC IRB has **APPROVED** your submission. The following items were reviewed and approved (clean version only) on April 28, 2016:

- Amendment/Modification - Request for Amendment Form (UPDATED: 04/26/2016)
- Consent Form - Consent Form Tracked 20160426 (UPDATED: 04/27/2016)
- Consent Form - Consent Form Clean 2016-04-26 (UPDATED: 04/26/2016)

This submission has received Expedited Review based on the applicable federal regulation.

Please use reproductions of the IRB approved informed consent (if applicable) to obtain consent from your participants.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.

Retention of Records: Records of this research study will be maintained in accordance with the new VHA's Records Control Schedule 10-1 (RCS) policies for the Office of Research and Development; section 7.6 - Research Investigator Files.

For a study such as this one (i.e. not FDA-regulated or Sponsored-study), the instructions state that the PI may destroy research records 6 years after the end of the fiscal year after completion of the research project, but the investigator may retain longer if needed.

PLEASE NOTE: The investigator's research records **MUST** be retained by the research office for storage at the completion of the research study. Records are the property of the Tuscaloosa VA Medical Center's Research Office. Please contact the IRB office at 205-554-3674 to make arrangements for delivery of all research study records.

Conditions of IRB Approval:

Adhere to ethical principles: (1) Respect for persons - consent, privacy, confidentiality, (2) Beneficence - maximizes possible benefits to the subject and minimize possible harms, and (3) Justice - equitable selection.

Using the IRB-stamped approved copy of the informed consent form, obtain informed, written consent from each human subject or his/her legally authorized representative (Health care agents [appointed under Durable Power of Attorney for Health Care] and next-of-kin, or guardians), unless the informed consent form is specifically waived by the IRB. If the subject lacks decision-making capacity or has been declared incompetent, surrogate consent is required. You are required to place the original, signed consent form in the subject's research file and send a copy to medical records to be scanned into the subject's medical record. In addition, provide a copy to the subject or his/her legally authorized representative. Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the consent document.

Promptly report all Unanticipated Problems involving risks to participants or others using the Unanticipated Problem Form and following procedures in TVAMC HRPP SOP #11 Reporting Requirements (both events at the VA and sponsor reports of events at other sites).

Report protocol deviation or violation initiated to prevent or eliminate an immediate hazard to a research participant and report protocol deviation or violation that is likely to (or resulted in) adversely affect 1) the rights, safety, or welfare of the research participant, 2) the participant's willingness to continue participation or 3) the integrity of the research data, including VA information security requirements PROMPTLY (within 5 business days). Report all adverse events and other protocol deviations (that do not meet the above definitions) at the time of the continuing review in a table.

Do not initiate any unapproved changes (Abstract, Protocol, or Consent Form modifications, advertisements, etc.) without IRB review and approval. Modifications to the approved protocol **MUST** be submitted to the IRB via an Amendment for approval PRIOR to initiation/implementing.

Research involving Devices or Emergency Use of Unapproved Test Articles is not permitted.

If applicable, provide a copy of each subject's consent form to the Investigational Pharmacist prior to your request to receive, store, and dispense study medications. (The Investigational Pharmacist is responsible for the storage and dispensing of investigational drugs). A copy of Investigational Drug Information Record (VA Form 9012) should also be sent to medical records to be scanned into the subject's electronic medical record (if applicable, also give copy to the nurse-in-charge on the unit where the patient is located).

Submit Continuing Review information to the IRB **21** days prior to the IRB meeting (1st Thursday of every month) that is scheduled at least one month prior to the expiration date of study (specified on the approval memorandum). Inform the IRB when your study is completed (federal law requires that every protocol

must be reviewed a minimum of once per year). File a final report upon completion or termination of a study.

At the Principal Investigator's expiration of Veteran Affairs (VA) appointment (including Without Compensation [WOC] appointments), the investigator's research records MUST be retained by the Tuscaloosa VA Medical Center's Research Office.

Penalties for Non-Compliance:

Non-compliance may result in suspension of approval for a particular project. Serious or continuing noncompliance may result in suspension of your privilege to conduct research at this VAMC.

The TVAMC IRB is required to follow VHA Handbook 1058.01 Requirements for Reporting Research Events to Facility Oversight Committees and the Office of Research Oversight.

Additional Conditions of IRB Approval for DNA Research:

DNA sampling and analysis is one of the most active and rapidly changing methods in modern biomedical research. It is also associated with a growing number of ethical, regulatory, and public-relations concerns for human subjects who donate DNA for analysis. Issues involve concerns both with the proprietary interests in donated materials leading to profitable bio-technologies, and with confidentiality of information which could represent a risk to individuals of discrimination socially or in terms of employment and medical or life insurance, or of criminal prosecution.

DNA Conditions of Approval:

Use of stored DNA specimens for future studies at the Tuscaloosa VAMC requires Tuscaloosa VAMC IRB or VA Central IRB submission and approval.

Use of stored DNA specimens for future studies outside the Tuscaloosa VAMC and not under the auspices of the Tuscaloosa VAMC IRB require Tuscaloosa or VA Central IRB approval. Stored specimens may not be shared with other scientists until after the Tuscaloosa VAMC or VA Central IRB reviews and approves such sharing.

STATEMENT OF COMPLIANCE

Name of IRB: Tuscaloosa VAMC Subcommittee on Human Studies (IRB)
IRB Address: Research Service (151)
VA Medical Center
3701 Loop Road East
Tuscaloosa, AL 35404

The Subcommittee on Human Studies (IRB) is duly constituted (fulfilling FDA requirements for diversity), allows only those IRB members who are independent of the investigator and the sponsor of the trial to vote/provide opinion on the trial, has written procedures for initial and continuing review of clinical trials, prepares written minutes of convened meetings, and retains records pertaining to the review and approval process; all in compliance with requirements defined in 21 CFR (Code of Federal Regulations) Parts 50, 56 and ICH (International Conference on Harmonization) guidance relating to GCPs (Good Clinical Practice).

All research must be conducted in accordance with federal regulations governing human research.

The IRB will have no option but to restrict, suspend, or terminate an investigator's privileges to conduct research at the Tuscaloosa VAMC if it finds that research is not being conducted in accordance with these regulations. The IRB is required to report non-compliance resulting in suspension or termination to pertinent agency officials (i.e., VA Headquarters, FDA, OHRP, and ORO).

If you have any questions, please contact Dedria Smith at (205) 554-2000x3674 or dedria.smith@va.gov. Please include your project title and assigned IRB ID number in all correspondence with this office.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within the TVAMC IRB's records.

The Tuscaloosa VAMC IRB is not connected with, has no authority over, and is not responsible for human research conducted at any other institution, except where a Memorandum of Understanding specifies otherwise. Separate consent forms, initial reviews, continuing reviews, amendments, and reporting of serious adverse events are required if the same study is conducted at multiple institutions.

HRPP Administrator or Designee

Date

APPENDIX C
Demographic Questionnaire

Name: _____

Age: _____

Sex (circle one): male female

Marital status (circle one):

never married

married

divorced

separated

widowed

Level of education (circle one):

Some high school

High school diploma

Some college

Bachelor's degree

Graduate degree

Race/ethnicity (circle all that apply):

African-American / Black / African Origin

Asian-American / Asian Origin / Pacific Islander

Latino-a / Hispanic

American Indian / Alaska Native / Aboriginal Canadian

European Origin / White

Bi-racial / Multi-racial

Other (specify) _____

Branch of military service (circle one):

Army

Navy

Air Force

Marines

Coast Guard

Location of most recent combat deployment: _____

Year of most recent combat deployment: _____

Rank during most recent deployment: _____

Length of time in service: _____

Highest rank attained: _____

With your current income, how difficult is it for you to meet your basic needs for food, housing, clothing, and medical care? (Circle one.)

Not difficult

Not very difficult

Somewhat difficult

Very difficult

How do you rate your overall health? 1 = Poor to 6 = Excellent _____