EXTRAVERSION AND RESILIENCE AS PROTECTIVE FACTORS FOR PTSD SYMPTOM SEVERITY IN THE MILITARY

by

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ABSTRACT

Posttraumatic stress disorder (PTSD) remains a concern for military personnel, as the number of service members with PTSD continues to rise. The present study examined Resilience and Extraversion as personal characteristics and their impact on psychological distress in military personnel, based upon the conservation of resources (COR) theory. COR postulates individuals are inclined to preserve, protect, and procure resources (i.e., anything a person values). Personal resources are characteristics unique to the individual and are likely to bolster an individual's resource base, thus improving one's ability to cope with the psychological and physiological demands of a traumatic event.

Participants consisted of 141 U.S. military personnel and were recruited through Amazon Mechanical Turk. Participants completed the Posttraumatic Stress Disorder Checklist for the DSM-5, Connor-Davidson Resilience Scale, and Big Five Inventory to assess degrees of PTSD symptom severity, Resilience, and Extraversion, respectively. A significant negative relationship was found between Resilience and PTSD symptom severity, and a significant positive relationship was found between Resilience and Extraversion. Extraversion was not found to mediate the relationship between Resilience and PTSD symptoms. Gender differences for each variable were also examined, with no significant Gender differences being found for Extraversion or Resilience scores. There was a significant relationship between ender and PTSD symptom severity, with women, on average, reporting higher levels of PTSD symptom severity. It is clear that the personal characteristic resource of Resilience could improve one's ability to overcome the impacts of a traumatic event and Gender is related to PTSD symptom severity.

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CHAPTER I

INTRODUCTION

Experiencing a traumatic event, even multiple traumatic events, is fairly common (Breslau, 2009). Many people who experience a traumatic event are able to recover completely; however, approximately 10% of those in the general population who experience a traumatic event will go on to develop posttraumatic stress disorder (PTSD), a disorder characterized by symptoms that negatively impact an individual's quality of life (American Psychiatric Association [APA], 2013; Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition [DSM-5], 2013). The prevalence rate of PTSD in United States (U.S.) military personnel is much higher than the general population, ranging from 11-20%, depending on the war/conflict (National Center for PTSD, 2019). What is considered a traumatic event is largely subjective, which may account for the difficulty associated with obtaining accurate prevalence rates for this disorder. Furthermore, traumatic experiences may occur at any point during a service member's lifetime, such as prior to deployment, during deployment, or after deployment (Graham et al., 2016), which may also influence projected rates of PTSD. Given the frequency of traumatic events, coupled with increased risk of PTSD in military personnel, there is a need to identify protective factors that influence PTSD symptom severity.

Posttraumatic Stress Disorder

Mental health issues, such as depression and PTSD, often follow involvement in the military (Vasterling et al., 2010). As noted above, PTSD is a mental health issue that affects many U.S. service members. PTSD can have a devastating impact on the quality of life of the service member. For example, military personnel with PTSD have higher rates of interpersonal

discord, divorce, and interpersonal aggression compared to those without PTSD (Jakupcak et al., 2007).

The military is a unique setting in that there is an increased likelihood of exposure to traumatic events due to the intensity of training, the potential for multiple deployments to dangerous and unpredictable areas, and possible frequent exposure to violence and human suffering (Tanielian & Jaycox, 2008). Additional factors that may increase overall distress for military personnel include job responsibility during a war, the politics surrounding the war, the location of the war, and the type of enemy faced (National Center for PTSD, 2019). Other traumatic events specific to the military include military sexual trauma (National Center for PTSD, 2019).

There has been a steady rise in the rates of PTSD among U.S. service members over time. For example, the National Center for PTSD (2019) estimates that 30% of Vietnam Veterans will be diagnosed with PTSD at some point in their lifetime. In a given year, 12% of Gulf War veterans receive a PTSD diagnosis, whereas rates of PTSD among Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) service members range from 11-20% (National Center for PTSD, 2019). Rates of PTSD have varied based on the parameters of studies conducted.

For the majority of PTSD diagnoses in the military, 77.87% have been found in men and women who were previously deployed (Fischer, 2015). While Fischer (2015) noted that it is not possible to determine whether a PTSD diagnosis results from a traumatic event prior to or during deployment, these findings indicate PTSD remains a concern for military personnel. Examining explanations for protective factors of PTSD could prove useful in the treatment of such a

disorder in military personnel. The conservation of resources (COR) theory provides one possible explanation for the development of PTSD (Hobfoll, 1991).

Conservation of Resources Theory

The COR theory (Hobfoll, 1989) has been found to be a reliable framework for interpreting psychological and traumatic stress (Hobfoll & Ford, 2000). The COR theory postulates that individuals are inclined to preserve, protect, and procure resources and that individuals feel threatened when they believe their resources are endangered (Hobfoll, 1989; 2001). According to Hobfoll's (1989) seminal work, resources are defined as "objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions, or energies" (p. 516). Personal resources are characteristics that are unique to the individual (Hobfoll, 1989). They are likely to enhance and strengthen an individual's resource base, which improves one's ability to cope with the psychological and physiological demands of a traumatic event (Hobfoll, 1991). If one has a strong resource base, then one is better equipped to address circumstances of a traumatic event where resources may be lost (Hobfoll, 1991). Traumatic events are likely to threaten an individual's resource reservoir.

Events are considered objectively stressful when an individual perceives his/her resources are being threatened or depleted (Hobfoll, 1989; Hobfoll, 2001; Holmgreen, Tirone, Gerhart, & Hobfoll, 2017; Vogt et al., 2011). Distress results when coping mechanisms intended to conserve resources or assuage losses are ineffective (Vogt et al., 2011). Psychological distress (e.g., PTSD) can result when resource loss significantly outweighs resource gain (Hobfoll, 1989). To counteract the impact of resource loss, individuals must be willing to invest their resources with the intention of gaining additional resources in the process (Hobfoll, 1989). For example, in

order to receive social support, one must first call upon his or her social support network. Resource investment has the potential to mitigate the impact of a stressor.

The present study focused on personal resources. Personal resources are likely already present within an individual, and therefore may be enhanced through skills-based trainings or therapy in order to reduce the negative effects of psychological distress. COR may explain the role of protective factors, such as Extraversion and Resilience, in the development of PTSD. As personal characteristic resources, Extraversion and Resilience may influence PTSD symptom severity.

Personality Characteristics

Personality characteristics allow people to understand themselves, as well as others (McCrae & John, 1992). They are thought to be comprised of traits, behaviors, moods, and emotions. Personality is a multifaceted structure that can be influenced by genetic factors, family dynamics, social influences, and personal experiences (Caspi & Roberts, 2001; Costa & McCrae, 1997). While personality is typically a stable trait over time (Caspi & Roberts, 2001; Costa & McCrae, 1997; Soldz & Vaillant, 1999), events, especially traumatic ones, have the potential to adjust personality dispositions. Conversely, personality characteristics may act as a buffer against symptom progression and severity of PTSD (Bonnanno, 2004).

Extraversion

The Five Factor Model, often known as the "Big Five," is one of the most recognized models of personality (Clark & Owen, 2012). The model defines an individual's personality expression in terms of five factors: (a) Openness to new experiences, (b) Conscientiousness, (c) Extraversion, (d) Agreeableness, and (e) Neuroticism. The present study focused on the construct of Extraversion, which is defined as gregarious and assertive behavior, and a tendency toward

positive emotional expression (John & Srivastava, 1999). The characteristics of Extraversion, such as assertiveness and positive emotional expression, are believed to be personal resources that assist a person in effectively coping with psychological distress (Amirkhan, Risinger, & Swickert, 1995; Caska & Renshaw, 2013; Penley & Tomaka, 2002). For example, in a sample of undergraduate students, Extraversion was associated with help-seeking behavior, as well as higher self-esteem when faced with naturally occurring stressors, such as interpersonal conflict or personal change (Amirkhan et al., 1995). Similarly, Caska and Renshaw (2013) found that Extraversion significantly moderated the relationship between the aftermath of combat experience and severity of PTSD. These findings indicate that Extraversion may play a critical role in coping with psychological distress.

Resilience

Resilience is another facet of personality that is defined as demonstrating high degrees of self-esteem, optimism, and perceived control (Schok, Kleber, & Lensvelt-Mulders, 2010). Resiliency has clearly been established as a protective factor against PTSD symptom severity (Fredrickson, Tugade, Waugh, & Larkin, 2003; Pietrzak & Cook, 2013; Schok et al., 2010). Furthermore, Resiliency and Extraversion are positively correlated (Alessandri et al., 2014; Campbell-Sills, Cohan, & Stein, 2006; Fredrickson et al., 2003). Given the strength of the relationship between Extraversion and Resilience, it is predicted that these factors combined will influence PTSD symptom severity. The COR theory is believed to account for their impact on PTSD because higher self-esteem and positive emotional expression make it easier to protect current resources and acquire new ones.

Review of the Literature

PTSD and Military Personnel

PTSD is a mental health diagnosis that results from actual or perceived threat to loss of life, bodily injury, or sexual assault (APA, 2013). This diagnosis is evidenced by symptoms such as intrusive thoughts related to the traumatic event, efforts to avoid people, places, or things that remind the individual of the event, deteriorations in mood or cognitive ability, and an increase in reactivity following the event that are endured for at least one month after the trauma.

As noted previously, PTSD affects the majority of previously deployed service members. A number of factors have been identified as risk factors for PTSD developing in veterans, which include, but are not limited to, low post-deployment social support (Han et al., 2014), younger age (Magruder et al., 2004), lower socioeconomic status, and female Gender (Vogt et al., 2011). Additionally, trauma earlier in life may lead to PTSD in adulthood (Brewin, Andrews, & Valentine, 2000). PTSD is associated with a number of consequences for the service member, including increased risk for comorbid mental health issues (i.e., depression, anxiety, and substance use), as well as intimate partner violence, and difficulties with emotional regulation (Brenner et al., 2015). Gaining insight into protective factors against PTSD development and symptom severity would be advantageous for service members because it could improve treatment outcome and reduce the risk of consequences associated with a PTSD diagnosis, which in turn would improve overall well-being. Veterans with PTSD are more likely to experience negative consequences, such as higher rates of severe relationship problems, divorce, and intimate partner violence (Breslau, 2009).

Extraversion and Military Personnel

Few studies have examined the Big Five personality factors in combat veterans (Clark & Owens, 2012). In fact, most research surrounding personality development and PTSD within military personnel has centered around personality disorders, rather than personality characteristics. Researchers who have examined Extraversion in veterans have found inconsistent findings in relation to PTSD symptom severity.

Many studies support the notion that Extraversion is strongly associated with PTSD symptom severity. Clark and Owens (2012) found Extraversion to be significantly negatively correlated with PTSD in a sample of U.S. veterans who completed tours in Iraq and Afghanistan. Clark and Owens (2012) suggested that Extraversion influences one's risk for PTSD. They provided an example that supports this notion: An Extravert's tendency to be more social and demonstrate high warmth may lead one to successfully search for and use social support. Caska and Renshaw (2013) found that Extraversion significantly moderated the relationships of both combat exposure and subsequent experiences with PTSD severity in members of the National Guard. In contrast, Extraversion did not successfully predict PTSD severity in a number of military studies (Bramsen, Dirkzwager, & Van der Ploeg, 2000; Card, 1987; Hyer, Braswell, Albrecht, & Boyd, 1994). Conflicting evidence regarding the relationship between Extraversion and PTSD indicates a need for additional research.

Of note, higher rates of Extraversion have been associated with better mental well-being and lower risk for mental health issues, such as depression and anxiety (Park et al., 2016). Additionally, Extraversion is positively correlated to Resilience (Gramzow et al., 2004; Skodol, 2010), suggesting the potential for Extraversion to act as a buffer for PTSD symptom severity, as does Resilience (Fredrickson et al., 2003; Isaacs et al., 2017). The conflicting evidence regarding

the relationship between Extraversion and PTSD symptom severity in military personnel suggests a gap in the literature that needs to be examined. Isaacs and colleagues (2017) studied the long-term predictors of Resilience in military veterans and found that Extraversion predicted Resilience. The researchers suggested that this outcome meant seeking out new social support may prevent psychological distress. Given the association between Extraversion and Resilience, Resilience is also likely to play a role in lowering PTSD symptom severity.

Resilience and Military Personnel

In studies of trauma, Resilience has been viewed as a personality characteristic that allows the individual to adaptively cope with a stressor (Agaibi & Wilson, 2005). It is a wellestablished buffer for PTSD symptom severity (Fredrickson et al., 2003; Isaacs et al., 2017). In other words, the more Resilience a person has, the less severe the individual's PTSD symptoms are.

In a nationally representative study of older (i.e., over the age of 60) U.S. veterans, Resilience was more common in those who were older, had higher education, and were Caucasian (Pietrzak & Cook, 2013). Of interest is the finding that those in the Resilient group also had higher scores of Extraversion (Pietrzak & Cook, 2013). Protective characteristics, such as emotional stability, optimism, and strong social support, have been associated with greater Resilience (Fredrickson et al., 2003; Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005). The characteristics of Resilience, such as optimism, self-esteem, and warmth, are believed to be personal resources (Hobfoll, 1991) that may improve a person's ability to cope with psychological distress (Agaibi & Wilson, 2005; Pietrzak & Cook, 2013). For example, Resilience has been a consistent predictor of PTSD symptom severity, as it is negatively related to PTSD (Fredrickson et al., 2003; Pietrzak & Cook, 2013; Schok et al., 2010). Resiliency's

ability to act as a buffer against PTSD symptom severity (Pietrzak & Cook, 2013) may be explained by the tenets of the COR theory (Hobfoll, 1991).

Gender and Military Personnel

The military remains a male-dominated field, even to this day. Since the year 2000, the percentage of female military personnel has slowly, but steadily, increased from 15.4% to 16.8% by 2015 (Military One Source, 2015). This may be, in part, due to the formal process that began in January 2013, which permitted women to serve in combat posts (CNN, 2013). It is likely that this policy change will promote female enlistment in the armed services. Although most, if not all, studies assess Gender in some capacity, many studies have found inconclusive findings regarding Gender differences among military personnel with PTSD. As more women enlist, it will become increasingly important to fully understand Gender differences in PTSD symptom severity, as well as protective factors for PTSD.

Hypotheses

H₁: A relationship exists between Extraversion, Resilience, and the amount of variance in PTSD symptom severity among military personnel.

H_{1a}: A relationship exists between Resilience and PTSD symptom severity.

H_{1b}: A relationship exists between Extraversion and Resilience.

H_{1c}: A relationship exists between Extraversion and PTSD symptom severity.

 H_{1d} : Extraversion explains the relationship between Resilience and PTSD symptom severity.

H₂: Gender differences will exist for PTSD symptom severity.

H₃: Gender differences will exist for scores of Extraversion.

H₄: Gender differences will exist for scores of Resilience.

Method

The present study aimed to explore the application of the COR theory to PTSD symptom severity through the variables of Extraversion and Resilience. The researcher also examined Gender differences for Extraversion, Resilience, and PTSD Symptom severity scores.

Participants

Participants consisted of 141 U.S. military personnel, recruited from across the U.S. through Amazon's Mechanical Turk (MTurk; Mason & Suri, 2012). The majority of participants were male (70.2%). Although the 2015 Demographics Report of military personnel (Military One Source, 2015) found women to compromise approximately 15.5% of the U.S. armed forces, the current sample was comprised of 29.8% female service members. Age at enlistment for participants ranged from 17 to 38 (M = 19.59, SD = 2.86), and current age of participants ranged from 21 to 73 (M = 42.87, SD = 12.82). Table 1 presents information regarding the ages of participants.

Table 1

Time Frame	Frequency	Percent
Age at Enlistment		
17	23	16.3%
18	50	35.5%
19	19	13.5%
20	8	5.7%
21	8	5.7%
22	14	9.9%
23	9	6.4%
24-26	8	5.7%
27-38	2	1.4%
Current Age		
21-25	5	3.5%
26-30	17	12.1%
31-35	30	21.3%
36-40	20	14.2%

Age, Summary of Information (n = 141)

41-45	14	9.9%
46-50	16	11.3%
51-60	21	14.9%
Over 60	18	12.8%

Of the 141 participants, 16 (11.3%) reported being active duty, 27 (19.1%) reported being retired, and 93 (66.0%) identified as separated. The remaining 5 (3.5%) endorsed reservist status. Deployment length was obtained by asking participants if their tours lasted zero to six months, six months to one year, or over one year. The majority, 54.55%, reported being deployed multiple times (mean frequency of deployment = 3.01 times, SD = 5.84), with the length of deployments typically ranging from 6 months to one year (SD = .52). Table 2 (below) presents a summary of the demographic information for the current sample.

Table 2

Variable	Frequency	Percent
Gender		
Male	99	70.2%
Female	42	29.8%
Ethnicity		
African American	15	10.6%
Caucasian/White	112	79.4%
Multiracial	3	2.1%
Other	11	7.8%
Military Standing		
Active Duty	16	11.3%
Retired	27	19.1%
Separated	93	66.0%
Reserves	5	3.5%
Military Branch		
Army	52	36.9%
Navy	31	22.0%
Air Force	27	19.1%
Marine Corp	11	7.8%
Other (e.g., Reserves or Guard)	10	7.1%

Demographic Data Summary of Research Participants (n = 141)

Multiple Branches	10	7.1%
Deployment Status		
Deployed	89	63.1%
Not Deployed	52	36.9%

Note. Variables that fell below the 5% cutoff were not reported.

Measures

Three self-report measures assessed symptoms of PTSD, the degree of the Extraversion personality characteristic, and level of Resilience. These self-report questionnaires included the PTSD Checklist for the DSM-5 (PCL-5; Weathers et al., 2013), which was accompanied by measures to identify potentially traumatic events that participants have experienced (i.e., "Criterion A"), the Big Five Inventory (BFI; John & Srivastava, 1999), and the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003).

Criterion A. The distinction between traumatic events and painful experiences is due in large part to the assumption that most people are capable of effectively coping with everyday stresses, whereas their adaptive coping responses are likely to be overwhelmed when faced with a traumatic event (Friedman, 2014). Painful experiences may include rejection or heartbreak. Exposure to a traumatic event, also known as Criterion A, is a requirement of a PTSD diagnosis (APA, 2013). Criterion A of a PTSD diagnosis is met when an individual is exposed to actual or threatened death, serious injury, or sexual violence (APA, 2013), which may include sexual assaults, acts of war, or motor vehicle accidents. A number of self-report questionnaires aided the researcher in identifying the types of traumatic events that participants experienced, as well as the index trauma, or the trauma causing the most distress.

All participants. All participants reported whether they had been deployed. Depending on their response, Qualtrics routed participants to different measures meant to assess for potentially traumatic events experienced in their lifetimes. Deployment may have exposed

participants to additional stressors, and thus indicated a need for additional assessments that did not apply to participants who had never been deployed. At the conclusion of the Criterion A assessments (i.e., LEC-5 or the DRRI-2; see following sections), participants indicated whether they perceive any of their own life events as traumatic, and then identified the event they considered "most" traumatic event (i.e., index trauma). Participants were asked to keep the most traumatic event in mind as they completed the Posttraumatic Stress Disorder Checklist for the DSM-5 (PCL-5), a screening tool for PTSD symptom severity.

Participants who indicated deployment. Participants who reported a history of deployment identified the types of stressors they experienced by completing various scales from the Deployment Risk and Resilience Inventory-2 (DRRI-2; Vogt, Smith, King, & King, 2012).

The DRRI-2 was normed on OEF and OIF veterans via a national mail survey (Vogt et al., 2012). The updates to the DRRI-2 resulted in 17 separate scales that address different but related psychosocial factors that may contribute to post-deployment well-being (Vogt et al., 2012). According to Vogt and colleagues (2012), the distinct nature of the 17 DRRI-2 scales permit them to be administered separately or together, depending on the needs of the researcher. Each scale is summed to create a total score specific to that scale. The DRRI-2 and its 17 scales have been found to be psychometrically sound and efficient (Vogt et al., 2012). The current researcher utilized scales associated with predeployment life events, deployment-related experiences, and post-deployment life events.

Participants who denied deployment. Traumatic events that were experienced by military personnel who had not been deployed were identified through the Life Events Checklist for the DSM-5 (LEC-5; Weathers et al., 2015). The LEC has been shown to have strong convergent validity with other measures assessing trauma exposure (Gray, Litz, Hsu, &

Lombardo, 2004). Psychometric properties indicated that the LEC was adequate when it was administered as a separate assessment of exposure to traumatic events (Gray et al., 2004). When administered to a clinical sample of combat veterans, the LEC maintained strong convergent validity with other widely used assessments measuring trauma exposure, such as the PTSD Checklist, and the Mississippi Scale for Combat-Related PTSD (Gray et al., 2004). Due to the minimal revisions of the LEC, psychometric properties of the LEC-5 are not currently available, and few psychometric differences are expected (National Center for PTSD, 2019).

The LEC-5 is a brief, 17-item self-report measure that prompts participants to identify difficult or stressful situations they experienced throughout their lifetime (Weathers et al., 2013). Participants indicate the degree to which they were directly affected by the potentially traumatic events through 6 response options: (a) happened to you personally; (b) you witnessed it happen to someone else; (c) you learned about it happening to a close family member or close friend; (d) you were exposed to it as part of your job; (e) you are not sure; or (f) it does not apply to you (Weathers et al., 2013). Participants check all the response options that apply to them.

PTSD Symptom severity. PTSD symptom severity was measured using the PTSD Checklist for the DSM-5 (PCL-5), developed by Weathers and colleagues (2013). The PCL-5 is a 20-item self-report measure that assesses current PTSD symptoms based on diagnostic criteria from the DSM-5 (Weathers et al., 2013). Participants rate their level of distress to a "very stressful" event using a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). Scores can range from 0 to 80, with higher scores indicating greater PTSD symptom severity (Weathers et al., 2013).

Validation studies have found the PCL-5 to be a psychometrically sound measure that is both valid and reliable for assessing PTSD (Blevins, Weathers, Davis, Witte, & Domino, 2015;

Bovin et al., 2016; Wortmann et al., 2016). The measure has been validated on several veteran samples, with researchers finding an internal consistency of the PCL-5 is .96 (Bovin et al., 2016). From a validation study with a military sample, cut-off score of 31-33 had a *sensitivity* of .88 and *specificity* of .69 (Bovin et al., 2016). For the purposes of the current study, a cutoff score in the PCL-5 was not used due to findings that Resilience often lowers PTSD symptom severity (Isaacs et al., 2017; Pietrzak & Cook, 2013).

Extraversion. The Big Five Inventory, developed by John and Srivastava (1999), determined the degree of Extraversion within participants. The BFI is a 44-item, self-report measure that assessed an individual's personality characteristics based on the Five Factor Model of personality, commonly known as the Big Five. The Extraversion component of this measure asks participants how much they agree with statements regarding their sociable and warm natures, as well as their levels of assertiveness, excitement-seeking, and positive emotional expression (John & Srivastava, 1999). Participants rate each question based on a five-point Likert scale ranging from 1 (*disagree strongly*) to 5 (*agree strongly*). The summation of responses creates a total score, with scores ranging from 8 to 40. Higher scores indicate greater levels of Extraversion (John & Srivastava, 1999). Validation studies have confirmed that the BFI is a sound and reliable measure to assess the Big Five traits (John et al., 2008). The reliabilities of the BFI scales range from .75 to .90 in U.S. and Canadian samples, with an average above .80.

Resilience. The Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003) measured levels of Resilience. The CD-RISC is a 25-item self-report measure that aims to distinguish between levels of Resilience (Connor & Davidson, 2003). Items are rated using a 5-point Likert scale, ranging from 0 (*not true at all*) to 4 (*true nearly all the time*). Resilience is a

continuous variable, as a total score can range from 0-100, with greater scores indicating more Resilience (Connor & Davidson, 2003).

The CD-RISC is a well-validated measure for both clinical and general populations. Connor and Davidson (2003) examined the psychometric properties of the CD-RISC on six groups: a community sample, primary care outpatients, general psychiatric patients, clinical trial of generalized anxiety disorder, and two clinical trials of PTSD. Cronbach's alpha was .89 in a non-help-seeking group, indicating good internal consistency. For the non-help-seeking group, item-total correlations ranged from .3 to .7 (Connor & Davidson, 2003). Test-retest validity was .87 for a clinical sample that consisted of individuals with PTSD (Connor & Davidson, 2003). Johnson and colleagues (2011) found the internal consistency of the CD-RISC to be strong at .91 and .95 in a sample of active duty and reserve military service members (N = 870).

Participant Recruitment through Amazon Mechanical Turk

Upon approval from Radford University's Institutional Review Board, active duty and retired U.S. military personnel were recruited using Amazon's MTurk. MTurk is an online platform that assists researchers in accessing participants across the world who are willing to take part in online research (Mason & Suri, 2012). Willing participants were paid a nominal fee of \$1.50 for completing the current survey, which took an estimated 20-40 minutes. This payment amount was consistent with current literature that suggests paying participants approximately \$0.05 per minute (Buhrmester, Kwang, & Gosling, 2011). At the conclusion of the study, participants were also given the option of entering into a random drawing for a \$25 Amazon gift card. To ensure email addresses were not connected with the collected data in any way, those participants who wished to enter the random drawing were taken to an additional Qualtrics survey to enter their email address.

Participants consisted of 141 active duty/retired U.S. military personnel recruited from across the U.S. through MTurk (Mason & Suri, 2012). MTurk aids "requesters," (i.e., researchers) in employing "workers" (i.e., participants) for the completion of computerized tasks (Paolacci & Chandler, 2014), such as completing online surveys. These computerized tasks are known as Human Intelligence Tasks within MTurk (Mason & Suri, 2012; Paolacci & Chandler, 2014).

MTurk provides access to a large and diverse pool of workers (Paolacci & Chandler, 2014). However, the workers are not representative of the population from which they are drawn (Berinsky, Huber, & Lenz, 2012). MTurk workers tend to be younger, roughly 30 years of age, overeducated, underemployed, and less religious than the general population (Berinsky et al., 2012; Paolacci, Chandler, & Ipeirotis, 2010). Buhrmester et al. (2011) found the test-retest reliability of self-report measures administered through MTurk to be high, ranging from .80 to .94, depending on the construct being examined. Although they had a relatively small sample size, these findings suggest that self-reports assessed through MTurk have test-retest reliability that is comparable to those of other traditional samples, such as college and community samples (Buhrmester et al., 2011). When compared to participants who have been recruited through more traditional methods, MTurk workers display the same cognitive biases, logical fallacies, and behavior in economic games (Goodman, Cryder, & Cheema 2013; Paolacci et al., 2010).

The survey and all collected data were stored on an external server, Qualtrics. A resource page containing contact information for a number of community and national services for veterans preceded and succeeded the survey. The resource page provided a list of nationally available mental health resources (e.g., Veteran's crisis line and information for Veteran healthcare) for service members concerned about their symptoms.

Results

Descriptive statistics were used to evaluate the research questions and test the hypotheses. Data from 141 respondents were examined for completeness using SPSS 25.0. Alpha of p = .05 was used to determine statistical significance for all analyses.

Scores and symptom severity for participants varied based upon deployment status, as well as Gender. A total of 90 participants endorsed deployment. On average, female service members who were deployed (M = 32.22; SD = 20.87) had higher rates of PTSD compared to their male counterparts (M = 21.35; SD = 19.10). Extraversion scores were similar among male and female service members who were deployed, with men having an average Extraversion score of 23.99 (SD = 8.48) and women having an average Extraversion score of 24.44 (SD = 7.05). On average, men who were deployed reported higher rates of Resilience (M = 68.94; SD = 17.86) compared to women who were deployed (M = 66.97; SD = 14.23). Figure 1 (below) presents a summary of participant scores based on the respective variable for participants who indicated deployment.



Figure 1. Average of variable scores by deployment status (n = 141)

Hypothesis 1: Mediation

Researchers of the current study hypothesized that Resilience scores would predict PTSD symptom severity in military personnel. They further predicted that Extraversion would act as a mediator, and account for a significant portion of the relationship between Resilience and PTSD symptom severity in military personnel. Multiple regression was used to test hypothesis one. To test the significance of the mediator (i.e., Extraversion) bootstrapping methods were implemented.

Results indicated that Resilience scores were significantly negatively correlated to PTSD symptom severity, r = -.28, p = 0.000. Resilience scores significantly predicted PTSD symptom severity, $\beta = -.41$, SE = .11, p = 0.0003 (CI = -.63 to -.19). Results indicated that Resilience scores were significantly positively related to Extraversion scores, r = .41, p = 0.000. Resilience scores significantly predicted Extraversion scores, $\beta = .20$, SE = .04, p = .0000 (CI = .12 to .27). Therefore, path a was confirmed. Results indicated that Extraversion scores were not significantly related to PTSD symptom severity, r = -.02, p = 0.40. Extraversion scores did not significantly predict PTSD symptom severity, $\beta = .30$, SE = .23, p = .20 (i.e., path b; CI = -.16 to .76). Extraversion was then regressed onto both PTSD Symptom severity and Resilience to determine if Extraversion explains the relationship between Resilience and PTSD symptom severity. Extraversion was not found to mediate the relationship between Resilience and PTSD symptom severity; $\beta = .06$, SE = .05 (i.e., path c'; CI = -.03 to .15). The results of the multiple regression analysis are presented in Figure 2. These results converge to indicate that hypothesis one of the current study was not supported.



Figure 2. Mediation model summary (n = 141)

Hypotheses 2-4: Gender

Correlation coefficients were computed for Gender and PTSD symptom severity, Resilience, and Extraversion (Table 3) to determine the relationship between Gender and PTSD symptom severity. Gender was determined by asking participants to select the term that best described their Gender (i.e., male, female, or other with a text box). Zero participants identified as "other." There was a weak positive correlation between PTSD symptom severity and Gender, r = .18; p = .03. There was no correlation between Gender and Extraversion, r = -.03; p = .76. There was also no correlation between Gender and Resilience, r = .03; p = .69.

Discussion

The present study examined the following: (1) whether Extraversion mediates the relationship between Resilience and PTSD symptom severity, (2) the correlation between Gender and PTSD symptom severity, (3) the correlation between Gender and Extraversion, and (4) the correlation between Gender and Resilience. It was hypothesized that a strong positive relationship between Resilience and PTSD symptom severity would be confirmed, and that Extraversion would influence that relationship. It was further hypothesized that Gender

differences would exist for the three variables of Extraversion, Resilience, and PTSD symptom severity.

Table 3

Correlation between Gender and PTSD symptom severity, Resilience, and Extraversion (n =

141)

	Gender	PTSD Symptom severity	Extraversion	Resilience
Gender	1			
PTSD Symptom	$.18^{*}$	1		
severity				
Extraversion	03	02	1	
Resilience	03	28**	.41**	1

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

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

Extraversion as a Mediator

Results indicated that Resilience scores were significantly negatively correlated to PTSD symptom severity, meaning that the higher the degree of Resilience, the lower the PTSD symptom severity. This finding is consistent with prior research that determined Resilience is a buffer for PTSD symptom severity (Fredrickson et al., 2003; Green, Calhoun, Dennis, & Beckham, 2010; Isaacs et al., 2017). Fredrickson and colleagues (2003) examined degrees of Resilience in college students following the 9/11 terrorist attacks. The current study expanded their work by focusing on a military sample rather than a sample consisting of college students, and by assessing for exposure to a wide array of stressful and/or traumatic experiences. Just as Fredrickson and colleagues (2003) found, military personnel with higher rates of Resilience from the present study appear to be better equipped to cope with stress/crises more effectively in that individuals with higher rates of Resilience were more likely to have lower PTSD symptom

severity. Findings regarding Resilience from the current study are also consistent with those from a study with deployed service members (Green et al., 2010). The current study extends the work of Green-and colleagues (2010) by also examining Resilience for non-deployed service members. Schok and colleagues (2010) found Resilience acted as a buffer for PTSD in a sample of Dutch veterans. The present study extends their work by examining Resilience on U.S. service members. Given that Resilience was significantly negatively related to PTSD symptom severity in the current study, the current study supports the conclusion made by Schok and colleagues (2010) that Resilience could lower the stress response that is initiated after exposure to war-zone stressors.

Results of the current study indicated that Resilience scores were significantly positively related to Extraversion scores, meaning that the higher the degree of Resilience, the higher degree of Extraversion. This finding is consistent with prior research that determined Extraversion and Resilience were closely related in military personnel (Isaacs et al., 2017; Park et al., 2016). Isaacs and colleagues (2017) found the majority of their military sample was psychologically resilient. Although Isaacs and colleagues (2017) also utilized the CD-RISC to measure Resilience, they used a shorter version of the measure (i.e., CD-RISC-10), making comparing results from the current study challenging. The 25-item measure was used in the existing study and determined there were comparable scores of Resilience for deployed and non-deployed personnel, which was decently high for both groups. This finding supports the notion proposed by Isaacs et al. (2017) that U.S. military personnel tend to be Resilient. Isaacs and colleagues (2017) found that Extraversion predicted Resilience, which was also true for the current study. This finding indicates a need for continued exploration into the relationship

between Extraversion and Resilience, as it is not possible to determine what aspects of Extraversion are contributing to Resilience in the current study.

Results from the present study indicated that the degree of Extraversion was not related to PTSD symptom severity, and Extraversion scores did not predict the severity of PTSD symptomology in the current sample. Therefore, Extraversion did not mediate the relationship between PTSD symptom severity and Resilience. This finding is consistent with the work of several military studies that also found no significant relationship between PTSD symptom severity and Extraversion (Bramsen et al., 2000; Card, 1987; Hyer et al., 1994). The current study extended the work of Bramsen and colleagues (2000) by focusing on U.S. military personnel, rather than members of the United Nations Protection Force. A unique finding from the current study was that deployed participants displayed higher rates of Extraversion compared to non-deployed participants. Because deployed personnel are at increased risk of exposure to traumatic events, it is possible that the higher rate of Extraversion by deployed personnel is due to a risk-taking element of Extraversion, as hypothesized by Schnurr and Vielhauer (1999).

Variable Correlations with Gender

The current study examined the relationship between Gender and each of the variables (i.e., PTSD symptom severity, Extraversion, and Resilience). The current study found Gender to be significantly related to PTSD symptom severity. In the current sample, women were more likely to endorse higher rates of PTSD symptom severity compared to their male counterparts. This finding is consistent with the meta-analysis completed by Crum-Cianflone and Jacobson (2014), which concluded that women were at a moderately higher risk for developing PTSD. When examining various types of trauma exposure, women were more likely to identify sexual assault as their "worst" trauma. This finding is similar to the work of Cortina and Kubiak (2006),

who found that women were almost twice as likely to experience sexual violence, as well as more severe symptoms of PTSD. It is important to note that the information provided here regarding exposure to sexual assault is based upon what participants identified as their "worst" trauma and does not necessarily mean other participants were not exposed to sexual assault.

Gender was not significantly related to Extraversion in the current sample; therefore, Extraversion was not Gender-specific. The current study builds upon the previous work of Lynn and Martin (1997) and Costa, Terracciano, and McCrae, (2001) by focusing on a military sample. Although significant Gender differences were not found in the current overall sample, there were slight differences between men and women based on deployment status. Women who were deployed indicated slightly higher rates of Extraversion compared to their male counterparts. In contrast, for non-deployed participants, men indicated slightly higher rates of Extraversion.

Gender was not significantly associated with Resilience in the current sample, meaning that Gender identification did not play a role in the degree of Resilience. Men were more likely to report slightly higher rates of Resilience compared to women. Findings from the current sample provide further support that Resilience is not Gender-specific (Zeidner & Endler, 1996). The current study was able to address Isaacs and colleagues' (2017) comment regarding unequal Gender distributions in the military and the subsequent difficulty in obtaining accurate assessment of Resilience by achieving nearly double (i.e., 29.8%) the representation of female service members in the current sample. Although the Gender distribution was not equal in the present study, the Gender distribution was more diverse compared to prior research, and therefore in a stronger position to address questions regarding Gender differences.

Limitations and Future Directions

Limitations of the current study include a lack of cultural diversity in the sample, as the majority of participants identified as Caucasian, and an unequal Gender distribution. Additionally, participant presentation was unable to be confirmed with a clinical interview, increasing the risk of false positives or false negatives for PTSD symptom severity. For example, all participants were asked to identify their "worst" trauma experience. However, several participants identified events that do not meet Criterion A requirements of a PTSD diagnosis (e.g., divorce or loss of a job). Although each non-Criterion A event is accompanied by varying degrees of distress, asking participants to keep their "worst" event in mind as they complete the PCL-5 may have led to an inaccurate presentation of current PTSD symptom severity for some participants.

The present study found a significant relationship between PTSD symptom severity and Resilience, as well as Extraversion and Resilience. As indicated by Costa et al. (2001), rates of Extraversion for Gender can vary based upon the tool used to measure Extraversion. This conclusion is also true for all measures of the constructs in the current study, as participant responses may change based on how a question is asked. Therefore, it would be advantageous to identify separate measures for Resilience, PTSD symptom severity, and Extraversion that provide balanced views of the constructs being assessed.

The current study did not find a significant relationship between PTSD symptom severity and Extraversion; Extraversion did not mediate the relationship between PTSD symptom severity and Resilience. Given that this finding contradicts prior research (Caska & Renshaw, 2013; Clark & Owens, 2012; Peng, Riolli, Schaubroeck, & Spain, 2011), it is possible that the measure used to assess for Extraversion in the current sample (i.e., the BFI) did not fully

encompass all factors of Extraversion. For example, Extraversion was operationally defined in the current sample as a construct that encompassed a tendency toward positive emotional expression (John & Srivastava, 1999). However, Extraversion questions of the BFI do not explicitly address hope or optimism, which are personal characteristic resources identified by Hobfoll (1995). Therefore, more comprehensive measures of Extraversion may prove useful in future research.

As indicated previously, the COR theory proposes that people are intrinsically motivated to protect, maintain, and accrue resources (Hobfoll, 1991). An individual's resource base is influenced when the individual encounters a stressful and/or traumatic experience. To further assess the role of personal characteristic resources, a longitudinal study may be effective in determining changes in resources over time based upon circumstances/stressors. Personal characteristic resources are unique to the individual. However, determining the presence of common characteristics in individuals who overcame the impact of a traumatic stressor can aid in treatment determinations, or help identify individuals who are at increased risk for PTSD.

Results from the current study indicate Resilience acts as a protective factor against PTSD symptom severity. Aspects of Resilience, such as self-esteem, optimism, and perceived control (Schok et al., 2010), promote recovery (Richardson, 2002). The strong positive relationship between Extraversion and Resilience suggests Resilient individuals tend to portray more assertive characteristics, and are more likely to demonstrate positive emotional expression, features that may be utilized to protect and accrue resources when faced with a traumatic stressor. While Extraversion was not found to mediate the relationship between Resilience and PTSD Symptom severity, other factors may be influencing symptom presentation, warranting further investigation. Findings from the current study support the notion that Resilience is a

personal characteristic resource that can help an individual grow and adapt in the face of

traumatic events.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter presents a review of the literature for posttraumatic stress disorder (PTSD), Extraversion, Resilience, and Gender. First, PTSD is discussed. Information regarding the history of the disorder, the diagnostic criteria, and prevalence rates in the military is provided. An explanation the conservation of resources (COR) theory as it relates to PTSD development is given. Personal resources (i.e., Extraversion and Resilience), according to the COR theory, and their potential role in PTSD symptom severity are also presented. The argument is made that Extraversion and Resilience have the power to decrease PTSD symptom severity. Lastly, a review of Gender in the context of the military, as well as Gender differences for the variables of PTSD, Extraversion, and Resilience will be provided.

Posttraumatic Stress Disorder

Lower mortality rates and repeated exposure to intense combat during multiple deployments have increased the risk of soldiers returning home with physical and mental health issues (Tan, 2009). Deployments involve relocating service members to another place in the world in order to fulfill their contract of service (Department of Defense [DoD], 2017). PTSD is one of many common mental health issue veterans experience (Breslau, 2009). Symptoms of PTSD result from a situation that leads a person to believe there is real or threatened risk of serious injury, death, or sexual assault (American Psychiatric Association [APA], 2013; *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition* [DSM-5], 2013). The threat of death or injury is likely to be experienced by an active duty service member daily, depending on the individual's assignments. Combat, and even training for combat, can potentially bring about feelings of fear, horror, and helplessness, which could lead to PTSD (Wall, 2012). Service

members may also experience traumatic events prior to their involvement in the military or following their discharge. In order to demonstrate the significance of PTSD in the U.S. military, the history of PTSD and its diagnostic criteria are given. Additionally, a review of known causes of PTSD in the military and the appearance of PTSD symptoms in military personnel is provided.

Background of PTSD

Although PTSD was not officially recognized as a clinical disorder in the U.S. until 1980 with its addition to the third edition *Diagnostic and Statistical Manual of Mental Disorders*, it did have an impact on soldiers in many wars/conflicts (Epstein & Miller, 2005). In the original inception of PTSD, a traumatic event was viewed as a catastrophic event that was outside the scope of normal human experience (Friedman, 2016). This means that events such as war, torture, and rape are considered traumatic events (Friedman, 2016). In contrast, painful experiences that are within the normal realm of life, such as rejection, failure, and heartbreak, are not traumatic events that could lead to a PTSD diagnosis (Friedman, 2016). According to Friedman (2016), the distinction between traumatic events and painful experiences is due in large part to the assumption that most people are capable of effectively coping with everyday stresses, whereas their adaptive coping responses are likely to be overwhelmed when faced with a traumatic event.

PTSD is a unique mental health diagnosis due to the emphasis placed on the traumatic event (Friedman, 2016). In fact, PTSD is not diagnosable without the presence of a traumatic event, also known as Criterion A in the DSM-5 (APA, 2013). Clinical experience (Friedman, 2016) and research (Boden et al., 2014) have found that there are individual differences in the ability to cope with a catastrophic event. While many people may experience a traumatic event at
some point during their lifetime, relatively few (i.e., approximately 10%) go on to develop PTSD (APA, 2013; Breslau, 2009). The rates of PTSD are much higher in the military, ranging from 11-20% (National Center for PTSD, 2019). These findings indicate that traumatic events go through a different appraisal process, depending on the individual, which subsequently results in different trauma thresholds (Friedman, 2016). Therefore, some individuals exposed to traumatic events may be more protected from developing PTSD (Friedman, 2016).

Brief history of PTSD in the military. Prior to the Vietnam War, PTSD was called "shell shock" and "battle fatigue" in World War II (Friedman, 2017). Shell shock was first labeled as such by soldiers themselves in World War I. At the time, PTSD symptoms (e.g., sleep disturbance or panic) were described as shell shock because they were observed following the explosion of artillery shells (Friedman, 2017). Thereafter, shell shock was often the diagnosis when a soldier was unable to perform his duties and with no clearly identifiable cause (Jones, 2012). Shell shock was considered a physical injury until 1916, when Myers concluded that it resulted from psychologically repressed trauma (as cited in Jones, 2012), as soldiers who had not been near explosions also began to experience the symptoms (Friedman, 2017). According to Myers' memoirs, as detailed in Jones (2012), this disorder was often accompanied by the profound social stigma of cowardice, which would deter service members from honestly reporting their symptoms.

The terms "battle fatigue" and "combat stress reaction" to describe PTSD came about in World War II (Friedman, 2017). These terms were thought to be more accurate because of the prolonged exposure to battle that was common of World War II, which often left soldiers battle weary and depleted (Friedman, 2017).

The first *Diagnostic and Statistical Manual of Mental Disorders* (DSM-I) was produced in 1952 (Friedman, 2017). The DSM-I included "gross stress reaction" to describe individuals who displayed certain symptoms following exposure to a traumatic event, such as a disaster or combat (Friedman, 2017). Although the individual experienced symptoms of gross stress reaction, their ability to lead everyday lives was not impacted greatly, leading to the conclusion that the individual with gross stress reaction was "relatively normal" (Friedman, 2017). If symptoms persisted beyond six months, another diagnosis was required. Although there was mounting evidence of the link between exposure to traumatic events and mental health issues, the "gross stress reaction" diagnosis was removed from the DSM with the release of the DSM-II in 1968 (Friedman, 2017). Instead, authors of the DSM-II included the diagnosis "adjustment reaction to adult life," which was limited to three types of trauma: unwanted pregnancy with suicidal thoughts, fear associated with military combat, and Ganser syndrome in prisoners facing a death sentence (Friedman, 2017).

In 1980, with the creation and release of the DSM-III, PTSD was officially considered a mental health diagnosis (Friedman, 2017). This diagnosis was based largely on research of Vietnam War Veterans, Holocaust survivors, victims of sexual assault, and many other types of severe trauma. PTSD was believed to develop following exposure to a severe and tragic stressor that was outside the realm of everyday life (Friedman, 2016). Associations between the traumas of war and the negative impact on veterans' lives became well established. Adjustments to diagnostic criteria for PTSD have been made over the years with each new edition of the DSM, based on a growing body of literature examining the symptoms and causes of PTSD (Friedman, 2017). The most recent edition of the DSM, the DSM-5, was released in 2013. A critical change

was made to the diagnostic criteria of PTSD in the DSM-5, namely moving PTSD from an anxiety disorder to a new category "Trauma- and Stressor-Related Disorders" (APA, 2013).

PTSD among military personnel is common, with rates ranging from 11-20% (National Center for PTSD, 2019). Rates of PTSD also vary based on the U.S. war/conflict. It was estimated that one in every 20 World War II veterans endured PTSD symptoms such as flashbacks, nightmares, and irritability (Miller, 2011). Despite a lack of major studies on soldiers during and after the Korean War, it has been proposed that 30% of service members who took part in the Korean War may have experienced PTSD symptoms (Epstein & Miller, 2005). In a longitudinal study by the National Vietnam Veterans Readjustment Survey, 15.2% of all male veterans and 8.1% of female theater veterans were diagnosed with PTSD (Kulka et al., 1988). The likelihood of developing PTSD after their involvement in the war was also high (Kulka et al., 1988). For example, 30.6% and 26.6% of male and female Vietnam veterans, respectively, have received a PTSD diagnosis at some point in their lifetime since their involvement in the Vietnam War (Kulka et al., 1988). In the 1991 Persian Gulf War, the rates actually decreased to 8% (Wolfe, Erickson, Sharkansky, King, & King, 1999). It is hypothesized that this may be due to lower levels of exposure to combat as most of the war consisted of air warfare and bombings (Perconte et al., 1993). Of note, female Gender was associated with higher incidences of PTSD among veterans, both upon immediate return to the U.S. and at 18- and 24-month follow-ups (Wolfe et al., 1999). With the War on Terror beginning shortly after 9/11, 18% and 20% of veterans who fought in the Afghanistan and Iraq Wars, respectively, were diagnosed with psychological disorders (Fischer, 2015). Researchers examining rates of PTSD for service members of U.S. Military Operations Enduring Freedom, Iraqi Freedom, and New Dawn rarely separate the U.S conflicts, as the missions and deployments often overlapped. A 2015 (Fulton et

al.) meta-analysis of 33 studies published between 2007 and 2013 involving Operation Enduring Freedom (OEF) and Operation Iraq Freedom (OIF) veterans found rates of PTSD to be approximately 23%. Fischer's (2015) report to the U.S. congress included incident cases of PTSD for service members among OEF and OIF veterans, as well as service members from Operation Freedom's Sentinel, Operation New Dawn, and Operation Inherent Resolve. Fischer (2015) defined PTSD as an individual with two or more outpatient visits, or one or more hospitalizations, in which PTSD was diagnosed. When including service members from the most recent Afghanistan and Iraq conflicts (i.e., 2001-2015), 77.87% of PTSD diagnoses were among deployed service members. It is clear that military personnel continue to be at risk for meeting diagnostic criteria for PTSD.

PTSD Diagnostic Criteria

In addition to experiencing a severe stressor (i.e., Criterion A; APA, 2013), an individual must also be experiencing four specific categories of symptoms for a minimum of one month. These symptoms include 1) intrusion symptoms, 2) persistent avoidance, 3) negative changes in mood and cognitions, and 4) arousal and reactivity (APA, 2013).

The severe stressor requirement is met when an individual is faced with the threat of death, actual or threatened bodily injury, or actual or possible sexual assault (APA, 2013). This may be experienced through direct exposure, witnessing a traumatic event, indirectly such as learning about the event by a close relative or loved one, or repeated direct exposure such as first responders (APA, 2013). The severity of the trauma ultimately predicts individuals' functioning post-trauma (Card, 1987; Graham et al., 2016). The second requirement, intrusive symptoms, includes flashbacks, psychological and physiological reactions to internal and external cues, and nightmares (APA, 2013). The third requirement, avoidance, occurs through emotional numbing,

a decreased interest in activities that were previously enjoyed, and/or avoidance of places or people that remind the person of the traumatic event (APA, 2013). The fourth requirement, negative changes in mood and cognition, may be evidenced by amnesia surrounding the event, persistent negative beliefs or expectations concerning oneself or the world, and/or persistent negative emotions such as fear, horror, guilt, or shame (APA, 2013). Feelings of fear, helplessness, or horror at the time of the event have been found to drastically increase the chances of developing PTSD (Craemer, McFarlane, & Burgess, 2005). Other negative changes to mood could include decreased interest in activities that were once pleasurable, isolation, or limited affect. The fifth requirement, hyper-arousal, is evidenced by irritability or anger, sleep problems, hyper-vigilance, and an exaggerated startle reflex (APA, 2013).

PTSD symptoms and their severity are likely to vary over time (APA, 2013). Diagnostic specifiers provide additional information regarding symptom expression or symptom onset. Two types of specifiers may accompany a PTSD diagnosis. PTSD *with dissociative symptoms* refers to someone who meets full diagnostic criteria for a PTSD diagnosis, as well as 1) persistent or recurrent feelings of detachment from one's thoughts or body (i.e., *depersonalization*), or 2) persistent or recurrent instances of feeling disconnected from reality (i.e., *derealization*; APA, 2013). There are likely to be individual differences in symptom expression of PTSD following a traumatic event. For example, approximately half of adults who endure a traumatic event effectively recover within three months post-trauma (APA, 2013). Others may remain symptomatic for at least 12 months, or even their lifetime (APA, 2013). The second specifier, *with delayed expression*, is given when at least six months have passed between the traumatic event and when full diagnostic criteria for PTSD is met (APA, 2013).

PTSD symptoms in the military. PTSD is among one of the most common psychological injuries facing returning veterans. In order to be diagnosed with PTSD, an individual, civilian or military will endorse symptoms that fit into the five criterion noted above (APA, 2013). While the categories of the symptoms may be the same, symptom expression is likely to differ in military personnel (Kathie, 2011).

Criterion A. According to Kane's (2016) report that analyzes a comprehensive dataset of U.S. troop deployments over time, U.S. troop deployments have gradually declined since the Vietnam War. Kane's (2016) analyses indicate that troop deployment may reach zero before mid-century. However, a meta-analysis by Richardson, Frueh, and Acierno (2010) determined that rates of PTSD among military personnel have continued to rise. This indicates that trauma for military personnel exists outside of combat and may be just as important to the development of PTSD as combat experience. Evidence also suggests that the type of trauma influences both the risk of PTSD development, and its severity and symptom expression (Chapman, Elnitsky, Thurman, Spehar, & Siddharthan, 2013). Therefore, potential stressors prior to deployment or military involvement, stressors during military service, and stressors after military service are examined.

Stressors outside of deployment/military. There are several stressors, or traumatic events, that can take place outside of the military, or at any point during a service member's lifespan, and are very common (Clancy et al., 2006). These include being the victim of a violent crime, natural disaster, domestic violence, or physical or sexual childhood abuse (Dohrenwend, 2000). Should these events occur frequently or be severe, the risk of developing a mental health disorder, such as PTSD, rises (Horwitz, 2010). Civilian traumas, compared to military traumas, may have different impacts on service members.

In a small sample of veterans (i.e., n = 104), those with civilian traumas (e.g., motor vehicle accidents, civilian sexual assaults, domestic violence, or natural disasters) were less likely to meet PTSD diagnostic criteria and were less likely to experience any of the PTSD symptoms (Graham et al., 2016). Pre-military sexual trauma has been found to increase the likelihood of experiencing a sexual trauma after one's military service (Himmelfarb, Yaeger, & Mintz, 2006). When examining the impact of childhood adversity on a male military sample, Cabrera, Hoge, Bliese, Castro, and Messer (2007) found exposure to two or more types of adverse childhood events (e.g., sexual abuse, psychological abuse, or exposure to an alcoholic adult in the home) significantly increased the odds of developing depression and PTSD.

Military-related trauma. Although deployed military personnel may not encounter traumatic events on a daily basis, they are acutely aware that they may never return home (Kathie, 2011). Even when service members return home, the likelihood of redeployment may be ever-present in their minds (Kathie, 2011). The constant and persistent threat of death or serious injury service members endure sets them apart from the general U.S. population (Kathie, 2011).

Military-related trauma is associated with more severe forms of PTSD, even when compared to civilian crime victims (Naifeh et al., 2008). Military-related trauma encompasses any traumatic event that may occur during a service member's time in the U.S. armed forces. Hoge et al. (2004) determined that combat experience and deployment were associated with the development of mental health problems, such as PTSD, major depression, and alcohol misuse. PTSD appears to be more common among deployed service members (Hoge et al., 2004). In Fischer's U.S. Congressional Report (2015), statistics of U.S. military casualties were analyzed from 2000 to June 5, 2015, which focused on issues specific to military personnel from Operation Freedom's Sentinel, Operation Inherent Resolve, or Operation New Dawn. According

to Fischer's (2015) report, 177,461 soldiers received a PTSD diagnosis. The majority of diagnoses, 77.87%, were among deployed personnel (Fischer, 2015). In order to receive a PTSD diagnosis, the individual had to be given a PTSD diagnosis during two or more outpatient visits, or one or more hospitalizations (Fischer, 2015). It is important to note that Fischer (2015) emphasized that it is not possible to determine if a PTSD diagnosis resulted from an event associated with deployment, or if it resulted from an event prior to deployment. Hoge and colleagues (2004) hypothesized that the greater PTSD symptom severity of combat veterans is likely due, in part, to the prolonged and malevolent nature of war/conflict. Factors that may influence PTSD severity include the degree of terror and horror at the time of the event, how long the event was endured, unexpectedness, presence of continued threat before and after the disaster, perceived control, how the disaster/event came about (e.g., natural versus man-made), as well as cultural/symbolic aspects of the event (Lyons, 1991).

Another type of military trauma is military sexual trauma (MST). MST refers to sexual assault, and/or repeated threatening sexual harassment during one's military service (Kelly, Shelton, Patel, & Bradley, 2001). MST has been consistently associated with high PTSD symptom severity (Maguen et al., 2012; Zinzow, Grubaugh, Monnier, Suffoletta-Maierle, & Frueh, 2007), and female veterans have been found to be at increased risk for MST (Zinzow et al., 2007). In a sample of 196 female veterans, researchers examined sexual trauma prior to, during, and after military service, and MST was the strongest predictor of PTSD (Himmelfarb et al., 2006). A review of the literature by Street, Vogt, and Dutra (2009) found that female service members are at an increased risk for sexual assault. Street and colleagues (2009) hypothesized that sexual assault or harassment during a combat deployment may result in more psychological damage than those occurring in peacetime settings. They explained that during deployment

missions, there is a strong sense of unit cohesion and having a shared mission where everyone's life is in danger. Victimization under these circumstances is likely to feel like a greater betrayal for victims of MST (Street et al., 2009). Their hypothesis was supported by the work of Kimerling, Ouimette, and Weitlauf (2007), who found that female OEF/OIF veterans who experienced MST were 3.5 times more likely to be diagnosed with a mental health condition, such as PTSD.

Just as trauma type may be associated with increased risk of PTSD, trauma type may also influence the expression of PTSD symptoms. In a small sample of 104 veterans, Graham et al. (2016) found that trauma type influenced the likelihood of PTSD, as well as the expression of particular symptoms. More specifically, they found that those with combat trauma were more likely to encounter decreased interest and withdrawal from others. Veterans with sexual trauma were more likely to endure social withdrawal, sleep disturbance, and difficulty concentrating. Despite rigorous military training, service members are not immune to the effects of combat stress (Kelley et al., 2012). According to Kelley et al. (2012), "personal Resilience is not equal for every soldier who endures combat" (p. 582). Every soldier will uniquely process each military experience over the course of his/her deployment, and afterwards (Kelley et al., 2012). Some may develop symptoms of PTSD, whereas others do not. Just as the trauma types may vary, symptom expression of PTSD may also differ.

Intrusive symptoms. Intrusion refers to the unwanted infiltration of thoughts, images, and feelings about the trauma (APA, 2013). Solomon and Mikulincer (2007) examined intrusion and avoidance symptoms among Israeli combat veterans with and without combat stress reactions. Combat stress reaction is a condition that results from the psychological breakdown of a soldier on the battlefield (Solomon & Mikulincer, 2007). Symptoms of this condition parallel those of

PTSD in that a person struggling with combat stress reaction is likely to experience a paralyzing fear of death, symptoms of depression, and physical and emotional numbness. It can also strongly predict subsequent PTSD symptomology (Friedman, Schnurr, & McDonagh-Coyle, 1994). Intrusive symptoms of PTSD cause great distress for the individual, as do avoidance symptoms.

Avoidance symptoms. Avoidance symptoms describe an individual's attempts to avoid, escape, or alter the form of negative or unwanted thoughts, memories, or feelings (APA, 2013; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Engaging in avoidant behaviors has been found to interfere with the service member's ability to positively interact with family members (Brockman et al., 2016). Furthermore, avoidance and numbing symptoms have been found to be associated with difficulties pertaining to communication, problem solving, self-disclosure, and expressions of warmth (Palmer, 2008). Escaping emotional pain and reminders of the traumatic event may reduce distress in the short-term; however, these behaviors have a number of long-term consequences for the service member. Other symptoms of PTSD also negatively impact a service member's quality of life.

Negative cognitions and changes in mood. Negative cognitions and changes in mood reflect persistent and pervasive changes in beliefs and/or disposition (APA, 2013; Friedman, 2016). These symptoms are likely to impact how the service member views him/herself, as well as how he/she interacts with others. He/she may feel as though he/she is permanently changed, inadequate, or weak, as a result of the traumatic experience (Friedman, 2016). It is well established that PTSD is associated with increased irritability and aggression (Jakupcak et al., 2007; Taft et al., 2007). Negative changes in mood and cognitions hamper one's social

relationships and feelings of self-worth, contributing to a deterioration in daily functioning. Other PTSD symptoms that inhibit one's quality of life include those of hyperarousal.

Hyperarousal and reactivity. The hyperarousal and reactivity cluster encompass anxious arousal symptoms, such as hypervigilance, or always feeling on guard, and an exaggerated startle response (APA, 2013; Boasso, Steenkamp, Nash, Larson, & Litz, 2016). According to Watson (2005), these symptoms are primarily based on threat- and danger-based processes within an individual. A theoretical model has been proposed by Chemtob, Novaco, Hamada, Gross, and Smith (1997) to explain the correlation between combat veterans' symptoms of PTSD, anger, and depression. They suggest that veterans with PTSD are triggered into a "survival mode," which is characterized by a loss of self-monitoring, a bias toward confirmation, and aggressive behavior. In combat, this type of behavior is considered adaptive (LaMotte, Taft, Weatherill, Scott, & Eckhardt, 2016), as it keeps soldiers alert to the dangers around them. However, the behavior becomes maladaptive when soldiers return home because of inappropriate activation. For example, reminders of a traumatic event can induce a fear response that involves the feeling of immediate danger, when in fact there is nothing around them that is dangerous or threatening (Ehlers, Hackmann, & Michael, 2004). Hyperarousal symptoms have been found to be positively associated with aggression (Taft et al., 2007). Furthermore, they may be associated with increased risk for intimate partner violence in relation to verbal and physical aggression (Galovski & Lyons, 2004). Symptoms of hyperarousal and reactivity are often barriers to the things veterans value most. Identifying risk factors for PTSD is one of the first steps to addressing this common issue faced by military personnel.

PTSD risk factors. According to the DSM-5 (APA, 2013), the severity, duration, and proximity of a person's exposure are the most crucial factors when determining the likelihood of

developing PTSD. As noted, PTSD affects the majority of previously deployed service members. Risk factors associated with the development of PTSD in military personnel include female Gender, young age, enlisted rank, low education, low social support, multiple deployments, combat exposure, and injury (Iversen et al., 2008; Seal et al., 2009). Not being in a relationship is another risk factor for PTSD (Iversen et al., 2008; Seal et al., 2009), as relationships may offer a means of support. Researchers have determined a number of risk factors that are likely to influence the development of PTSD throughout the lifespan of service members.

Pre-deployment factors, such as trauma earlier in life (Brewin, Andrews, & Valentine, 2000), may lead to PTSD in adulthood. Other pre-deployment risk factors include a genetic predisposition (Jang, Taylor, Stein, & Yamagata, 2007), age and education at the time of deployment (Brewin et al., 2000), female Gender (Vogt et al., 2011), race, family history of psychiatric illness (Brewin et al., 2000), and personality (Shalev, 1996). Risk factors for PTSD during deployment include characteristics of the combat area, intensity and duration of combat, logistical/military support, and unit characteristics (Vasterling et al., 2010). Post-military factors may also pose a risk for the development of PTSD, as they have also been found to contribute to the course, expression, and longevity of PTSD (Friedman et al., 1994). Post-military risk factors include individual symptoms (Richardson et al., 2010), lack of social support (King, King, Fairbank, Keane, & Adams, 1998), and coping skills (Friedman et al., 1994). Identifying risk factors for PTSD is the first step to addressing PTSD in the military. Further research is needed to identify potential protective factors for PTSD symptom severity.

Gaining insight into protective factors for PTSD symptom severity would be advantageous for service members because it could improve treatment outcome and reduce the risk of consequences associated with a PTSD diagnosis, which in turn would improve overall well-being (Vogt, Pless, King, & King, 2005; Xue et al., 2015). The COR theory provides an explanation for the development of PTSD and may also provide an avenue of exploration regarding protective factors for such a diagnosis.

Conservation of Resources Theory

COR theory (Hobfoll, 1989) has been found to be a reliable framework for understanding the processes involved with experiencing, coping with, and overcoming chronic and traumatic stress (Holmgreen et al., 2017). Stressful life events have been shown to negatively affect an individual's physical and mental well-being. However, the resources that may be available to the person have been found to mediate the effect of the negative life events (Hobfoll & Walfish, 1984). The COR theory acknowledges that events are considered objectively stressful when an individual perceives his/her resources are being threatened or depleted (Hobfoll 1989; Hobfoll, 2001; Holmgreen et al., 2017; Vogt et al., 2011). Distress results when coping mechanisms intended to conserve resources or assuage losses are ineffective (Vogt et al., 2011). According to Hobfoll's (1989) seminal work, resources are defined as "objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions, or energies" (p. 516). Resources can include physical objects (e.g., house, car), life circumstances (e.g., quantity and/or quality of relationships), or personal qualities (e.g., a positive worldview; Carver & Connor-Smith, 2010). The COR theory is comprised of principles and corollaries, which are reviewed below, followed by a discussion of how COR theory may affect the development of PTSD. An argument is made that Extraversion and Resilience act as resources, and subsequently have the ability to reduce PTSD symptom severity.

Background of COR

The COR theory was proposed as a conceptualization for stress in 1989 by Stevan E. Hobfoll. The COR theory was intended to explain behavior and thought processes during stressful experiences (Hobfoll, 1989). The COR theory postulates that individuals are inclined to preserve, protect, and procure resources, especially in times of distress (Halbesleben, Neveu, Paustian-Underdahl, & Westman, 2014; Hobfoll, 1989), with resources being loosely defined as anything a person values (Hobfoll, 1989). Therefore, when individuals are confronted with stress, their efforts go toward minimizing the impact of stress by protecting their resources (Hobfoll, 1989). The COR theory has been supported by research in areas ranging from natural disaster recovery (Blaze & Shwalb, 2009) to issues in the workplace (Hobfoll, 2011). As the theory gained notoriety and empirical support, the COR theory was applied to traumatic stress (Blaze & Shwalb; 2009; Hobfoll, 1991; Hobfoll, Dunahoo, & Monnier, 1995). The COR theory has since been translated to explain the mechanisms of PTSD in military populations (Vinokur, Pierce, Lewandowski-Romps, Hobfoll, & Galea, 2011; Vogt & Tanner, 2007; Vogt et al., 2011).

Given that people are intrinsically motivated to acquire, maintain, and guard their resources, it can be assumed that stress is likely to occur under any of three conditions. First, stress may occur when there is substantial threat of resource loss. Second, stress may result from an actual loss of resource(s); or, third, stress follows when resource investment does not result in a meaningful resource gain (Hobfoll et al., 1995). When resource investment does not pay off, there is a net loss of resources due to more resources being lost during the investment process than were acquired as an outcome (Hobfoll et al., 1995).

The COR theory is comprised of principles and corollaries, which explain the roles and rules, respectively, of resources on traumatic stress (Hobfoll & Ford, 2001). In order to explain this phenomenon, an examination of the principles and corollaries of COR theory is provided.

Principles of COR. The COR theory is comprised of three principles and four corollaries (Hobfoll et al., 1995).

COR principle 1: "The primacy of resource loss" (Hobfoll, 2011, p. 117). The first principle of COR theory is that resource loss is excessively more significant than resource gain (Hobfoll, 1989). Resource loss carries more weight than resource gain in not only degree, but also rate (Hobfoll, Tracy, & Galea, 2006; Wells, Hobfoll, & Lavin, 1999). When making decisions, outcomes that are considered in terms of losses are weighted more heavily than outcomes framed in terms of gains (Hobfoll et al., 1995). Additionally, Hobfoll et al. (1995) have found resource loss to be significantly correlated with psychological distress. In contrast, resource acquisition has a restricted impact on psychological distress. For example, when someone is ill, an improvement in his/her health or symptoms (i.e., a gain) is considered significant, but when someone is healthy, improvements in health have little bearing on the individual's well-being.

From a historical perspective, loss has often threatened survival (Friedman, 2016). For example, in the Paleolithic period, an injury, or the loss of mobility, likely meant an individual was unable to hunt for food, and could perish, as a result. In the military, especially in combat, there is the potential for a significant loss such as moral injury, defined as committing, failing to prevent, or witnessing acts of transgression that contradict one's deeply held beliefs (Litz et al., 2009); divorce (King et al., 1998); accidents (King et al., 1998); and the loss of fellow soldiers. Resource attainment may become more important when service members encounter combat

stress. This is likely due to coping cognitions, or thoughts, that have the individual focusing on gains to balance negative emotional reactions produced by adverse circumstances (Cohen & Hoberman, 1983). Resource loss clearly influences well-being. Another factor that may influence the outcome of exposure to a traumatic event is whether resources were invested.

COR principle 2: Resource investment (Halbesleben et al., 2014; Hobfoll et al., 2006). In the second principle, individuals must invest in resources to be able to prevent resource loss, restore losses, and acquire new resources (Halbesleben et al., 2014; Hobfoll et al., 2006). This principle is typically studied in research concerning coping, indicating that coping requires resources to be invested in order to prevent future losses (Ito & Brotheridge, 2003). Resources must be invested in order to effectively cope with a stressor (Hobfoll, 1991). Resource investment, or coping in times of stressors, could involve the use of money or insurance, asking others for help, and testing the beliefs about oneself (Hobfoll, 1991). For example, resources (e.g., time, money, or energy) are often invested in times of natural disaster when people are rebuilding their homes (Blaze & Shwalb, 2009). Another example of investment is reaching out to friends following exposure to a stressor (Hobfoll et al., 1995). In order to receive social support, people must first call upon members of their support system.

The second principle applies to the military when considering the impact of social support on PTSD. Social support has long been proved to be related to physical health and psychological well-being (Cunningham et al., 2014; Hobfoll, Freedy, Lane, & Geller, 1990; Vogt et al., 2005). Those with more copious amounts of social support have been found to be less affected when faced with stressors (Hobfoll et al., 1990). For example, in a sample of active duty Navy personnel (n = 132) who had returned from deployment, those who were actively engaged in their support system demonstrated better post-deployment adjustment, compared to those who

did not use social support (Cunningham et al., 2014). Additionally, unit cohesion was found to be associated with mental health Resilience in a sample of Army National Guard and Reserve units, which was maintained over time (McAndrew, 2016). To benefit from social support and military units, service members must invest some of their resources. Resource investment is meant to counteract some of the resources lost when confronting a stressor. The occurrence of loss and gain spirals may also influence one's ability to recover from a traumatic stressor.

COR principle 3: Loss and gain spirals (Hobfoll, 1991; 2001). As stated in principle 1, resource losses are more influential than resource gains, and gains take time and energy to create. These losses and gains build on each other over time, creating loss and gain spirals (Hobfoll, Stevens, & Zalta, 2015). If resources are spent in order to counteract the impact of resource loss, then those who encounter loss become more susceptible to the effects of stress (Hobfoll, 1991). Any new losses or threats that come about exacerbate the situation, as the individual no longer has an adequate amount of resources to offset the loss. Should this continue, a loss spiral ensues. Similarly, gains bring about gains (Hobfoll, 1991). When a person gains resources, a reserve system is created that can be used to face new challenges or losses (Hobfoll, 1991).

For example, in a longitudinal study of 193 college women at Virginia Tech who were enrolled at the time of a mass shooting, resource losses at 2 months post-shooting were stronger predictors of distress at 6 months post-shooting than resource gains (Littleton, Axsom, & Grills-Taquechel, 2009). A lack of resources prior to the shooting predicted resource loss at 2 months post-shooting (Littleton et al., 2009), supporting the idea that those lacking resources are more susceptible to future losses (Vogt et al., 2011). Additionally, resource gain at 2 months postshooting predicted additional resource gain at 6 months post-shooting (Littleton et al., 2009).

This cycle provided support confirmation of the loss and gain spirals proposed by Hobfoll (1991, 2002).

Findings from a study of trauma-exposed firefighters also support the notion that the maintenance and accrual of resources have the potential to balance out resource loss (Sattler Boyd, & Kirsch, 2014). Military research has supported loss and gain spirals. For example, in a sample of Vietnam veterans, King et al. (1998) found that resource deficiencies from earlier in life, such as family turmoil, were related to PTSD symptomology. Based on these findings, they suggested that resource deficiency may have contributed to their lack of adequate resources when faced with combat-related stressors. Thus, initial resource loss increases the likelihood of further loss, creating a resource deficit that is likely to persist until resource restorations can occur (Hobfoll et al., 2015). Corollaries provide additional information regarding the COR theory principles.

Corollaries of COR. Hobfoll (1998, 2001, 2002) identified a number of corollaries to assist in explaining the complex nature of resource investment.

Corollary 1 states that people with more resources are less likely to encounter stressful experiences that negatively influence their psychological and physiological well-being, and also have more capability to coordinate resource gain (Hobfoll, 2002). If people already have resources, they are better equipped to effectively cope with new stressors (Hobfoll, 2002). Corollary 1 predicts that those who lack resources are more susceptible to additional loss when faced with chronic or traumatic stress (Holmgreen et al., 2014). This prediction leads to the second and third corollaries of the COR theory, which are intertwined. Corollaries 2 and 3 state that not only are those without resources more vulnerable to resource loss, but that initial losses bring about future losses (Hobfoll, 1998). The final corollary, corollary 4, states that "those who

lack resources are likely to adopt a defensive posture to guard their resources" (Hobfoll, 1998, p. 83). Defensive postures could include maladaptive coping strategies, such as denial and avoidance (Holmgreen et al., 2014). Holmgreen and colleagues stated that the defensive coping strategies are reinforced because they limit additional loss; however, they also decrease access to and use of valued resources. Of note, these defensive strategies are consistent with symptoms of PTSD (APA, 2013).

COR and PTSD

Traumatic stress is much more severe compared to the stress individuals are likely to encounter on a daily basis (Hobfoll, 1991). This premise is consistent with the notion that PTSD develops as a result of exposure to a catastrophic event that is outside the realm of everyday life (Friedman, 2016). Hobfoll (1991) argued that traumatic stressors have a significant impact on an individual's resources because they 1) violate a person's basic values, 2) are often unpredictable in occurrence or magnitude, 3) make extreme demands, 4) are so unique that the individual does not have adequate resources in place to combat resource loss, and 5) often imprint an image in the mind of the individual that is easily recalled when cued. According to the COR theory, severe responses to trauma (e.g., PTSD symptoms) result from a swift and harsh loss of resources (Hobfoll, 1991) that are vital to oneself, survival, and/or social attachments (Hobfoll, 2014). Resources are used and invested to avoid resource loss or its impact (Hobfoll, 2001). However, when resources are used at each stage of the stress and recovery process, the individual becomes increasingly vulnerable to negative outcomes of stress (Hobfoll, 2001). Should the individual continue to be exposed to negative stress sequelae, rapid and powerful loss spirals will occur (Hobfoll, 2001), which can lead to PTSD.

Prior stress exposure has implications for adjustment difficulty after deployment (Vogt et al., 2011). More specifically, childhood traumatic experiences may mean a loss of resources that predict a greater risk for exposure to stressors later in life, as well as less access to appropriate resources that prevent losses (Vogt et al., 2011). When considering post-deployment experiences, experience with additional life stressors (King et al., 1998) and a lack of social support (King, King, Foy, Keane, & Fairbank, 1999) can make adjusting to life after deployment challenging (Vogt et al., 2011), suggesting that a loss of resources negatively impacts recovery. Vogt and colleagues (2011) examined the applicability of the COR theory to psychological distress in a national random sample of OEF and OIF veterans. The components of the COR theory they assessed were the susceptible loss of resources, an actual loss of resources, and failure to achieve resource acquisition after resource investment. They confirmed that these tenets predicted posttraumatic stress symptomology, suggesting that resource loss associated with pre-deployment experiences may predispose an individual to deployment stressors. There were no significant Gender differences regarding childhood experiences, post-deployment stressors, and post-deployment social support. However, female soldiers acknowledged less exposure to warfare (Vogt et al., 2011), suggesting that women may experience other traumatic stressors while on deployment.

Several studies have applied the COR theory to PTSD, in an effort to understand warrelated risk factors (Vinokur et al., 2011; Vogt et al., 2011). Vinokur et al. (2011) determined that in a sample of U.S. Air Force personnel, warzone experience provided the possibility of losing resources from a number of important domains. These included risk of life, prolonged separation from familial and interpersonal support, and a deterioration in emotional functioning. Symptoms of PTSD predicted a loss in resources and a decline in perceived health and

functioning of the service member. Although King and colleagues (1999) did not directly study the COR theory, they did apply it to their findings regarding Vietnam veterans and the impact of deployment-related stressors. They concluded that there were several chains of risk for PTSD. Some chains of risk were encountered during deployment, but several resulted from predeployment experiences, indicating that there was a reduction of resources over time, subsequently putting veterans at risk for exposure to additional stressors. Similarly, Vogt and Tanner (2007) employed principles of COR on Gulf War veterans. They concluded that direct and indirect effects of deployment-related risk factors aligned with the COR theory.

Vogt et al. (2011) applied the COR theory to PTSD symptomology on national sample of veterans from OEF and/or OIF. The researchers found that several chains of risk accounted for PTSD symptoms; many risk factors were present prior to deployment, accounting for symptoms of PTSD. Vogt and colleagues (2011) determined that these chains of risk predicted service members' difficulty in accessing and utilizing resources when encountering subsequent stressors.

COR and Resources

As stated previously, resources can be anything that a person values (Hobfoll, 1989). Hobfoll and colleagues (1995) acknowledged that this broad definition of a resource could be a potential criticism of the COR theory. However, they countered this criticism by highlighting existence of some key values, which are widely accepted, such as health, honor, and love. The authors were able to consolidate the findings of their work to generate a list of 74 resources, which included object resources (e.g., appropriate housing), personal resources (e.g., hope), and energy resources (e.g., finances; Hobfoll et al., 1995).

The COR theory proposes that a rich resource base can promote recovery from traumatic stressors by acting as a safeguard against resource loss (Hobfoll, 2012). This safeguard, in turn,

helps one cope when resources are threatened or lost. Conversely, someone with a weaker resource base may be more vulnerable to resource loss, which decreases the likelihood of recovery from a stressor in a timely and effective manner (Hobfoll, 2012). Given this premise, those with weaker resource bases may be more susceptible to PTSD. Indeed, in a sample of 286 firefighters, PTSD symptoms were negatively associated with personal characteristics resources, such as self-efficacy and optimism (Sattler et al., 2014). For military service members, the same concept applies. Their resources and vulnerabilities can influence mental health outcomes. For example, adequate resources protect the service member and decrease the direct cost of PTSD, whereas substantial vulnerabilities and other sources of stress can exacerbate PTSD symptoms (Karney, Ramchand, Osilla, Caldarone, & Burns, 2008).

Personal resources are characteristics that are unique to the individual (Hobfoll, 1989). Personal characteristics are considered resources because of their ability to aid in stress resistance (Hobfoll, 1989). They are likely to enhance and strengthen an individual's resource base, which improves one's ability to cope with the psychological and physiological demands of a traumatic event. Examples of personal characteristic resources include, but are not limited to, self-esteem, hope, optimism, and social skillfulness (Hobfoll, 1991). Many of these attributes are present within the constructs of Extraversion and Resilience.

Extraversion as a resource. The present study focused on the construct of Extraversion as a personal characteristic resource. Extraversion is defined as gregarious and assertive behavior, and a tendency toward positive emotional expression (John & Srivastava, 1999). Other characteristics of Extraversion include high activity and sociability (Clark & Owens, 2012). Hobfoll (2001) identified the "ability to communicate well" as a resource. Assertiveness, a defining feature of Extraversion (John & Srivastava, 1999), is related to communication because

assertiveness involves expressing one's own needs while also acknowledging and respecting another's. Similarly, successful social interactions are often associated with assertiveness (Zellars & Perrewe, 2001). The tendency to relate to and communicate with others increases the likelihood of their reaching out for social support in times of distress, which may help them overcome the negative effects of stress (Zellars & Perrewe, 2001). For example, in a metaanalysis, Extraversion was found to be positively associated with active coping and willingness to seek out and utilize social support (Connor-Smith & Flachsbart, 2007), suggesting that Extraversion may act as a buffer against stress.

A tendency toward positive emotion is also a common attribute of Extraverted individuals (John & Srivastava, 1999). Optimism, a positive emotion, has been identified as a personal characteristic resource (Hobfoll et al., 1995). Higher levels of optimism have been related prospectively to better subjective well-being in times of adversity or difficulty (Carver, Scheier, & Segerstrom, 2010). Similarly, in a cross-sectional analysis of stressful events, positive affect was strongly associated with one's ability to self-regulate (Moskowitz, Shmueli-Blumberg, Acree, & Folkman, 2012). Positive emotions have also been found to be involved in eliciting social support (Bonanno, 2004), which is believed to counteract the effects of resource loss (King et al., 1999). Extraversion is comprised of a number of characteristics that allow it to serve as a personal characteristic resource. Resilience may also act as a personal resource.

Resilience as a resource. Resilience is another facet of personality that is defined as demonstrating high degrees of self-esteem, optimism, and perceived control (Schok, Kleber, & Lensvelt-Mulders, 2010).

According to the COR theory (Hobfoll, 2001) personal resources are comprised of vital skills, such as self-efficacy and self-esteem (Hagger et al., 2015). Hobfoll (2001) identified

"positive feelings about self" as a personal characteristic resource. Self-esteem is considered a stable construct that is based upon self-worth, which includes feeling good about oneself. Blaze and Shwalb (2009) found that lower self-esteem was significantly predictive of general psychological distress in a sample of high school students who were displaced following a hurricane. There is evidence that resources, such as self-esteem, increase Resilience when faced with adversity.

"Optimism" has been identified as a personal characteristic resource (Hobfoll, 2001), and has also been found to be strongly associated with Resilience (Southwick & Charney, 2012). In a sample of burn-injury victims, Resilience mediated the relationship between dispositional optimism and subjective well-being (He et al., 2013). Resilience was also found to have an independent effect on well-being (He et al., 2013). In a sample of active duty Navy personnel, service members with high Resilience were those that viewed stress as a challenge, engaged in support with others, pursued their own goals, maintained confidence in their effectiveness, maintained a sense of humor and a problem-solving approach, as well as remained patient and optimistic (Cunningham et al., 2014). Pietrzak, Whealin, Stotzer, Goldstein, and Southwick (2011) used a cluster analysis to create three groups of OEF/OIF veterans, based on level of combat exposure and PTSD symptom severity. Degrees of resiliency were then compared among these groups. Veterans with high resiliency were characterized by being in a relationship, having fewer psychological issues, endorsing a larger degree of purpose and control, and having family support (Pietrzak et al., 2011).

These findings align with many personal characteristic resources identified by Hobfoll (2001), such as optimism, self-efficacy, hope, feelings that life has meaning, and perceived

control over one's life. Collectively, these findings indicate that Resilience is a resource that has been found to offset losses associated with traumatic events and PTSD.

Personal Resources as Protective Factors Against PTSD

Behavioral styles, or temperaments, of children become apparent early in life (Caspi & Roberts, 2001). An extensive longitudinal study that compared behavioral styles at age three to personality types at age 18 found that personality traits were largely maintained (Caspi & Silva, 1995). Several theories exist that attempt to explain when personality develops. Costa and McCrae (1997) proposed that personality is fully developed by the age of 30. Their conclusion was based on an examination of personality consistency over a three and six-year period, which found that personality tended to be stable for men and women over 30 (Costa & McCrae, 1997). Consistency in personality across the lifespan suggests there may be a tendency toward certain coping strategies, depending on personality type.

Personality dispositions could explain different coping strategies among service members. Military personnel may experience and cope with PTSD symptoms in a number of ways. For example, Killgore and colleagues (2008) found that soldiers exposed to intense combat reported slightly more willingness to engage in risky behaviors post-deployment. Similarly, in a longitudinal study that examined risky and self-destructive behaviors of deployed and non-deployed military personnel, Thomsen, Stander, McWhorter, Rabenhorst, and Milner (2011) found that deployed service members engaged in riskier behaviors and had more psychiatric problems compared to their non-deployed counterparts. Of note, deployment was related to increases in risky behavior only for those who endorsed a pre-deployment history of risky behavior (Thomsen et al., 2011). PTSD is also strongly associated with impulsivity (James, Strom, & Leskala, 2014), which could potentially put veterans in dangerous situations. The

common utilization of maladaptive coping strategies by military personnel with PTSD indicates an area of concern.

Personality characteristics allow people to understand themselves, as well as others (McCrae & John, 1992). Personality is thought to be comprised of traits, behaviors, moods, and emotions (McCrae & John, 1992). Personality is a multifaceted structure that can be influenced by genetic factors, family dynamics, social influences, and personal experiences (Caspi & Roberts, 2001). While personality is typically a stable trait over time (Caspi & Roberts, 2001), events, especially traumatic ones, have the potential to adjust personality dispositions. Thus, personality characteristics, such as Extraversion and Resilience, may influence PTSD symptom severity (Bonanno, 2004).

Extraversion

The Five Factor Model is one of the most recognized models for personality (Clark & Owen, 2012). This model views an individual's personality expression in terms of five factors: Openness to new experiences, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The present study focused on the construct of Extraversion, which is defined as gregarious and assertive behavior, and a tendency toward positive emotional expression (John & Srivastava, 1999). This factor has been identified as a potential protective factor against the development of PTSD (Bonanno, 2004). However, there is conflicting evidence regarding the relationship between Extraversion and PTSD (Bramsen, Dirkzwager, & Van der Ploeg, 2000; Card, 1987; Caska & Renshaw, 2013; Clark & Owens, 2012).

Extraversion and PTSD. Few studies have examined the Big Five personality factors in veterans (Clark & Owens, 2012). In fact, most research surrounding personality development and PTSD within military personnel has centered around personality disorders, rather than

personality characteristics (Clark & Owens, 2012). Researchers who have examined Extraversion in veterans have found inconsistent findings in relation to PTSD symptom severity. For example, Clark and Owens (2012) found Extraversion to be significantly negatively correlated with PTSD in a sample of U.S. veterans who completed tours in Iraq and Afghanistan. Similarly, Caska and Renshaw (2013) determined that Extraversion significantly moderated the relationships of both combat exposure and subsequent experiences with PTSD severity in members of the National Guard. Higher rates of Extraversion have also been associated with a number of other benefits.

Of note, higher rates of Extraversion have been associated with better mental well-being and lower risk for mental health issues, such as depression and anxiety (Park et al., 2016). Extraversion has been found to be positively correlated to Resilience (Gramzow et al., 2004; Skodol, 2010), suggesting the potential for Extraversion to act as a buffer for PTSD symptom severity, as does Resilience (Fredrickson, Tugade, Waugh, & Larkin, 2003; Isaacs et al., 2017). Furthermore, evidence supports the notion that Extraversion can decrease the severity of some PTSD symptoms. For example, in a sample of nurses and physicians, Extraversion was negatively correlated to the PTSD symptoms of intrusion, avoidance, and arousal (Ceobanu & Mairean, 2015). In Ceobanu and Mairean's (2015) study, emotional and informational social support was found to moderate the relationship between Extraversion and symptoms of PTSD. Similarly, in a sample of Army personnel deployed in Iraq, Extraversion was associated with seeking out social support and avoidance coping (Peng, Riolli, Schaubroeck, & Spain, 2011). In a small sample of OEF/OIF combat veterans, high PTSD symptom severity was associated with low levels of Extraversion. These findings suggest that personality traits, such as Extraversion, may impact one's response to trauma, as well as one's potential for PTSD symptom severity.

There is a comparable amount of evidence that Extraversion does not successfully predict PTSD severity in a number of military studies (Bramsen et al., 2000; Card, 1987; Clark & Owens, 2012; Hyer. Braswell, Albrecht, & Boyd, 1994). Although Extraversion was found to be significantly related to PTSD symptom severity, Extraversion was not found to be a significant predictor in the regression model (Clark & Owens, 2012). Bramsen et al. (2000) obtained measurements of personality characteristics in a non-American sample of UN peacekeepers prior to deployment. Extraversion was not a significant predictor for PTSD symptom severity. Similarly, in a sample of National Guard service members, the strength of the association between Extraversion and PTSD symptom severity weakened as levels of Extraversion increased (Caska & Renshaw, 2013). While Extraverted individuals have a number of positive qualities, they may also have some qualities that influence their safety.

Another consideration regarding Extraversion is findings that Extraversion is related to higher levels of risk-taking, which increases the risk of a traumatic event (Schnurr & Vielhauer, 1999). Breslau, Davis, Andreski, and Peterson (1991) examined risk factors for PTSD in a large random sample of young adults. Risk factors for exposure to traumatic events included male Gender, extraversion, low education, early conduct problems, and a family history of psychiatric disorders or substance use problems. The conflicting evidence regarding the relationship between Extraversion and PTSD symptom severity in military personnel suggests a gap in the literature that needs to be examined.

Resilience

Resilience is another facet of personality that is defined as demonstrating high degrees of self-esteem, optimism, and perceived control (Schok et al., 2010). Resiliency is more than simply recovery for an injury (Bonanno, 2004), as it is also defined by growth and adaptation in the face

of adversity (Richardson, 2002). Resilience is believed to be a personal quality that reflects one's coping capacity for stress (Connor & Davidson, 2003).

Resilience and PTSD. In studies of trauma, Resilience has been viewed as a personality characteristic that allows the individual to adaptively cope with a stressor (Agaibi & Wilson, 2005). Resilience is a well-established buffer for PTSD symptom severity (Fredrickson, Tugade, Waugh, & Larkin, 2003; Isaacs et al., 2017). In other words, the more Resilience one possesses, the less severe one's PTSD symptoms are, which has been supported by research. For example, Veterans who are described as resilient tend to have greater perceived levels of social support, utilize less avoidant coping, and demonstrate greater psychological flexibility (Elliot et al., 2015). Additionally, Resilience was associated with exposure to traumatic events in military veterans (n = 497; Green, Calhoun, Dennis, & Beckham, 2010). Indeed, higher levels of Resilience acted as a buffer for veterans with high combat exposure. Resilience may also influence expression of PTSD symptoms.

When examining Resilience and meaning following deployment in a sample of Dutch veterans, Resilience predicted lower perceived threats from exposure to war-zone stressors (Schok et al., 2010). Resilience also predicted lower levels of intrusion and avoidance symptoms of PTSD in Dutch veterans (Schok et al., 2010). In this sample, Resilience was measured by self-esteem, optimism, and control. Schok and colleagues (2010) concluded that Resilience lowers the stress response that is often activated following exposure to war-zone stressors. Similarly, in a sample of 475 active duty marines who were transitioning into civilian life, Resilience predicted mental health problems and impairment (Hourani et al., 2012). Higher levels of Resilience acted as a buffer for mental health problems, such as depression, anxiety, and PTSD. Similarly, Iraq and Afghanistan veterans with higher Resilience were less likely to have a

diagnosis of PTSD (Roberts et al., 2006). Lack of Resilience was found to predict PTSD, suicidality, substance use problems, depression, and poor health in deployed veterans (Green et al., 2010). Some individuals may be more prone to Resilience than others may.

In a nationally representative study of older (i.e., over the age of 60) U.S. veterans, Resilience was more common in those who were older, had higher education, and were Caucasian (Pietrzak & Cook, 2013). Of interest is the finding that those in the Resilient group also had higher scores of Extraversion (Pietrzak & Cook, 2013). Protective characteristics, such as emotional stability, optimism, and strong social support, have been associated with greater Resilience (Fredrickson et al., 2003; Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005). There are similar components between Extraversion and Resilience, such as optimism, suggesting there is a relationship between Extraversion and Resilience.

The Relationship between Resilience and Extraversion. Components of Resiliency and Extraversion are similar, such as the tendency toward positive emotions and hopes for the future (Caspi & Roberts, 2001; Schok et al., 2010). When examining the relationship of Resilience to personality in college students, Resilience was positively related to Extraversion (Campbell-Sills, Cohan, & Stein, 2006). In a pretest and posttest of undergraduate students before and after the 9/11 terrorist attacks, Extraversion and Resilience were positively correlated (Fredrickson et al., 2013). Extraversion has also been found to be a significant predictor of Resilience in college students (Campbell-Sills et al., 2006) and U.S. military veterans (Isaacs et al., 2017).

Isaacs and colleagues (2017) studied the long-term predictors of Resilience in military veterans and found that Extraversion predicted Resilience. The researchers suggested that this outcome meant that seeking out new social support may prevent psychological distress.

Similarly, Korean War veterans, aged 60-74 years, with high Resiliency also exhibited high scores of Extraversion (Park et al., 2016). Although research demonstrates a strong positive relationship between Resiliency and Extraversion (Alessandri et al., 2014; Campbell-Sills et al., 2006; Fredrickson et al., 2013), Extraversion and Resilience have been deemed to be separate and distinct constructs (Campbell et al., 2006; Fredrickson et al., 2013; Park et al., 2016).

Gender

The military remains a male-dominated field. Although women have had roles in the armed forces since the Revolutionary War (Murdoch et al., 2016), their role has been primarily informal, as laws and policies prohibited women from serving in certain roles or units (Kamarck, 2016). Despite these laws and policies, many female service members have, in fact, served in combat (Kamarck, 2016). The lifting of the 1994 Direct Ground Combat Definition and Assignment Rule Combat Exclusion Policy in 2013 (DoD, 2013) has allowed women to advance their military careers, and will likely lead to more female enlistment over time. Since the year 2000, the percentage of female military personnel has steadily increased from 15.4% to 16.8% by 2015 (Military One Source, 2015).

According to the 2015 report (Military One Source), the U.S. military is currently comprised of 15.5% female service members, and 84.5% male service members. Regarding active duty enlistment and officer status, 15.1% of female service members were enlisted as compared to 17.0% of female officers. For male service members, 84.9% were enlisted and 83.0% were officers, as of 2015. As the number of female service members continues to grow, there is an increased need for identifying and understanding Gender differences in the U.S. armed forces in the development of PTSD, particularly in relation to the utilization of personal resources, such as Extraversion and Resilience.

Women in the military. Although research based on Gulf War veterans indicated that men are at increased risk for mission-related stressors compared to women (Vogt et al. 2005), women are progressively taking on more mission-related responsibilities as they become more engaged in combat (Street et al., 2009). Vogt et al. (2011) found that women endorsed feeling less prepared for battle, elevated perceptions of risk, and higher instances of mental health issues compared to their male counterparts. In a comparison study of Gulf War veterans and OEF and OIF male and female veterans, men endorsed more contact with mission-related stressors (Fox et al., 2016). Women reported greater degrees of interpersonal stressors; however, the researchers noted that sexual harassment and harassment in general continues to be a prominent issue for women who are deployed (Fox et al., 2016). Given the differences in stressors and preparation among male and female service members, there are likely Gender differences in PTSD symptom severity.

Gender and PTSD. Gender differences are among one of the most studied factors associated with PTSD; however, findings are inconclusive (Fox et al., 2016; Jacobson, Donoho, Crum-Cianflone, & Maguen, 2015; Olff et al., 2007; Worthen et al., 2015). In a review of 18 studies of PTSD in OEF and OIF veterans, seven researchers found women to be at elevated risk of PTSD, seven studies found no significant differences, and four studies determined women to be at decreased risk (Crum-Cianflone & Jacobson, 2014). Crum-Cianflone and Jacobson (2014) concluded that women were at a moderately higher risk of developing PTSD compared to their male counterparts.

There is rising evidence that men and women respond differently to stressful situations (Kimerling et al., 2007; Lancaster, Melka, & Rodriguez, 2011); some evidence suggests that women's emotional responses may increase the likelihood of developing PTSD (Lancaster et al.,

2011). Lancaster and colleagues (2011) examined the emotional predictors of civilian men and women for developing PTSD, finding that when other emotions were considered, only anger, guilt, sadness, and disgust were predictors of PTSD. Anger predicted PTSD in both men and women, but guilt was unique to men, while disgust and sadness were unique to women (Lancaster et al., 2011). The type of trauma may contribute to these feelings.

Cortina and Kubiak (2006) found that women were almost twice as likely to experience sexual violence, and that women reported more severe symptoms of PTSD. They concluded that sexual violence is possibly "the most Gender-dependent form of trauma. This Gender difference in sexual victimization risk has clear implications for PTSD" (Cortina & Kubiak, 2006, p. 754). Research by Maguen and colleagues (2012) found Gender differences in rates of military sexual trauma (MST). In their large sample of Iraq and Afghanistan veterans, 36% of female service members with PTSD screened positive for MST, compared to 1% of male service members. Regardless of Gender, MST was associated with increased risk of comorbid mental health issues (Maguen et al., 2012). Another study found that men reported experiencing trauma at an earlier age than women did, and more men than women experienced assaultive violence prior to their worst event (Breslau & Anthony, 2007). For the men who reported any exposure to trauma, 23.2% disclosed having experienced assaultive violence as their worst event. Of that percentage, 7.1% met the standards for a PTSD diagnosis. Among women who experienced a traumatic event, 21.4% identified an assaultive one being their worst, and of those women, 23.25% screened positive for PTSD (Breslau & Anthony, 2007). Carter-Visscher and colleagues' (2010) results concerning National Guard troops were consistent with findings from Breslau and Anthony (2007), as women were more likely to experience a history of emotional maltreatment and a history of sexual assault. Worthen et al. (2015) found stronger associations for PTSD and

anger in servicewomen who experienced a traumatic event without deployment. Conversely, male service members demonstrated stronger associations between PTSD and anger in deployment contexts, particularly in combat (Worthen et al., 2015). These findings suggest Gender differences in the expression of PTSD.

A study completed by Wolfe et al. (1999) examined the rates and predictors of PTSD in Gulf War veterans. The tests were administered immediately following the Gulf War, and again two years after returning home. In both instances, women were twice as likely to report symptoms of PTSD. Researchers found that meeting the presumptive PTSD criteria at Time 1 (i.e., pretest) was the strongest predictor for meeting the criteria at Time 2 (i.e., posttest), and PTSD rates greatly increased over time. Gender and the degree of combat exposure were closely associated with PTSD status at both assessment times. This finding is in accordance with other studies that demonstrate Gender differences among servicemen and servicewomen with a PTSD diagnosis (Olff et al., 2007).

Whereas portions of the extant literature support Gender differences in the development of PTSD and/or PTSD symptom severity, an equal amount of evidence exists to the contrary. Gender differences and PTSD development were examined in a large sample (n = 2342) of OEF and OIF service members by using propensity score matching to create a one-to-one Gender ratio (Jacobson et al., 2015). This was the first study of its kind because the study matched participants with baseline characteristics over the course of the longitudinal study. No significant Gender differences were found for the development of PTSD, or for PTSD symptom severity (Jacobson et al., 2015). The authors noted that regardless of Gender, a PTSD diagnosis was strongly associated with combat experience.

Gender and Personality. There are conflicting views on whether personality traits are more common among men or women (Vianello, Schnabel, Sriram, & Nosek, 2013). Some researchers allege that Gender differences for personality traits are almost non-existent (Hyde, 2005), while others propose that Gender differences in personality are large (Del Giudice, Booth, & Irwing, 2012). Determining whether there are differences in personality expression based on Gender in a military sample could provide useful information regarding treatment interventions, and how or when to provide possible screenings.

Gender and Extraversion. Depending on the personality measure used, levels of Extraversion based on Gender may vary (Costa et al., 2001). For example, one review found that women scored lower on Extraversion compared to men (Lynn & Martin, 1997), but women had higher rates of Extraversion in another review (Costa et al., 2001). Costa and colleagues (2001) hypothesized that the difference in Extraversion scores between the studies is due to their use of the Revised Neuroticism Extraversion Openness Personality Inventory, which emphasizes warmth more than assertiveness in its measurement of Extraversion. Del Giudice and colleagues (2012) noted that Extraversion scales with loadings on warmth and affiliation tend to be higher in females, whereas Extraversion loadings on dominance and excitement-seeking tend to be higher in males. Consistently, women have been found to score slightly higher than men on Extraversion (Costa et al., 2001), with a more recent study demonstrating that women continued to score slightly higher than men on Extraversion (Weisberg, DeYoung, & Hirsh, 2011). The inconsistencies in research regarding Extraversion and Gender indicate further investigation is warranted.

Gender and Resilience. With female service members experiencing increased exposure to combat in current military conflicts, the question of differences in resiliency based on Gender

has been raised. In both military and civilian samples, male Gender has been weakly related to psychological Resilience (Brewin et al., 2000; Southwick, Litz, Charney, & Friedman, 2011). Research evidence suggests that Resilience is not Gender specific and does not increase or decrease with age (Zeidner & Endler, 1996). However, the unequal Gender distribution in the military may contribute to issues with accurately determining the role Gender has on resiliency (Isaacs et al., 2017). Gender differences in resiliency are also unsupported in the civilian population. For example, Campbell-sills et al. (2006) found no significant relationship between Resilience and Gender in a sample of young adults. Several other researchers have found no significant relationship between Resilience and Gender (Connor & Davidson, 2003). Although Gender differences for Resilience have not been found, the growing number of female service members warrants further investigation.

Definitions

- Active duty: full-time duty that involves operating in the active military service. Members of the Reserve Components who take part in full-time training duty also fall under this definition (Department of Defense [DoD], 2017). Full-time National Guard duty is not included in this definition, according to the DoD.
- **Conservation of resources (COR) theory:** Individuals are intrinsically motivated to maintain and accrue new resources in times of distress (Hobfoll, 1989, 1991, 2001).
- **Department of Defense (DoD):** a government agency that supervises every branch of the U.S. military (Powers, 2016).
- **Deployed:** relocation of a service member to another place in the world in order to fulfill his or her contract of service (Powers, 2016).
- Deployment: when military forces are rotated into and out of an operational area (DoD, 2017)
- **Discharged service member:** a military member who is released from his or her obligations to the U.S. military (Guina, 2015). The discharge releases the individual from any future military duties.
- **Enlistment:** a signed contract with a designated branch of the U.S. military that outlines the individual's contract of service. The minimum length of enlistment for anyone who joins the U.S. armed forces is eight years (Powers, 2016).
- **Extraversion:** gregarious and assertive behavior, with a tendency toward positive emotional expression (John & Srivastava, 1999).
- Posttraumatic stress disorder (PTSD): a trauma- and/or stress-related disorder that requires one to have experienced a traumatic event, as well as experiencing the following symptoms for at least one month: 1) intrusion symptoms, 2) persistent avoidant behavior, 3) negative changes in thoughts or mood, and 4) hyperarousal (DSM-5; American Psychiatric Association, 2013).
- **Resilience:** demonstrating high degrees of self-esteem, optimism, and perceived control (Schok et al., 2010).
- **Resources:** anything a person values (Hobfoll, 1989); could include physical objects (e.g., house, car), life circumstances (e.g., quantity and/or quality of relationships), or personal qualities (e.g., a positive worldview; Carver & Connor-Smith, 2010).
- **Retired service member:** an individual who is officially discharged from the military and has no contractual obligation to return to service (Powers, 2016).
- **Separated service member:** someone who has fulfilled his/her active duty contract. For a predetermined length of time, based on his/her contract, the individual is subject to a recall to active duty at any time (Powers, 2016).

Terrorism: The illegal use of violence, or the threat of violence, to elicit fear and coerce governments or societies (DoD, 2017). Acts of terrorism are often motivated by religious, political, or other ideological beliefs (DoD, 2017).

Trauma: generally defined by stressful events that result in unique challenges to coping and adaptation (Agaibi & Wilson, 2005).

Veteran: a person who has previously served, or is currently serving, in the armed forces.

Summary

PTSD is associated with a number of consequences for the service member, including increased risk for comorbid mental health issues (e.g., depression, anxiety, and substance use), as well as intimate partner violence, and difficulties with emotional regulation (Breslau, 2009). The COR theory provides an explanation for the development of PTSD, in that traumatic stress results from a rapid loss of resources (Hobfoll, 1991). Having a rich resource base can promote recovery from traumatic stressors by acting as a safeguard against resource loss (Hobfoll, 2012). Hope, optimism, and positive feelings about oneself have been found to act as buffers against losses associated with traumatic stress (Hobfoll, 2001). Hope, optimism, perceived sense of control, and the ability to communicate well have been identified as personal characteristic resources (Hobfoll, 2001). These factors have been associated with lower PTSD symptom severity (Connor-Smith & Flachsbart, 2007; Fredrickson et al., 2003; Friborg et al., 2005), and also comprise the personality traits Extraversion (John & Srivastava, 1999) and Resilience (Schok et al., 2010). The current researcher hypothesized that the personal characteristic resources of Extraversion and Resilience would predict PTSD symptom severity. Given the strength of the relationship between Extraversion and Resilience (Campbell-Sills et al., 2006; Fredrickson et al., 2003; Isaacs et al., 2017), the researcher also predicted that these factors

combined will influence PTSD symptom severity. The COR theory is believed to account for their impact on PTSD because higher self-esteem and positive emotional expression make it easier to protect current resources and acquire new ones.

CHAPTER III

METHOD

Review of the Study

As noted in Chapter II, the conservation of resources (COR) theory may explain the role of protective factors in PTSD symptom severity. Personal resources (Hobfoll et al., 1995), such as Extraversion and Resilience, are potential protective factors for PTSD symptom severity. The literature review provided a foundation for identifying Extraversion and Resilience as resources, as defined by the COR theory. The current chapter provides information regarding participants and participant recruitment, measures used to gain information about participants, and tools for determining degrees of PTSD symptom severity, Extraversion, and Resilience. The analysis for the current study is also presented.

The present study aimed to explore the application of the COR theory to PTSD symptom severity through the variables of Extraversion and Resilience. The researcher also examined Gender differences for Extraversion and Resilience scores. The following hypotheses were tested:

H₁: A relationship exists between Extraversion, Resilience, and the amount of variance on PTSD symptom severity among military personnel.

H_{1a}: A relationship exists between Resilience and PTSD symptom severity.

H_{1b}: A relationship exists between Extraversion and Resilience.

H_{1c}: A relationship exists between Extraversion and PTSD symptom severity.

 H_{1d} : Extraversion explains the relationship between Resilience and PTSD symptom severity.

H₂: Gender differences will exist for PTSD symptom severity.

H₃: Gender differences will exist for scores of Extraversion.

H₄: Gender differences will exist for scores of Resilience.

Data Cleaning

Two rounds of data collection were completed due to concerns regarding the validity of the first round of data collection. Toward the end of the first round of data collection, a participant contacted the primary researcher via email to inform her he had taken the survey multiple times and to inquire as to whether multiple submissions were permitted. Upon further inspection of participant responses at the end of round one, it was determined that 38 participants had submitted a total of 113 responses of the collected 200 surveys. The primary researcher was unable to identify the duplicate responses without the possibility of exposing identifiable participant information. Therefore, to maintain the fidelity of the data for the current study and protect the participants, a second round of data collection was completed.

During round two of data collection, steps were taken on the Amazon Mechanical Turk (MTurk) website to prevent multiple submissions from participants. Specifically, an additional qualification was added to workers (i.e., participants) following the submission of their randomly generated MTurk code. The qualification identified them on the Mturk website as someone who had already completed the survey, and therefore eliminated their eligibility to complete the survey a second time.

Round two of data collection yielded a total of 226 participants. During data cleaning, three participants were removed due to being outliers for time completion (i.e., completion time was at least 69.4 minutes). A total of 53 participants were removed for not completing most of the survey. Survey completion time varied based upon participants' deployment status. Individuals who were deployed completed additional measures due to increased likelihood of

exposure to traumatic events while on deployment, which increased the amount of time it took to complete the survey. The average completion time for participants who indicated deployment was 944.96 seconds (SD = 394.42; n = 114). For individuals who denied deployment, the average completion time was 710.89 seconds (SD = 446.32; n = 56). Twenty participants who endorsed deployment, and three participants who denied deployment, were removed from the data set, as they fell more than one standard deviation below their respective means. Six participants were removed as they failed the attention check item. Lastly, one participant was removed due to concerns regarding the quality of the individual's responses and the ability to attend appropriately to item content. At the conclusion of data cleaning, the sample consisted of 141 participants.

Participants

Participants consisted of 141 U.S. military personnel, recruited from across the U.S. through MTurk (Mason & Suri, 2012). The majority of participants were male (70.2%). Although the 2015 Demographics Report of military personnel (Military One Source, 2015) found women to compromise approximately 15.5% of the U.S. armed forces, the current sample was comprised of 29.8% female service members. Age at enlistment for participants ranged from 17 to 38 (M = 19.59, SD = 2.86), and current age of participants ranged from 21 to 73 (M = 42.87, SD = 12.82). Table 1 presents information regarding the ages of participants.

Composition of the current sample for each U.S. military branch was fairly diverse. Fiftytwo (36.9%) reported service with the U.S. Army, 31 (22.0%) reported service with the U.S. Navy, 27 (19.1%) reported service with the U.S. Air Force, and 11 (7.8%) reported service with the U.S. Marine Corp. Ten individuals (7.1%) reported serving with multiple branches of the U.S. military, and the remaining 10 individuals (7.1%) served with either a U.S. Reserves unit,

the National Guard, or the Coast Guard. Length of service for participants ranged from 1-45 years (M = 8.01, SD = 7.30). Of the 141 participants, 16 (11.3%) reported being active duty, 27 (19.1%) reported being retired, and 93 (66.0%) identified as separated. The remaining 5 (3.5%) endorsed Reservist status. Table 2 presents a summary of the demographic information for the current sample.

Table 1

Time Frame	Frequency	Percent
Age at Enlistment		
17	23	16.3%
18	50	35.5%
19	19	13.5%
20	8	5.7%
21	8	5.7%
22	14	9.9%
23	9	6.4%
24-26	8	5.7%
27-38	2	1.4%
Current Age		
21-25	5	3.5%
26-30	17	12.1%
31-35	30	21.3%
36-40	20	14.2%
41-45	14	9.9%
46-50	16	11.3%
51-60	21	14.9%
Over 60	18	12.8%

Age, Summary of Information (n = 141)

Deployment length was obtained by asking participants if their tours lasted zero to six months, six months to one year, or over one year. The majority, 55.1%, reported being deployed multiple times (mean frequency of deployment = 3.01 times, SD = 5.84), with the length of deployments typically ranging from 6 months to one year (SD = .52). Additional deployment-related information can be found in Table 3.

Table 2

Variable	Frequency	Percent
Gender		
Male	99	70.2%
Female	42	29.8%
Ethnicity		
African American	15	10.6%
Caucasian/White	112	79.4%
Multiracial	3	2.1%
Other	11	7.8%
Military Standing		
Active Duty	16	11.3%
Retired	27	19.1%
Separated	93	66.0%
Reserves	5	3.5%
Military Branch		
Army	52	36.9%
Navy	31	22.0%
Air Force	27	19.1%
Marine Corp	11	7.8%
Other (e.g., Reserves or Guard)	10	7.1%
Multiple Branches	10	7.1%
Deployment Status		
Deployed	89	63.1%
Not Deployed	52	36.9%

Demographic Data Summary of Research Participants (n = 141)

Note. Variables that fell below the 5% cutoff were not reported.

Measures

A sorting question was used to determine the veteran status of the participant.

Participants who confirmed they had served or are currently serving with the U.S. military proceeded to the full survey. Those who indicated they were not a veteran were routed to the end of the survey. After determining that the participant was a veteran, demographic information was collected. Three self-report measures assessed symptoms of PTSD, the degree of the Extraversion personality characteristic, and level of Resilience. These self-report questionnaires included the PTSD Checklist for the *Diagnostic and Statistical Manual of Mental Disorders*-

Fifth Edition (PCL-5; Weathers et al., 2013), which was accompanied by measures to identify potentially traumatic events that participants have experienced (i.e., "Criterion A"), the Big Five Inventory (BFI; John & Srivastava, 1999), and the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003).

Table 3

Deployment Summary of Information (n = 89)

Variable	Frequency	Percent
Multiple Deployments		
Yes	49	55.1%
No	40	44.9%
Length of Deployment		
0 to 6 months	18	20.2%
6 months to 1 year	64	71.9%
Over 1 year	7	7.9%
Number of Deployments		
1 Time	40	44.9%
2 Times	17	19.1%
3 Times	14	15.7%
4 Times	9	10.1%
5 Times	3	3.4%
Over 5 Times	6	6.7%

Demographic Information

Participants responded to questions pertaining to demographic characteristics, such as Gender, current age, and rurality. Gender was determined by asking participants "which term best describes your Gender?" with the options of "male," "female," and "other" with a text box. Gender responses were coded as male = 0, female = 1, and other = 2. A slider within Qualtrics assessed for current age. This option permitted participants to drag their mouse across the screen until their numeric age was presented. Participants also reported their rurality, or the size of the area they spent most of their time growing up. Response options for rurality included rural

(50,000 people or less), urban (50,000 to 100,000 people), and metropolitan (100,000 people or more). Response options for rurality were coded as rural = 0, urban = 1, and metropolitan = 2.

Specific questions regarding their military service were also included. Military-specific questions provided information such as current military status (i.e., active duty, retired, or reserves), current military rank or military rank at the time of discharge (e.g., Private or Lieutenant), and Military Occupational Specialty (MOS; e.g., Infantry or Air Defense). MOS is common knowledge among military personnel, which also allowed these items to act as forms of validity checking.

Criterion A

As noted in Chapter II, the distinction between traumatic events and painful experiences is due in large part to the assumption that most people are capable of effectively coping with everyday stresses, whereas their adaptive coping responses are likely to be overwhelmed when faced with a traumatic event (Friedman, 2014). Painful experiences may include rejection or heartbreak. Exposure to a traumatic event, also known as Criterion A, is a requirement of a PTSD diagnosis (APA, 2013). Criterion A of a PTSD diagnosis is met when an individual is exposed to actual or threatened death, serious injury, or sexual violence (APA, 2013), which may include sexual assaults, acts of war, or motor vehicle accidents. A number of self-report questionnaires aided the researcher in identifying the types of traumatic events that participants experienced, as well as the index trauma, or the trauma causing the most distress. Following the completion of these questionnaires, participants endorsed whether they perceived any of the events as "traumatic," and then specified which event was "most traumatic" to them. Participants were encouraged to think about the most traumatic event when answering questions related to PTSD symptoms.

All participants. All participants reported whether they had been deployed. Depending on their response, Qualtrics routed participants to different measures meant to assess for potentially traumatic events experienced in their lifetimes. Deployment may have exposed participants to additional stressors, and thus indicated a need for additional assessments that did not apply to participants who had never been deployed. At the conclusion of Criterion A assessments, participants indicated whether they perceive any of their own life events as traumatic. They then identified the most traumatic event (i.e., index trauma), and were asked to keep the most traumatic event in mind as they completed the Posttraumatic Stress Disorder Checklist for the DSM-5 (PCL-5), a screening tool for PTSD symptom severity.

Participants who indicated deployment. Participants who reported a history of deployment answered questions regarding the average length of their deployments, the number of deployments, as well as whether they had ever taken part in combat missions. Participants also identified the types of stressors they experienced by completing various scales from the Deployment Risk and Resilience Inventory-2 (DRRI-2; Vogt, Smith, King, & King, 2012).

The DRRI (King, King, Vogt, Knight, & Samper, 2006) is a widely used tool for measuring risk and Resilience factors among military personnel who have been deployed (Vogt, Proctor, King, King, & Vasterling, 2008). It was developed based on military experiences of the 1990-1991 Gulf War (Vogt et al., 2012). Vogt and colleagues updated the DRRI in 2012 to more accurately reflect the changes in the nature of war, as well as the changes within the military population (Vogt et al., 2012). The biggest distinction between the Gulf War and post-9/11 conflicts is the range of stressors to which service members were likely exposed (Vogt et al., 2012). The Gulf War was a relatively brief military conflict with limited exposure to combat and high levels of concern regarding exposure to nuclear, biological, and chemical attacks (Ruzek,

Schnurr, Vasterling, & Friedman, 2011). In contrast, veterans of post-9/11 conflicts have been exposed to longer and more constant combat operations characterized by increased risk for exposure to insurgents (Ruzek et al., 2011). Insurgents are members of an organized resistance movement that use subversion, violence, and armed conflict to accomplish their goals (DoD, 2017). Given the differences in deployment-related stressors, it was important to create a tool that also encompasses stressors of contemporary warfare.

The DRRI-2 was normed on Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) veterans via a national mail survey (Vogt et al., 2012). The psychometric properties of the DRRI-2 were measured over several years with three key phases (Vogt et al., 2012). Phase I included a comprehensive literature review of the original DRRI scales, as well as information gleamed from OEF and OIF veterans. Phase II entailed DRRI and DRRI-2 survey completion by a national sample of male and female OEF/OIF veterans. The characteristics of the initial scales and items of the DRRI-2 were compared to the original DRRI. The third and final phase of the evaluation process involved administration of refined DRRI-2 scales to a second national sample of OEF/OIF veterans. These scores were used as a means of determining the psychometric properties of the finalized DRRI-2 scales (Vogt et al., 2012). The updates to the DRRI-2 resulted in 17 separate scales that address different but related psychosocial factors that may contribute to post-deployment well-being (Vogt et al., 2012).

According to Vogt and colleagues (2012), the distinct nature of the 17 DRRI-2 scales permit them to be administered separately or together, depending on the needs of the researcher. Each scale is summed to create a total score specific to that scale. The DRRI-2 and its 17 scales have been found to be psychometrically sound and efficient (Vogt et al., 2012). The current researcher utilized scales associated with pre-deployment life events, deployment-related

experiences, and post-deployment life events. Validity and reliability of individual DRRI-2 scales utilized in the current study are provided below.

Pre-deployment factors. Pre-deployment factors (Section A of the DRRI-2; Vogt et al., 2012) were examined by asking participants about prior stressors through the Predeployment Life Events Scale. The 18 dichotomous items asked participants to endorse traumatic events they experienced prior to deployment by checking "yes" (1) or "no" (0). Items addressed factors such as physical and sexual abuse, natural disasters, and witnessing someone being assaulted or killed (Vogt et al., 2012). Sample questions include "Before deployment someone close to me died" and "Before deployment I was physically punished by a parent or primary caregiver." Items are summed to create a total score, with scores ranging from 0 to 18. Higher scores indicate greater exposure to pre-deployment stressors. The Pre-deployment Life Events Scale was considered a composite variable because the items were based on distinct events that are not necessarily expected to covary (Vogt et al., 2012). As a result, the internal consistency was found to be slightly lower at .79 (Vogt et al., 2012).

Deployment factors. Four scales of the DRRI-2 were used to examine deploymentspecific factors: the Combat Experiences Scale, the Postbattle Experiences Scale, NBC Exposures Scale, and the Deployment Concerns Scale.

Combat experiences. The Combat Experiences Scale consisted of 17 items that examined experiences specific to combat exposure (Section D of the DRRI-2; Vogt et al., 2012). This scale refers only to objective events and circumstances and does not address subjective interpretations of the events or circumstances (Vogt et al., 2012). Using a 5-point Likert-type scale with response options ranging from 1 (*Never*) to 5 (*Daily or almost daily*), participants were asked to indicate the frequency of combat experiences that took place during deployment, such as friendly

fire, and being attacked or witnessing an attack (Vogt et al., 2012). Example items include "During deployment I went on combat or patrol missions" and "During deployment I was exposed to hostile incoming fire." Items are summed, with total scores ranging from 17 to 85, with higher scores indicating greater exposure to combat (Vogt et al., 2012). The Combat Experiences Scale was found to have a high internal consistency of .91 in a national sample of male and female OEF/OIF veterans (Vogt et al., 2012).

Postbattle experiences. The 13-item Postbattle Experiences Scale (Section E of the DRRI-2; Vogt et al., 2012) examines service members' exposure to the aftermath and consequences of combat/battle. Using a 6-point Likert scale, participants endorse the frequency of exposure to consequences of combat, such as handling human remains and coming in contact with prisoners of war. Example items include "During deployment I saw people begging for food" and "During deployment I saw the bodies of dead Americans or allies." Response options range from 1 (*Never*) to 6 (*Daily or almost daily*). Items are summed to generate a total score, with total scores ranging from 13 to 78. Higher scores indicate greater exposure to common consequences of warfare (Vogt et al., 2012). The Postbattle Experiences Scale was found to have a high internal consistency of .92 in a national sample of male and female OEF/OIF veterans (Vogt et al., 2012).

NBC exposure. The Exposure to Nuclear, Biological, and Chemical Agents Scale (Section F of the DRRI-2; Vogt et al., 2012) assesses exposure to a variety of nuclear, biological, and chemical (NBC) agents that the service member believes occurred while he/she served in a war zone. This scale is a 13-item measure that asks participants to indicate the NBCs they may have been exposed to on their most recent deployment. Example items include "While I was deployed, I was exposed to mustard gas or other blistering agents," and "When I was deployed, I was exposed to nuclear, biological, or chemical weapons." The response format is presented with polytomous items of 0 = No, 1 = Not Sure, and 2 = Yes. Scores are summed, with a possible range of 0 to 26, with higher scores indicating greater perceived exposure to NBCs (Vogt et al., 2012). The Exposure to Nuclear, Biological, and Chemical Agents Scale was considered a composite variable because the items were based on distinct events that are not necessarily expected to covary (Vogt et al., 2012). As a result, the internal consistency was found to be slightly lower than other DRRI-2 scales at .80 in a national sample of male and female OEF/OIF veterans (Vogt et al., 2012).

Deployment-related concerns. Perceived threat during deployment was assessed using the Deployment Concerns Scale (Section G of the DRRI-2; Vogt et al., 2012). The Deployment Concerns Scale is a 12-item measure that asks participants to rate the amount of danger they felt they were exposed to during combat using at 5-point Likert scale. Example items include "During deployment I was concerned that I would encounter an explosive device (for example, a roadside bomb, mine, or booby trap)" and "During deployment I was concerned about being trapped in the crossfire of rival factions." Response options ranged from 1 (*Strongly disagree*) to 5 (*Strongly agree*). Items are summed, with total scores ranging from 12 to 60. Higher scores indicate greater perceived threat during deployment (Vogt et al., 2012). The Deployment Concerns Scale was found to have high internal consistency of .91 in a national sample of male and female OEF/OIF veterans (Vogt et al., 2012).

Post-deployment factors. Post-deployment stressors were measured with the Postdeployment Life Events Scale (Section N of the DRRI-2; Vogt et al., 2012). This scale assesses whether service members have been exposed to stressful life events after returning from deployment. The events listed on the Post-deployment Life Events Scale include both general

stressful events that are unrelated to deployment (e.g., physical or sexual assault), as well as events or challenges associated with reintegration (e.g., financial strain or divorce). Example items include "Since returning home, I was robbed or had my home broken into," and "Since returning home, I have witnessed someone being seriously assaulted or killed." The response format is presented with dichotomous items of 0 = No, 1 = Yes. Scores are summed, with a possible range of 0 to 14, with higher scores indicating greater exposure to additional life stressors following deployment (Vogt et al., 2012). The Post-deployment Life Events Scale was considered a composite variable because the items were based on distinct events that are not necessarily expected to covary (Vogt et al., 2012). As a result, the internal consistency was found to be slightly lower at .70, when compared to other DRRI-2 scales.

Participants who denied deployment. Traumatic events that were experienced by military personnel who had not been deployed were identified through the Life Events Checklist for the DSM-5 (LEC-5; Weathers et al., 2015). The LEC was originally developed to accompany and precede the Clinician-Administered PTSD Scale (Gray, Litz, Hsu, & Lombardo, 2004). The LEC has been shown to have strong convergent validity with other measures assessing trauma exposure (Gray et al., 2004). Psychometric properties indicated that the LEC was adequate when it was administered as a separate assessment of exposure to traumatic events (Gray et al., 2004). When administered to a clinical sample of combat veterans, the LEC maintained strong convergent validity with other widely used assessments measuring trauma exposure, such as the PTSD Checklist, and the Mississippi Scale for Combat-Related PTSD (Gray et al., 2004). The LEC was also found to be a strong predictor of symptoms of PTSD (Gray et al., 2004). The LEC received minimal changes when it was updated to correspond with the DSM-5 (Weathers et al., 2013). The only two changes within the LEC were adding a "Part of my job" response category

and adjusting the question of whether someone has experienced a "sudden, unexpected death of someone close to you" to "Sudden accidental death" (Weathers et al., 2013). Due to the minimal revisions of the LEC, psychometric properties of the LEC-5 are not currently available, and few psychometric differences are expected (National Center for PTSD, 2019).

The LEC-5 is a brief, 17-item self-report measure that prompts participants to identify difficult or stressful situations they experienced throughout their lifetime (Weathers et al., 2013). Participants indicate the degree to which they were directly affected by the potentially traumatic events through six response options: (a) happened to you personally; (b) you witnessed it happen to someone else; (c) you learned about it happening to a close family member or close friend; (d) you were exposed to it as part of your job; (e) you are not sure; or (f) it does not apply to you.

The LEC-5 does not have formal scoring instructions, other than when identifying exposure to one or more of the traumatic events listed (National Center for PTSD, 2019). Participants are asked to indicate their level of exposure to potentially traumatic events that are included on a 6-point nominal scale, with the option of selecting multiple levels of exposure for the same traumatic event (Weathers et al., 2013). The LEC-5 only confirms the occurrence of a potentially traumatic event and does not produce a total score or composite score (Weathers et al., 2013).

PTSD Symptom severity

PTSD symptom severity was measured using the PTSD Checklist for the DSM-5 (PCL-5), developed by Weathers and colleagues (2013). The PCL-5 is one of the most commonly used measures for examining current symptoms of PTSD (Bovin et al., 2016). This tool was recently updated to reflect changes of the DSM-5 (Blevins, Weathers, Davis, Witte, & Domino, 2015; Bovin et al, 2016). The PCL-5 is a 20-item self-report measure that assesses current PTSD

symptoms based on diagnostic criteria from the DSM-5 (Weathers et al., 2013). Participants are asked to reflect on the symptoms experienced in the past month (e.g., "repeated, disturbing, and unwanted memories of the stressful event" and "trouble remembering parts of the stressful experience") in response to a "very stressful" event (Weathers et al., 2013). Participants rate their level of distress using a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). Scores can range from 0 to 80, with higher scores indicating greater PTSD symptom severity (Weathers et al., 2013).

Validation studies have found the PCL-5 to be a psychometrically sound measure that is both valid and reliable for assessing PTSD (Blevins et al., 2015; Bovin et al., 2016; Wortmann et al., 2016). The original validation study of the PCL-5, completed on a sample of undergraduate students, found internal consistency to be .94. Validation studies regarding veteran samples found PCL-5 internal consistency to be .95 in war veterans (Pietrzak et al., 2015), and .91 in a sample of treatment-seeking veterans (Wortmann et al., 2016). The measure has been validated on several veteran samples, with researchers finding an internal consistency of the PCL-5 is .96 (Bovin et al., 2016). Test-retest reliability, which was completed four weeks apart, in the veteran sample was .84 (Bovin et al., 2016). Collectively, these findings indicate that the PCL-5 is an accurate and reliable screener for symptoms of PTSD. From a validation study with a military sample, a cutoff score of 31-33 had a *sensitivity* of .88 and *specificity* of .69 (Bovin et al., 2016). For the purposes of the current study, a cutoff score in the PCL-5 was not used due to findings that Resilience often lowers PTSD symptom severity (Isaacs et al., 2017; Pietrzak & Cook, 2013).

Extraversion

The Big Five Inventory, developed by John and Srivastava (1999), determined the degree of Extraversion within participants. The BFI is a 44-item, self-report measure that assessed an individual's personality characteristics based on the Five Factor Model of personality, commonly known as the Big Five. The factors of the Big Five include Openness to new experiences, Conscientiousness, Agreeableness, Extraversion, and Neuroticism (John & Srivastava, 1999).

The Extraversion component of this measure asks participants how much they agree with statements regarding their sociable and warm natures (e.g., "I see myself as someone who is talkative"), as well as their levels of assertiveness, excitement-seeking (e.g., "I see myself as someone who is full of energy"), and positive emotional expression (John & Srivastava, 1999). Participants rate each question based on a five-point Likert scale ranging from 1 (*disagree strongly*) to 5 (*agree strongly*). The summation creates a total score. Extraversion is considered a continuous variable, with scores ranging from 8 to 40. Higher scores indicate greater levels of Extraversion, whereas lower scores suggest low levels of Extraversion (i.e., Introversion; John & Srivastava, 1999).

Validation studies have confirmed that the BFI is a sound and reliable measure to assess the Big Five traits (John et al., 2008). The reliabilities of the BFI scales range from .75 to .90 in U.S. and Canadian samples, with an average above .80. Test-retest reliability, completed three months apart, was found to range from .80 to .90; the mean was .85 (Rammstedt & John, 2007). Similarly, Hampson and Goldberg (2006) determined that Extraversion maintained a test-retest reliability of .79 over a 2.8-year interval.

Resilience

The Connor-Davidson Resilience Scale (Connor & Davidson, 2003) measured levels of Resilience. The CD-RISC is a 25-item self-report measure that aims to distinguish between levels of Resilience (Connor & Davidson, 2003). Example questions include "I am able to adapt when changes occur" and" Under pressure, I stay focused and think clearly." It is a widely used assessment that has been validated on a wide array of populations, such as a community sample, medical students, and a national random digit study (Connor et al., 2003). Items are rated using a 5-point Likert scale, ranging from 0 (*not true at all*) to 4 (*true nearly all the time*). Resilience is a continuous variable, as a total score can range from 0-100, with greater scores indicating more Resilience (Connor & Davidson, 2003). CD-RISC scores among veterans have varied across studies. For example, a mean CD-RISC score of 72.0 (SD = 18.4) was found in a sample of 497 post-9/11 veterans (Green et al., 2010). Tsai, Harpaz-Rotem, Pietrzak, and Southwick (2012) found a mean CD-RISC score of 59.6 (SD = 19.1) among OEF/OIF veterans with a PTSD diagnosis.

The CD-RISC is a well-validated measure for both clinical and general populations. Connor and Davidson (2003) examined the psychometric properties of the CD-RISC on six groups: a community sample, primary care outpatients, general psychiatric patients, clinical trial of generalized anxiety disorder, and two clinical trials of PTSD. Cronbach's alpha was .89 in a non-help-seeking group, indicating good internal consistency. For the non-help-seeking group, item-total correlations ranged from .3 to .7 (Connor & Davidson, 2003). Test-retest validity was .87 for a clinical sample that consisted of individuals with PTSD (Connor & Davidson, 2003). Johnson and colleagues (2011) found the internal consistency of the CD-RISC to be strong at .91 and .95 in a sample of active duty and reserve military service members (N = 870). The total

participants were split into approximately two equal groups, as the purpose of Johnson et al.'s (2011) study was to validate a new measure of stress response, and they required comparison groups.

Collectively, these findings indicate that the CD-RISC is psychometrically sound, with good internal consistency and test-retest reliability. The CD-RISC has also been administered to a number of diverse populations (Connor & Davidson, 2003; Petros et al., 2014), including the military (Green et al., 2010; Johnson et al., 2011). Although the CD-RISC was originally reported to have five factors (i.e., personal competence, trust/tolerance/strengthening effects of stress, acceptance of change and secure relationships, control, and spiritual influences), Davidson and Connor (2017) noted that factor structure and mean scores have varied based on population and setting. Therefore, they recommended researchers not separate scores based on a factor structure (Davidson & Connor, 2017).

Procedure

Upon approval from Radford University's Institutional Review Board, active duty and retired U.S. military personnel were recruited using MTurk. MTurk is an online platform that assists researchers in accessing participants who are willing to take part in online research across the world (Mason & Suri, 2012). Willing participants were paid a nominal fee of \$1.50 for completing the current survey, which took an estimated 20-40 minutes. This payment amount was consistent with current literature that suggests paying participants approximately \$0.05 per minute (Buhrmester, Kwang, & Gosling, 2011).

Informed Consent

The current study received approval from Radford University's Institutional Review Board. The informed consent page preceded the survey, and provided participants with a

summary of the study, as well as how the collected data would be used. No identifying information was collected. Participants were informed of the risks and benefits of participating, with no more risk than they encounter in daily life. Additionally, participants were notified that they may refrain from answering questions that bring about discomfort or discontinue their participation at any time without penalty. Because research participants cannot be penalized for choosing to discontinue at any point or not answer questions (APA Ethics Code, 2017), all participants were able to receive a randomized MTurk code, which is discussed in further detail later in this chapter. Only participants who did not meet the research requirement of being a U.S. military veteran were not compensated.

Informed consent also familiarized participants with the general purpose of the study, as well as necessary qualifications to participate. Necessary qualifications included being at least 18 years of age and having served, or currently serving with the U.S. armed forces. Participants were also reminded of MTurk's policies and agreements regarding the work they provide. Per MTurk's policies, by registering for and using the site, participants are agreeing that they are at least 18 years of age and have the authority to enter into an agreement with MTurk, and acknowledge that "if the Services do not meet the Requester" reasonable satisfaction, the Requester may reject the Services and repost the specific request" (Amazon Mechanical Turk Participation Agreement, 2014).

Good and useful data requires participants to pay attention to questions (Berinsky, Margolis, & Sances, 2014). In order to ensure participants were appropriately attending to items, an "Instructional Manipulation Check," or screener, was administered (Berinsky et al., 2014) approximately halfway through the survey. A screener works by prompting participants to demonstrate they are paying attention by following precise instructions when responding to an

item (Berinsky et al., 2014). Participants were notified in the informed consent of the need for appropriate attention to be given to all items and were also notified of the potential for screener items to secure compliance with this request. There was one screener question approximately halfway through the survey. The attention check item was placed within the BFI as the BFI was approximately halfway through the survey. For the attention check question, participants were asked to endorse "Disagree a little." If participants failed to follow the instructions for this item, it was assumed they were not paying adequate attention to the items and survey. Therefore, they were routed to a page that displayed the following information:

Thank you for taking our survey. As stated in the Consent Form, there are certain requirements that must be met in order to participate and receive compensation. You are seeing this message because you are not eligible to complete the study and receive compensation. This may be due to any of the following reasons:

- You stated you are not currently, nor have you ever served for the U.S. armed forces.
- You do not agree to participate.
- You are under 18 years old.
- English may not be your first language.
- You failed to answer a question that checked to see if you read and understood the instructions.

This follows Amazon Mechanical Turk policy, which states that "a Requester may reject your work if the HIT was not completed correctly or the instructions were not followed." You may close this window or use your explorer bar to navigate back to the Amazon Mechanical Turk site. The Consent Form from the beginning of the study is below if you would like to review it:

[Consent Form followed...]

Participant Recruitment through Amazon Mechanical Turk

Participants consisted of 141 active duty/retired U.S. military personnel recruited from across the U.S. through MTurk (Mason & Suri, 2012). MTurk is an online labor market that was created by Amazon in 2005 (Mason & Suri, 2012; Paolacci & Chandler, 2014). It currently acts as a source of participant recruitment for the purposes of experimental research (Paolacci, Chandler, & Ipeirotis, 2010). MTurk aids "requesters" (i.e., researchers) in employing "workers" (i.e., participants) for the completion of computerized tasks (Paolacci & Chandler, 2014), such as completing online surveys. These computerized tasks are known as Human Intelligence Tasks within MTurk (Mason & Suri, 2012; Paolacci & Chandler, 2014). An overview of MTurk and its components is provided.

A Brief Review of MTurk. "Crowdsourcing is defined as a job that is outsourced to an undefined group of people in the form of an open call" (Mason & Suri, 2012, p. 1). MTurk is considered a form of crowdsourcing because it is an online labor market where people are able to post jobs (Mason & Suri, 2012). Those interested, known as workers, are able to complete the jobs for payment (Mason & Suri, 2012). MTurk provides a wide and targeted approach to participant recruitment (Mason & Suri, 2012) by allowing access to a pool of diverse workers (Paolacci & Chandler, 2014).

Requesters are the "employers," meaning they post jobs to be completed online through MTurk (Mason & Suri, 2012). Workers, or the "employees," choose to accept those jobs, and an agreement for services between the requester and worker is established. The requester can

develop and post almost any task that can be completed on a computer, such as surveys, experiments, and writing (Buhrmester et al., 2011). Workers then browse available tasks, and choose whether to participate (Buhrmester et al., 2011). In other words, researchers create tasks that they pay participants to complete.

Human Intelligence Tasks (HITs). HITs are computerized tasks that workers can choose to complete (Mason & Suri, 2012). HITs tend to be brief, typically accomplished within minutes, with workers being paid cents compared to dollars (Paolacci & Chandler, 2014). Computerized tasks, or jobs, include, but are not limited to, transcribing text, learning a skill, and completing an online survey (Paolacci & Chandler, 2014). Therefore, the survey of the current study is considered a HIT. One study or survey is considered a singular HIT (Mason & Suri, 2012).

All available HITs, or jobs, on MTurk are posted in a centralized location that permits works to easily browse, search, and choose between available jobs (Mason & Suri, 2012). Each HIT is displayed with the following information: title of the HIT, the requestor who created the HIT, the wage being offered, the number of available HITs for that job, length of allotted time for HIT completion, and when the HIT expires (Mason & Suri, 2012). Workers are able to view a more detailed description of the HIT by clicking on a link. They may also view keywords and required qualifications associated with the HIT (Mason & Suri, 2012). The requester decides this information, as well as any qualifications, when creating the HIT.

The work/job submitted by a worker is called an "assignment" (Mason & Suri, 2012). For the current study, the job is a survey, so each "assignment" is the individual responses for the survey by each participant. In other words, one completed survey is equal to one assignment. When browsing HITs, workers are able to sort available jobs, depending on their own preference

(Mason & Suri, 2012). Common sorting criteria include how recently the HIT was created, HIT expiration, and length of time allotted for the HIT (Mason & Suri, 2012).

Requesters are able to construct HITs in two different ways, either as internal HITs or external HITs (Mason & Suri, 2012). An internal HIT is a format that uses templates provided by Amazon, in which the task and all collected data are completed on Amazon servers (Mason & Suri, 2012). In external HITs, the task and data are stored on the requester's server, with workers gaining access to the requester's server through a frame (i.e., URL link) on the MTurk website (Mason & Suri, 2012).

The HIT process begins with its creation, which is completed by the requester (Mason & Suri, 2012). When setting up the HIT, the requester designates the preferred number of assignments, or participant count (Mason & Suri, 2012). Typically, one job is completed by one worker (Mason & Suri, 2012). When the requester (i.e., researcher) is prepared for the HIT to be worked on, the HIT is posted to MTurk (Mason & Suri, 2012). Requesters can post as many HITs as they wish, permitting they have an appropriate balance on the requester's Amazon Payments Account to cover both the payment to workers and fees to Amazon (Mason & Suri, 2012). Once the HIT is posted to MTurk, workers are able to view and elect to accept the task (Mason & Suri, 2012). When workers complete the task (i.e., survey) and submit the assignment (i.e., their responses to the survey), the requester reviews their work and decides whether to accept or reject the submission. When the work is accepted by the requester, the base pay is transferred from the requester's account and placed in the worker's account (Mason & Suri, 2012).

The HIT is considered complete and is subsequently removed from the MTurk list of available jobs when either of two conditions are met: 1) all of the assignments for the HIT have been submitted, or 2) the expiration date of the HIT has been reached (Mason & Suri, 2012).

Price of HITs. In July 2017, Amazon updated its pricing (MTurk, 2017). The price the requester pays for each HIT is comprised of both the amount owed to the worker, as well as Amazon's service fee. The amount paid to the worker is entirely up to the requester (MTurk, 2017). Mason and Suri (2012) recommended paying workers \$0.03-0.05 per minute for their time, as their brief study of survey completion time based on price demonstrated comparable results. The Amazon's service fee is dependent upon the amount paid to workers and the number of assignments. There is a 20% fee on the amount paid to the worker for up to nine assignments (i.e., participants). HITs with 10 or more assignments are charged an additional 20% service fee based on the worker payment amount (MTurk, 2017). Amazon charges an additional fee if the requester would like to utilize a more targeted recruitment approach (MTurk, 2017).

Buhrmester and colleagues (2011) examined the effect of compensation amount and data quality. Their findings suggested that low compensations rates do not appear to negatively affect data quality. Compensation only appeared to influence data collection speed, meaning studies with lower compensation took longer to reach their participant count.

Quality Assurance with Data from MTurk. In general, MTurk provides access to a large and diverse pool of workers (Paolacci & Chandler, 2014). However, the workers are not representative of the population from which they are drawn (Berinsky, Huber, & Lenz, 2012). MTurk workers tend to be younger, roughly 30 years of age, overeducated, underemployed, and less religious than the general population (Berinsky et al., 2012; Paolacci, Chandler, & Ipeirotis, 2010).

Buhrmester and colleagues (2011) measured the psychometric properties of MTurk using a sample of 116 MTurk participants. The participants in their study completed measures on political conservatism and liberalness, global self-esteem, social dominance, and personality. Sixty percent of their participants completed a follow-up survey that was administered three weeks later. They found the test-retest reliability to be high, ranging from .80 to .94, depending on the construct being examined (Buhrmester et al., 2011). Although they had a relatively small sample size, these findings suggest that self-reports assessed through MTurk have test-retest reliability that is comparable to those of other traditional samples, such as college and community samples (Buhrmester et al., 2011). When compared to participants who have been recruited through more traditional methods, MTurk workers display the same cognitive biases, logical fallacies, and behavior in economic games (Goodman et al., 2013; Paolacci et al., 2010).

Monitoring attentiveness of web participants is challenging, and the conscientiousness of those participants is a logical concern. Studies that have implemented attention-sensitive tasks on MTurk participants found minor differences when compared to other participants (Berinsky et al., 2014; Paolacci et al., 2010). However, recent studies have suggested the use of attention check questions or Instructional Manipulation Checks to increase the quality of data collected on MTurk. The main objective of such questions is to screen out respondents who are not appropriately attending to items or instructions (Berinsky et al., 2014; Peer, Vesgerau, & Acquisti, 2014). Peer et al. (2014) noted that the use of attention check questions is also useful to researchers who are unfamiliar with participants' motivation, reading capabilities, and participants' ability to understand and comply with research instructions. However, MTurk provides some information regarding the reliability of its workers, based on participants' past performance (i.e., "reputation"). The workers' reputation is provided in the form of approval

rates (Peer et al., 2014). As noted previously, requesters approve or reject a worker's submission. These approvals and rejections influence a worker's reputation. To protect the privacy of individual workers, MTurk does not disclose personal approval ratings to requesters. However, requesters are able to set a minimum qualification for workers to be able to view, access, and complete a HIT (Peer et al., 2014). The purpose of such qualifications is intended to ensure that collected responses are credible and reliable.

Workers also appear to be honest when completing self-report measures. Shapiro, Chandler, and Mueller (2013) found that when MTurk participants were asked to share their location, their reports consistently matched their IP addresses. Similarly, Mason and Suri (2012) found consistency in workers' demographic characteristics over a 6-month time period. Indirect comparisons of MTurk workers and college students do not support the notion that MTurk workers are more likely to cheat (Suri et al., 2011). These findings indicate that MTurk workers are likely to be diligent, attentive, and honest in their reporting.

For tasks that rely on subjective data, as the current study does, researchers determined there is no relationship between pay rates and quality (Buhrmester et al., 2011). With subjective data, or responses that are based on individual experience, true responses logically require no more effort than false responses (Paolacci & Chandler, 2014). Goodman and colleagues (2013) suggested that, instead, workers' understanding of the task influences responses and accuracy. Researchers examining the behavior of MTurk workers found that workers were willing to complete tasks for as little as \$1.38 per hour, suggesting that payments do not appear to affect data quality (Buhrmester et al., 2011).

Ethical Considerations when Using MTurk. As with any research project involving human subjects, researchers must be diligent in conducting ethical research (APA Ethics Code, 2017).

Informed consent and confidentiality. When approval is needed from an institutional review board (IRB), psychologists provide accurate information regarding their research proposal to obtain IRB approval prior to collecting data (APA Ethics Code, 2017). In informed consent, participants are informed of the purpose, expectations, duration, and procedures of the study (APA Ethics Code, 2017). They are also informed they may discontinue their participation at any time without penalty (APA Ethics Code, 2017). Participants must also be informed of any consequences associated with declining or withdrawing, any risks or benefits, and incentives for participation (APA Ethics Code, 2017). Identifying information is not to be collected, and care is to be taken to protect the privacy and confidentiality of participants (APA Ethics Code, 2017). Steps must be taken to also protect the collected data (APA Ethics Code, 2017).

MTurk addresses some of these stipulations by providing participants with a preview page of each HIT (Mason & Suri, 2012). Requesters are encouraged to use this page to outline the purpose of the study, any risks and benefits associated with the research, and a means of contacting the researcher should problems occur during the study (Mason & Suri, 2012). These steps are meant to assist the worker in making an informed decision on whether to participate in a HIT.

Regarding confidentiality and privacy, the name of the researcher or institution will be released when a HIT is posted (Mason & Suri, 2012). In contrast, the workers commonly remain anonymous on MTurk, as Worker IDs are anonymized strings of numbers that do not contain any identifiable information (Mason & Suri, 2012). Privacy concerns with storing data on MTurk

have been raised, as Amazon has access to any data stored on their server (Mason & Suri, 2012). Although Amazon states it will not access the data, it may be a concern to participants and researchers (Mason & Suri, 2012). Therefore, storing data on an external server (i.e., external HIT) offers a number of advantages. For example, storing data on an external server, such as Qualtrics, eliminates the concern of Amazon accessing the data because Amazon will never have access to it (Mason & Suri, 2012).

Compensation and incentives. A common concern about the ethical nature of using MTurk surrounds the low wages workers earn (Mason & Suri, 2012). According to Mason and Suri (2012), from a legal standpoint, workers are considered "independent contractors," making them fall outside the minimum wage laws. Workers are viewed as independent contractors because there is an established agreement between the requester and the worker for the worker to complete the job based at the agreed wage separate from the time required to complete the task (Mason & Suri, 2012). The low wages of MTurk rarely meet the IRS threshold requiring them to submit their earnings to the IRS (Mason & Suri, 2012). However, reporting their earnings to the IRS is the worker's responsibility.

From an employee (e.g., worker) standpoint, arguments can be made against the low wage (Mason & Suri, 2012). However, research suggests that workers are intrinsically (e.g., "tasks are fun") and extrinsically (e.g., extra source of income) motivated to complete the HITs for which they sign up (Paolacci et al., 2010). According to Mason and Suri (2012), most workers do not rely on earnings from MTurk for their necessities. Workers are notified of the wage and expected time frame through several means, such as the description of the study (Mason & Suri, 2012) and informed consent (APA Ethics Code, 2017). Workers also determine

their own working conditions and hours (Mason & Suri, 2012). Ultimately, it is the worker's choice to engage in the contract (Mason & Suri, 2012).

Safety and debriefing. Just as with traditional studies, it is important that workers understand the purpose of the study and are reminded of methods to contact the primary researcher in the event of questions or complaints (Mason & Suri, 2012). Debriefing participants is also imperative if deception is used (APA Ethics Code, 2017). There is no way for MTurk to prevent requesters from using deception (Mason & Suri, 2012). To mitigate worries regarding deception, Mason and Suri (2012) suggested guaranteeing to workers that they will never be deceived by the researcher's experiment by making a clear statement that no deception is occurring within the informed consent. This method also promotes a level of trust between the requester and worker and was used in the current study.

MTurk and the Current Study

To reduce the likelihood of having several non-veteran participants choose to complete the present HIT (i.e., the online survey), the current researcher chose to set an additional qualification for participation: military experience. The addition of the military experience qualification required an additional \$0.30 fee per assignment. The HIT for the current study permitted up to 175 assignments (i.e., participants), with an expiration date of one week from the first date the survey was posted. Requesters are able to post a single HIT as many times as they like (Mason & Suri, 2012). Because 175 participants were not recruited within one week, the survey/HIT was reposted to MTurk. HIT qualifications and additional qualifications implemented for the current study are explained in more detail later in this chapter. The survey and all collected data were stored on an external server, Qualtrics.

Compensation and Incentives. The current survey took approximately 15-30 minutes to complete. Given Buhrmester et al.'s (2011) findings that compensation has little effect on participation rates, the current researcher elected to pay participants \$0.05 per minute. Taking the highest estimated completion time, 30 minutes, payment equated to \$1.50 per participant. At the conclusion of the study, participants were also given the option of entering into a random drawing for a \$25 Amazon gift card. To ensure email addresses were not connected with the collected data in any way, those participants who wished to enter the random drawing were taken to a separate Qualtrics survey to enter their email address.

Recruitment Process. Participants were recruited using the crowdsourcing platform MTurk. Within MTurk, the researcher (i.e., "requester;" Mason & Suri, 2012) may specify additional qualifications, which aims to reduce the risk of poor data collection. The specific qualifications in the current study are as follows: (1) 18 years of age or older, (2) military experience, (3) HIT approval rate greater than or equal to 95, (4) number of HITs approved greater than or equal to 100, and (5) worker location within the U.S.

To consent to a study, participants must be 18 years of age or older (APA Ethics Code, 2017). MTurk also requires all workers to be 18 years of age or older (Mason & Suri, 2012). As noted, workers choose HITs to perform from a large list of available and alternative HITs (Paolacci & Chandler, 2014). All workers may not be suitable to participate in every HIT, and requesters are allowed to require workers to meet specific qualifications (Paolacci & Chandler, 2014). Because the current study examined PTSD symptom severity in a military sample, participants were required to have prior or current military experience with the U.S. military.

The HIT approval rate ensures that the assignments completed by a worker have been accepted by requesters (Mason & Suri, 2012), which will assist the researcher in obtaining

quality data. Low approval rates suggest several rejections of workers' jobs, which may have occurred for a variety of reasons (Goodman & Paolacci, 2017). The number of HITs approved indicates a participant's (i.e., "worker;" Mason & Suri, 2012) experience. This qualification is believed to deter participants who will not accurately and appropriately attend to items, as well as help researchers to meet their objectives by recruiting participants who have consistently provided reliable and credible responses in past surveys (Peer et al., 2014). The current study required participants to have a 95% HIT approval rate.

Participants were also required to be residing within the U.S. to reduce the likelihood of individuals from other countries, or military service members from other countries, completing the survey. Additionally, requiring the worker to be located within the U.S. reduced the likelihood of individuals who spoke other languages, and were thus unfamiliar with American verbiage and phrasing, from taking part in the study. The measures in the current study were developed on U.S. samples, and thus, from a Western perspective (Heppner, 2006). In the English language, there tends to be nuances that are not consistent across languages or cultures (Heppner, 2006). Therefore, precautions were taken to maintain the integrity of the data collected.

Once IRB approval was obtained, the current researcher activated a HIT with the qualifications listed previously. The activation posted the HIT, entitled "PTSD in the Military," to the MTurk website. The keywords of "survey, military, research, academic study, demographics" accompanied the MTurk posting to provide additional information to workers (i.e., participants) regarding the nature of the study. A more detailed description of their role in the research was also provided as "Your responses will help identify potential protective factors for PTSD in the military." When the current survey was posted to MTurk, only participants who

met the above qualifications were able to see the listing, and could choose to accept the study (i.e., "task;" Mason & Suri, 2012). The HIT listing also displayed the wage being offered (\$1.20 for the current study), who the requester (i.e., current researcher) is, how much time the task was expected to take (i.e., 30-45 minutes), the allotted number of HITs (i.e., 175), and when the HIT expired (i.e., two weeks after the HIT was posted) (Mason & Suri, 2012). Clicking on a link attached to the HIT gave participants a more detailed description of the study, the keywords, and the required qualifications (Mason & Suri, 2012).

When participants chose to accept the task, they were asked to click on a link that took them to an external site, Qualtrics, where the survey was stored. Storing the survey on an external site, such as Qualtrics, provided a number of advantages. For example, the data is never made available to Amazon (Mason & Suri, 2012) or the requester (Paolacci et al., 2010), which ensured responses were never linked to the worker's account or identity. Qualtrics also provided an extra level of protection to the data by encrypting it.

Full Survey

The full battery/survey consisted of 214 questions. Twelve items assessed demographic characteristics of participants. Twenty items comprised the PCL-5, the BFI encompassed 44 items, and 25 items made up the CD-RISC. Questions that determined the types of traumatic events (i.e., Criterion A) each participant had experienced ranged from 17 to 87, with those who had been deployed answering additional questions specific to their deployment experience. Following indication of informed consent by clicking a red arrow at the bottom right of the screen, and prior to entering the full survey, all participants confirmed that they have served, or currently are serving in the U.S. military. If participants indicated they never served for the U.S.

military, they were taken to a page that informed them they did not meet the necessary qualifications to participate in the study.

A resource page containing contact information for several community and national services for veterans preceded and succeeded the survey. Participants were informed that scores on any section of the survey do not indicate they have a particular diagnosis. Participants were encouraged to contact a licensed medical or mental health professional should they have concerns regarding their physical or mental well-being. The resource page provided a list of nationally available mental health resources for service members concerned about their symptoms. Contact information and/or web address information was provided for the following services: the Veterans' crisis line, veteran healthcare, a web address to assist with locating veteran hospitals and clinics, as well as information for free veteran services that are available nationwide.

Upon completion of the survey, participants were given a random code that was generated by Qualtrics. Participants copied their individual random code into MTurk, which acted as a form of verification that they completed the survey. When approving HITS in MTurk, the current researcher was able to verify that the code each participant matched the random codes Qualtrics generated. Once participation was verified, the current researcher then approved payment. The HIT was removed from MTurk's available jobs when 175 workers had submitted their survey responses. The data was then downloaded, cleaned, and analyzed.

Analysis

For this study, a cross-sectional survey design was used. A mediation model through the application of multiple regression examined the impact of the relationship between Extraversion
and PTSD symptom severity, as well as Resilience and PTSD symptom severity. Gender differences were also examined through pairwise comparisons.

PTSD symptom severity was the outcome variable, and Resilience was the predictor variable. A mediator is the variable that is believed to explain the relationship between the predictor and outcome variable (Frazier, Tix, & Barron, 2004). A mediator aims to determine "how" or "why" one variable predicts/causes the outcome variable (Frazier et al., 2004). For the current study, Extraversion was examined as a variable that mediates the relationship between Resilience and PTSD symptom severity. There are four steps that need to be completed in order to determine whether a variable (i.e., Extraversion) mediates the relationship between the predictor variable (i.e., Resilience) and the outcome variable (i.e., PTSD symptom severity; Frazier et al., 2004). Using multiple regression is the most common method of examining a mediational model (Frazier et al., 2004).

Step one was to prove that a significant relationship existed between the predictor variable and the outcome variable, also known as "Path c" (Frazier et al., 2004). There is strong evidence to indicate a significant relationship between Resilience and PTSD symptom severity. The relationship between the predictor (i.e., Resilience) and the outcome variable (i.e., PTSD symptom severity) was tested by regressing the outcome variable on the predictor variable.

Step two is to demonstrate the strength of the relationship between the predictor variable and the mediator, known as "Path a" (Frazier et al., 2004). In this step, the mediator (i.e., Extraversion) is regressed on the predictor variable (i.e., PTSD symptom severity; Frazier et al., 2004).

Step three is to show the strength of the relationship between the mediator and the outcome variable, also known as "Path b" (Frazier et al., 2004). It was estimated that

Extraversion controlled for the effects of Resilience on PTSD symptom severity. This was accomplished by regressing the PTSD symptom severity on both Extraversion and Resilience, which provides a test of whether Resilience is related to PTSD symptom severity, as well as an estimate of the relationship between Extraversion and PTSD symptom severity, when controlling for Extraversion.

The fourth and final step of testing mediation is to show how the strength of the relationship between the predictor and outcome variable has changed when the mediator variable is added into the model (Frazier et al., 2004). This path is known as "Path c" and is compared to the original Path c. If Extraversion completely mediates, or explains, the relationship between Resilience and PTSD symptom severity, the relationship between Resilience and PTSD symptom severity would not differ from zero after Extraversion is added into the model. Complete mediation would mean that Extraversion fully accounts for the relationship between Resilience and PTSD symptom severity. If Extraversion is a partial mediator, the relationship between Resilience and PTSD symptom severity will be significantly smaller when Extraversion is added in the model, but will still be larger than zero (Frazier et al., 2004). The PROCESS application was utilized to implement bootstrapping methods to test the significance of the mediator (i.e., Extraversion).

The current researcher hypothesized that a relationship existed between Resilience and PTSD symptom severity that was mediated by Extraversion. More specifically, military service members with high scores of Extraversion were expected to have lower PTSD symptom severity compared to those with low Extraversion. Higher scores of Resilience were expected to predict lower PTSD symptom severity, compared to lower scores of Resilience. Descriptive statistics

were used to examine Gender differences for Extraversion, Resilience, and PTSD symptom severity.

Summary

The present study examined protective factors for PTSD symptom severity, Extraversion and Resilience, through the application of the COR theory. PTSD symptom severity was obtained through the PCL-5. Levels of Extraversion were attained through the BFI, and Resilience levels were found through the CD-RISC. Collection of data using the MTurk system provided a number of advantages to the current study: 1) the online platform provided access to a wide and diverse subject pool for minimal cost (Mason & Suri, 2012), 2) targeted military participants through specified qualifications (Amazon, 2017), and 3) data that is obtained quickly from a participant pool that has been found to be diligent and honest (Shapiro et al., 2013).

Mason and Suri (2012) recommend paying participants \$0.03-0.05 per minute of the projected survey time. Endorsing deployment experience prompted veterans for additional information specific to their deployment, thus, questions assessing for exposure to traumatic events (i.e., Criterion A for PTSD diagnostic criteria) differed by deployment involvement. The differing Criterion A measures based on deployment status led to a wider range of completion time among participants. The current study took participants 15-30 minutes to complete; therefore, the current research paid participants \$1.50.

A mediation model examined the relationship between Extraversion and Resilience, and their amount of variance on PTSD symptom severity. Descriptive statistics were used to identify Gender differences for each of the variables. The results of the study provided valuable information regarding the development of PTSD in military service members.

CHAPTER IV

RESULTS

Descriptive statistics were used to evaluate the research questions and test the hypotheses. Data from 141 respondents were examined for completeness using SPSS 25.0. Alpha of p = .05 was used to determine statistical significance for all analyses. The hypotheses for the current study are outlined below. The current chapter provides information regarding results from the current study. Information for participants who indicated deployment will be presented first, followed by information for participants who denied deployment.

H₁: A relationship exists between Extraversion, Resilience, and the amount of variance in PTSD symptom severity among military personnel.

H_{1a}: A relationship exists between Resilience and PTSD symptom severity.

H_{1b}: A relationship exists between Extraversion and Resilience.

H_{1c}: A relationship exists between Extraversion and PTSD symptom severity.

 H_{1d} : Extraversion explains the relationship between Resilience and PTSD symptom severity.

H₂: Gender differences will exist for PTSD symptom severity.

H₃: Gender differences will exist for scores of Extraversion.

H₄: Gender differences will exist for scores of Resilience.

Deployed Personnel

Scores and symptom severity for participants varied based upon deployment status, as well as Gender. A total of 90 participants endorsed deployment. On average, female service members who were deployed (M = 32.22; SD = 20.87) had higher rates of PTSD compared to their male counterparts (M = 21.35; SD = 19.10). Extraversion scores were similar among male

and female service members who were deployed, with men having an average Extraversion score of 23.99 (SD = 8.48) and women having an average Extraversion score of 24.44 (SD = 7.05). On average, men who were deployed reported higher rates of Resilience (M = 68.94; SD = 17.86) compared to women who were deployed (M = 66.97; SD = 14.23). Table 4 presents a summary of participant scores based on the respective variable for participants who indicated deployment. Table 4

Variable	Range	Mean	SD
PTSD Symptom severity			
Male	0-69	21.35	19.10
Female	0-66	32.00	21.25
Extraversion			
Male	8-40	23.99	8.48
Female	12-37	24.46	7.19
Resilience			
Male	24-100	68.94	17.86
Female	18-88	66.28	14.16

Variable Score Information for Deployed Service Members Summary of Information (n = 89)

For those who were deployed, the most common stressful and/or traumatic event prior to deployment was "someone close to me experienced a serious illness, injury, or mental health problem" (62.9%), followed by dangerous military duties (46.1%). Additional stressful and/or traumatic events that participants endorsed prior to deployment included "someone close to me dying" (42.7%), physical punishment by a parent/primary caregiver (31.5%), and unwanted sexual experience in either childhood or adulthood (42.7%). Table 5 presents information regarding exposure to pre-deployment stressful and/or traumatic events.

Table 5

Pre-deployment Traumatic Event Information for Deployed Service Member, Summary of

Information (n = 89)

Event	Frequency	Percent
Someone close to me died	38	42.7%
Divorce or left by significant other	20	22.5%
Robbery	10	11.2%
Saw/heard physical fighting between parents/caregivers	29	32.6%
Physical punishment by parent/caregiver	28	31.5%
Unwanted sexual activity (before age 18)	23	25.8%
Unwanted sexual activity (age 18 or older)	15	16.9%
Natural disaster/fire	25	28.1%
Someone close to me experienced serious illness, injury,	56	62.9%
or mental health problem		
Personally witnessed someone being seriously assaulted	22	24.7%
or killed		
Lost my job or had serious trouble finding a job	15	16.9%
Emotionally mistreated	30	33.7%
Serious financial problems	31	34.8%
Serious physical or mental health problems	18	20.2%
Dangerous military duties	41	46.1%
Seriously physically injured by another person (before	11	12.4%
age 18)		
Seriously physically injured by another person (age 18	9	10.1%
or older)		
Stressful legal problem(s)	16	18.0%

Exposure to deployment-specific stressors were also examined. Most participants who had been deployed reported being personally injured in a combat-related incident (85.4%) and/or participation in hand-to-hand combat (89.9%). Other common stressful and/or traumatic events identified by participants included personally witnessing civilians being seriously wounded or killed (70.8%), taking part in an assault on entrenched or fortified positions (70.8%), being part of an artillery unit that was fired upon by enemy combatants (68.5%), and/or exposure to "friendly" fire (80.9%). Several participants also endorsed exposure to nuclear, biological, or chemical (NBC) agents. Most participants reported exposure to the NBC agent smoke or other

air pollutants (80.9%), as well as exposure to fumes or exhaust from heaters or generators (67.5%). Most (n = 79; 88.8%) reported receipt of preventative vaccinations by injection. Several (37.1%) reported concerns that their health might suffer due to exposure to NBC agents. The most common deployment-related concerns endorsed by participants included concerns of exposure to depleted uranium in munitions (58.4%), concerns of being trapped in the crossfire of rival factions (55.1%), and fears of being taken hostage (51.7%). Table 6 outlines exposure to stressful and/or traumatic events during deployment, which includes combat experiences, postbattle experiences and exposure to NBC agents.

Table 6

Deployment-Related Traumatic Event Information for Deployed Service Member, Summary of

Information (n = 89)

Event	Frequency	Percent
Combat Experiences		
Participation in combat patrols or missions	43	48.3%
Took part in an assault on entrenched or fortified positions	63	70.8%
that involved naval and/or land forces		
Witnessed someone from my unit or an ally unit being	50	56.2%
seriously wounded or killed		
Encountered land or water mines, booby traps, or roadside	57	64.0%
bombs		
Exposed to hostile incoming fire	39	43.8%
Exposed to "friendly" fire	72	80.9%
Part of a convoy that was attacked	53	59.6%
Part of an artillery unit that was fired upon by enemy	61	68.5%
combatants		
Personally witnessed enemy combatants being seriously	50	56.2%
wounded or killed		
Personally witnessed civilians being seriously wounded or	63	70.8%
killed		
Personally injured in combat-related incident	76	85.4%
Fired my weapon at an enemy combatant	59	66.3%
Think I wounded or killed someone during combat operations	61	68.5%
Involved in searching or clearing homes, buildings, etc.	74	83.1%
Participated in hand-to-hand combat	80	89.9%

Involved in searching and/or disarming potential enemy	60	67.4%
combatants		
Post-battle Experiences		
Saw people begging for food	29	32.6%
Saw refugees who had lost their homes or belongings	42	47.2%
Observed homes or communities that had been destroyed	34	38.2%
Took care of injured or dying people	57	64.0%
Saw civilians after they had been severely wounded or	48	53.9%
disfigured		
Saw Americans or allies after they had been severely	41	46.1%
wounded		
Saw bodies of dead enemy combatants	49	55.1%
Saw the bodies of dead Americans or allies	49	55.1%
Saw the bodies of dead civilians	53	59.6%
Interacted with detainees or P.O.W.'s	62	69.7%
Exposed to sight, sound, or smell of dead or dying animals	45	50.6%
Involved in handling human remains	61	68.5%
Exposure to NBC Agents		
Took preventative pills	29	32.6%
Received preventative vaccinations by injection	79	88.8%
Exposed to nerve gas agents	3	3.4%
Exposed to mustard gas or other blistering agents	1	1.1%
Exposed to government-issued DEET-containing insect	43	48.3%
repellants		
Exposed to other pesticides	37	41.6%
Exposed to smoke or other air pollutants	72	80.9%
Exposed to diesel or other petrochemical fuel on my skin	54	60.7%
Exposed to fumes or exhaust from heaters or generators	61	68.5%
Exposed to depletion of uranium in munitions	13	14.6%
Exposed to burning trash or burning feces	49	55.1%
Exposed to chlorine gas	2	2.2%
Exposed to nuclear, biological, or chemical weapons	4	4.5%

Deployment concerns are presented in Table 7. Participants were also asked about exposure to stressful and/or traumatic events after their return from deployment. The most common stressful/traumatic events were the death of a loved one (65.2%), someone close to them experiencing a serious illness, injury, or mental health problem (61.8%), as well as experiencing serious financial problems (53.9%). Information regarding stressful and/or traumatic events that participants reported occurring post-deployment are provided in Table 8.

Table 7

Deployment Concerns, Summary of Information (n = 89)

Event	Frequency	Percent
Concerned about getting an infectious disease	27	30.3%
Concerned that my health might suffer due to exposure to NBC agents	33	37.1%
Felt I was in great danger of being wounded	24	27.0%
Concerned that medicine I was given to protect me from illness	31	34.8%
would make me sick		
Concerned I would encounter an explosive device	28	31.5%
Feared I would become sick from pesticides	45	50.6%
Concerned a rocket or mortar would hit our living quarters	24	27.0%
Concerned I might be exposed to depleted uranium in	52	58.4%
munitions		
Thought I would never survive	44	49.4%
Concerned I might be taken hostage	46	51.7%
Concerned that locals who were supposed to help us were	26	29.2%
actually working against us		
Concerned about being trapped in the crossfire of rival factions	49	55.1%

Table 8

Post-deployment Concerns, Summary of Information (n = 89)

Concern/Event	Frequency	Percent
Robbed or had home broken into	14	15.7%
Unwanted sexual experience	5	5.6%
Divorce or left by significant other	39	43.8%
Problems accessing adequate healthcare	27	30.3%
Natural disaster, fire, or serious accident	20	22.5%
Someone close to me experienced serious illness, injury, or	55	61.8%
mental health problem		
Witnessed someone being seriously assaulted or killed	14	15.7%
Lost my job or had serious trouble finding a job	36	40.4%
Been emotionally mistreated	22	24.7%
Experienced serious financial problems	48	53.9%
Personally experienced serious physical or mental health	42	47.2%
problems		
Stressful legal problems	25	28.1%
Personally been seriously physically injured by another person	8	9.0%
Someone close to me has died	58	65.2%

Non-deployed Personnel

A total of 52 participants denied experiencing deployment during their military career. For non-deployed participants, female service members (M = 23.69; SD = 22.94) also had higher rates of PTSD compared to their male counterparts (M = 21.35; SD = 19.10). Extraversion scores were once again similar among male and female service members who were not deployed, with men having an average Extraversion score of 22.91 (SD = 7.72) and women having an average Extraversion score of 21.00 (SD = 7.22). On average, men who were not deployed reported slightly higher rates of Resilience (M = 68.83; SD = 16.46) compared to women who were not deployed (M = 68.31; SD = 17.37). Table 9 depicts scores for participants who denied a history of deployment.

Table 9

Variable Score Information for Non-Deployed Service Members Summary of Information (n = 52)

Variable	Range	Mean	SD
PTSD Symptom severity			
Male	0-70	19.35	20.88
Female	0-75	23.69	22.94
Extraversion			
Male	8-37	22.91	7.72
Female	8-34	21.00	7.22
Resilience			
Male	24-98	68.83	16.46
Female	27-100	68.31	17.37

Table 10 presents respondent information from the Life Events Checklist for the DSM-5 (LEC-5). Only individuals who denied deployment experience completed the LEC-5. The most common stressful and/or traumatic events participants endorsed included personally experiencing a transportation accident (71.2%) and a physical assault (42.3%), as well as

learning about sexual assault (36.5%) and sudden violent death (40.4%). Although six

participants (11.5%) reported combat exposure as "part of my job," it is unclear whether these

individuals were deployed or were referencing combat training exercises or an alternative

explanation, as they denied deployment, and also confirmed they had never been deployed.

Table 10

Stressful and/or Traumatic Event Exposure for Non-Deployed Personnel, Summary of Information (n = 52)

Event	Frequency	Percent
Natural Disaster		
Happened to me	20	38.5%
Witnessed it	17	32.7%
Learned about it	16	30.8%
Part of my job	4	7.7%
Not Sure	0	0.0%
Doesn't Apply	14	26.9%
Fire or Explosion		
Happened to me	13	25.0%
Witnessed it	17	32.7%
Learned about it	15	28.8%
Part of my job	4	7.7%
Not Sure	0	0.0%
Doesn't Apply	16	26.9%
Transportation Accident		
Happened to me	37	71.2%
Witnessed it	18	34.6%
Learned about it	20	38.5%
Part of my job	5	9.6%
Not Sure	0	0.0%
Doesn't Apply	7	13.5%
Serious Accident at Work, Home, or		
during Recreational Activity		
Happened to me	9	17.3%
Witnessed it	16	30.8%
Learned about it	14	26.9%
Part of my job	4	7.7%
Not Sure	1	1.39%
Doesn't Apply	19	36.5%

Event	Frequency	Percent
Exposure to Toxic Substance	• •	
Happened to me	10	19.2%
Witnessed it	5	9.6%
Learned about it	13	25.0%
Part of my job	8	15.4%
Not Sure	3	5.8%
Doesn't Apply	22	42.3%
Physical Assault		
Happened to me	22	42.3%
Witnessed it	12	23.1%
Learned about it	18	34.6%
Part of my job	4	7.7%
Not Sure	1	1.9%
Doesn't Apply	15	28.8%
Assault with a Weapon	-	
Happened to me	11	21.2%
Witnessed it	7	13.5%
Learned about it	14	26.9%
Part of my job	3	5.8%
Not Sure	2	3.8%
Doesn't Apply	24	46.2%
Sexual Assault		
Happened to me	12	23.1%
Witnessed it	6	11.5%
Learned about it	19	36.5%
Part of my job	4	7.7%
Not Sure	2	3.8%
Doesn't Apply	22	42.3%
Other Unwanted or Uncomfortable		
Sexual Experience		
Happened to me	15	28.8%
Witnessed it	9	17.3%
Learned about it	16	30.8%
Part of my job	1	1.9%
Not Sure	2	3.8%
Doesn't Apply	23	44.2%
Combat or Exposure to war-zone (in the		,.
military or as civilian)		
Happened to me	1	1.9%
Witnessed it	3	5.8%
Learned about it	19	36.5%
Part of my job	6	11.5%
Not Sure	ŏ	0.0%
Doesn't Annly	33	63.5%
Captivity		

Event	Frequency	Percent
Happened to me	1	1.9%
Witnessed it	3	5.8%
Learned about it	12	23.1%
Part of my job	3	5.8%
Not Sure	0	0.0%
Doesn't Apply	36	69.2%
Life-threatening Illness or Injury		
Happened to me	10	19.2%
Witnessed it	13	25.0%
Learned about it	16	30.8%
Part of my job	5	9.6%
Not Sure	0	0.0%
Doesn't Apply	22	42.3%
Severe Human Suffering		
Happened to me	0	0.0%
Witnessed it	9	17.3%
Learned about it	17	32.7%
Part of my job	4	7.7%
Not Sure	4	7.7%
Doesn't Apply	21	40.4%
Sudden Violent Death		
Happened to me	1	1.9%
Witnessed it	9	17.3%
Learned about it	21	40.4%
Part of my job	4	7.7%
Not Sure	2	3.8%
Doesn't Apply	21	40.4%
Sudden Accidental Death		
Happened to me	1	1.9%
Witnessed it	15	28.8%
Learned about it	17	32.7%
Part of my job	4	7.7%
Not Sure	0	0.0%
Doesn't Apply	20	38.5%
Serious Injury, Harm, or Death You Caused to Someone Else		
Happened to me	6	11.5%
Witnessed it	3	5.8%
Learned about it	5	9.6%
Part of my job	3	5.8%
Not Sure	1	1.9%
Doesn't Apply	37	71.2%
Any Other Very Stressful Event or		
Experience		
Happened to me	14	26.9%

Event	Frequency	Percent
Witnessed it	9	17.3%
Learned about it	11	21.2%
Part of my job	3	5.8%
Not Sure	5	9.6%
Doesn't Apply	22	42.3%

Comparison of Variable Scores for Deployed versus Non-Deployed Personnel

Scores and symptom severity for participants varied based upon deployment status, as well as Gender. A total of 89 participants endorsed deployment. On average, female service members who were deployed had higher rates of PTSD (M = 32.00; SD = 21.25) compared to their male counterparts (M = 21.35; SD = 19.10). Extraversion scores were similar among male and female service members who were deployed, with men having an average Extraversion score of 23.99 (SD = 8.48) and women having an average Extraversion score of 24.46 (SD = 7.19). On average, men who were deployed reported slightly higher rates of Resilience (M = 68.94; SD = 17.86) compared to women who were deployed (M = 66.28; SD = 14.16). Figure 1 presents the average of participant scores based on their identified Gender in relation to Extraversion, Resilience, and PTSD symptom severity; the figure is divided based on endorsed deployment status.



Figure 1. Average of Variable Scores by Gender and Deployment Status (n = 141)

Scores for each variable (i.e., PTSD symptom severity, Resilience, and Extraversion) were compared between groups. PTSD symptom severity was slightly greater for participants who reported deployment experience (M = 24.46; SD = 20.22) compared to those who denied deployment (M = 20.69; SD = 21.40). Extraversion scores for deployed personnel (M = 24.13; SD = 8.09) were slightly higher compared to individuals who had not been deployed (M = 22.32; SD = 7.56). Resilience scores were slightly lower for deployed participants (M = 68.45; SD = 16.80) compared to non-deployed participants (M = 68.67; SD = 16.57). Figure 2 presents the averages of PTSD symptom severity, Extraversion, and Resilience comparing deployed personnel to non-deployed personnel.



Figure 2. Average of Variable Scores by Deployment Status (n = 141)

Criterion A Events

Although all participants endorsed exposure to at least one event that would be considered traumatic according to the DSM-5, not all participants described their stressful experiences as traumatic. Of the 141 participants, 66.0% identified a stressful event they experienced as "traumatic." Of note, 62.4% of the 93 participants who endorsed exposure to an event they considered "traumatic" reported a history of deployment. Individuals who endorsed deployment were more likely to identify an event as traumatic, and deployment/combat was the most common identified traumatic event. Although diagnosis of a terminal illness for oneself or a loved one could be associated with grief or loss, it is an event that could bring about fears of actual death, and therefore was considered a Criterion A event in the current study. Individuals who recognized an event as traumatic reported higher rates of PTSD (M = 28.97; SD = 21.02), slightly higher rates of Extraversion (M = 23.84; SD = 7.63), and comparable scores of

Resilience (M = 68.46; SD = 16.33) when compared to individuals who did not identify an event as traumatic. A total of 48 participants (34.0%) reported that they did not consider any of their experiences to be "traumatic." Individuals who denied interpretation of their events as "traumatic" reported an average of 11.64 on the PCL-5 (SD = 14.34) and had an average Extraversion score of 22.74 (SD = 8.47), and an average Resilience score of 68.67 (SD = 17.45). Table 11 provides further information regarding rates of each variable (i.e., PTSD symptom severity, Extraversion, and Resilience) based upon deployment status, and whether participants viewed an experience in their life as "traumatic."

Table 11

Endorsement of Trauma, Summary of Information (n = 141)

	Frequency	Percentage	Mean PTSD	Mean	Mean
			Symptom	Extraversion	Resilience
			severity		
An event was					
considered "traumatic"					
Deployed	58	62.4%	30.25	24.55	67.23
Non-Deployed	35	37.63 %	26.84	22.65	70.51
Total/Overall	93	66.0%	28.97	23.84	68.46
An event was not					
considered "traumatic"					
Deployed	31	64.58%	13.62	23.34	70.74
Non-Deployed	17	35.42%	8.02	21.65	64.88
Total/Overall	48	34.0%	11.64	22.74	68.67

As indicated by the DSM-5 (2013), Criterion A of a PTSD diagnosis involves exposure to death, the threat of death, actual or threatened serious injury/bodily harm, or actual or threatened sexual violence. The event may be personally experienced, witnessed, learned about regarding a family member or loved one, or repeated indirect exposure to aversive details of the trauma. Although 93 participants (66.0%) endorsed an event as "traumatic," not all of the events

identified by participants met the definition of Criterion A, according to the DSM-5. For those who considered an event traumatic, they were asked to briefly describe what they considered the "worst" trauma. Of the 93 participants who recognized their event as traumatic, 69 participants (74.1%) met the definition of Criterion A. Rates of endorsement for Criterion A are outlined in Table 12.

Table 12

Criterion A	, Summary o	f Inf	formation (n = 9	9 3,)
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Criterion A Met	Frequency	Percent
Yes	69	74.19%
No	24	25.8%

Those who did not meet the definition of Criterion A (n = 24; 26.9%) identified their most stressful incidents as events such as grief/loss, divorce and divorce-related stressors, and loss of a job. The most common stressor identified that did not meet the definition of a Criterion A event was grief/loss (66.7%), followed by divorce and related stressors, such as custody battles or divorce proceedings (20.8%). See Table 13 for further detail of non-Criterion A endorsed events. Tables 12 and 14 provide a summary of the Criterion A information for the current sample. Table 15 breaks down Criterion A event endorsement by Gender.

Table 13

Types of "Traumatic" Non-Criterion A Events, Summary of Information (n = 24)

Type of Trauma	Frequency	Percentage
Physical Injury	1	4.2%
Divorce and Related Stressors (e.g., custody	5	20.8%
battles)		
Grief/Loss	16	66.7%
Financial Strain	1	4.2%
Job Loss	1	4.2%

Table 14

Types of Criterion A Events, Summary of Information (n = 68)

Type of Trauma	Frequency	Percentage
Witnessing the death of someone	10	14.5%
Severe motor vehicle accident	4	5.9%
"All" of the traumas	3	4.4%
Physical assault	4	5.9%
Deployment/Combat related	19	27.9%
Diagnosed with terminal illness (self)	3	4.4%
Exposure to human remains	2	2.9%
Fire	2	2.9%
Sexual assault	16	23.5%
Diagnosis of terminal illness (loved one)	2	2.9%
Natural disaster	3	4.4%
Witnessing human suffering	1	1.5%

Table 15

Types of Criterion A by Gender (n = 68)

Type of Trauma	Male	Female
Witnessing the death of someone	6	3
Severe motor vehicle accident	3	1
"All" of the traumas	0	3
Physical assault	1	3
Deployment/Combat related	15	4
Diagnosed with terminal illness (self)	3	0
Exposure to human remains	2	0
Fire	2	0
Sexual assault	5	11
Diagnosis of terminal illness (loved one)	1	1
Natural disaster	3	0
Witnessing human suffering	1	0

Hypothesis 1: Mediation

H1: A relationship exists between Extraversion, Resilience, and the amount of variance in

PTSD symptom severity among military personnel.

H_{1a}: A relationship exists between Resilience and PTSD symptom severity.

H_{1b}: A relationship exists between Extraversion and Resilience.

H_{1c}: A relationship exists between Extraversion and PTSD symptom severity.

 H_{1d} : Extraversion explains the relationship between Resilience and PTSD symptom severity.

Researchers of the current study hypothesized that Resilience scores would predict PTSD symptom severity in military personnel. They further predicted that Extraversion would act as a mediator, and account for a significant portion of the relationship between Resilience and PTSD symptoms severity in military personnel. Multiple regression analyses were used to test hypothesis one.

Testing multiple regression is a four-step procedure that is completed with three multiple regression equations. The procedure was used to determine if a variable (i.e., Extraversion) mediated the relationship between the predictor variable (i.e., Resilience) and the outcome variable (i.e., PTSD symptom severity). The PROCESS application was then used to implement bootstrapping methods in order to assess the significance of the mediator variable (i.e., Extraversion).

The first step of multiple regression is to test the total effect, or path c. The total effect is determined by examining the relationship between the predictor variable and the outcome variable. Results indicated that Resilience scores were significantly negatively correlated to PTSD symptom severity, r = -.28, p = 0.000. Resilience scores significantly predicted PTSD symptom severity, $\beta = -.41$, SE = .11, p = 0.0003 (CI = -.63 to -.19). Therefore, a significant relationship was found for path c. The second step (i.e., path a) determined if a significant relationship existed between the predictor variable (i.e., Resilience scores) and the mediator variable (i.e., Extraversion scores). Results indicated that Resilience scores were significantly

positively related to Extraversion scores, r = .41, p = 0.000. Resilience scores significantly predicted Extraversion scores, $\beta = .20$, SE = .04, p = .0000 (CI = .12 to .27). Therefore, path a was confirmed. The third equation of multiple regression (i.e., path b) determined whether a significant relationship was found between the mediator (i.e., Extraversion scores) and the outcome variable (i.e., PTSD symptom severity) when controlling for the predictor variable (i.e., Resilience scores). Results indicated that Extraversion scores were not significantly related to PTSD symptom severity, r = -.02, p = 0.40. Extraversion scores did not significantly predict PTSD symptom severity, $\beta = .30$, SE = .23, p = .20 (CI = -.16 to .76). Correlation information is presented in Table 16. Extraversion was then regressed onto both PTSD symptom severity and Resilience to determine if Extraversion explains the relationship between Resilience and PTSD symptom severity. Extraversion was not found to mediate the relationship between Resilience and PTSD symptom severity, $\beta = .06$, SE = .05 (i.e., path c'; CI = -.03 to .15). Because the confidence interval for path c' includes zero, it is not possible to say with 95% confidence that the effect differs from zero. Thus, it is assumed that, with Extraversion in the equation, it is too close to zero to be considered an effect; Extraversion does not mediate the relationship between Resilience and PTSD symptom severity. The results of the multiple regression analysis are presented in Figure 3. These results converge to indicate that hypothesis one of the current study was not supported.



Figure 3. Mediation model summary (n = 141)

Table 16

Correlation between Variables (n = 141)

Variable	Resilience	Extraversion	PTSD Symptom severity
Resilience	1		
Extraversion	.41*	1	
PTSD Symptom severity	28*	02	1

* Correlation significant at the 0.000 level (1-tailed)

Hypotheses 2-4: Gender

Hypothesis 2

H₂: Gender differences will exist for PTSD symptom severity.

Correlation coefficients were computed for Gender and PTSD symptom severity (Table

17) to determine the relationship between Gender and PTSD symptom severity. Gender was

determined by asking participants to select the term that best described their Gender (i.e., male,

female, or other). Not a single participant identified as "other." As indicated in Chapter III, the

PTSD symptom severity score was calculated by summing participant responses for the 20 questions of the PCL-5, which was based on a Likert scale (Weathers et al., 2013). The results of the correlational analysis demonstrate that the correlation was statistically significant, confirming the second hypothesis. There was a weak positive correlation between PTSD symptom severity and Gender, r = .18; p = .03.

Table 17

Correlation between Gender and PTSD symptom severity, Resilience, and Extraversion (n =

141)

	Gender	PTSD Symptom severity	Extraversion	Resilience
Gender	1			
PTSD Symptom	$.18^{*}$	1		
severity				
Extraversion	03	02	1	
Resilience	03	28**	.41**	1

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

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

Hypothesis 3

H₃: Gender differences will exist for scores of Extraversion.

Correlation coefficients were computed for Gender and Extraversion scores (Table 17) to determine the relationship between Gender and Extraversion scores. As indicated in Chapter III, the Extraversion score was calculated by summing participant responses for the eight Extraversion items of the BFI, which was based on a Likert scale (John & Srivastava, 1999). The results of the correlational analysis demonstrate that the correlation was not statistically significant, rejecting the third hypothesis. There was no correlation between Gender and Extraversion, r = -.03; p = .76.

Hypothesis 4

H₄: Gender differences will exist for scores of Resilience.

Correlation coefficients were computed for Gender and Resilience scores (Table 17) to determine the relationship between Gender and Resilience scores. As indicated in Chapter III, the Resilience score was calculated by summing participant responses for the 25 items of the CD-RISC, which was based on a Likert scale (Connor & Davidson, 2003). The results of the correlational analysis demonstrate that the correlation was not statistically significant, rejecting the fourth hypothesis. There was no correlation between Gender and Resilience, r = -.03; p = .69.

Summary

The current study examined whether Extraversion influenced the relationship between Resilience and PTSD symptom severity in a sample of 141 U.S. military service members. Multiple regression analyses rejected the hypothesis that Extraversion accounted for some variance in the relationship between Resilience and PTSD symptom severity (H₁). The relationship of Gender and each of the three variables (i.e., Extraversion, Resilience, and PTSD symptom severity) was also examined. Gender was found to be significantly related to PTSD symptom severity (H₂). Gender was not significantly correlated to Extraversion (H₃) or Resilience (H₄).

CHAPTER V

DISCUSSION

The present study examined the following: (1) whether Extraversion mediates the relationship between Resilience and PTSD symptom severity, (2) the correlation between Gender and PTSD symptom severity, (3) the correlation between Gender and Extraversion, and (4) the correlation between Gender and Resilience. It was hypothesized that a strong positive relationship between Resilience and PTSD symptom severity would be confirmed, and that Extraversion would influence that relationship. It was further hypothesized that Gender differences would exist for the three variables of Extraversion, Resilience, and PTSD symptom severity. The following chapter discusses the results and implications of the current findings, as well as the limitations of the current study and future directions.

Interpretation and Implications of Results

As indicated in Chapter II, the conservation of resources (COR) theory (Hobfoll, 1989) has been found to be a reliable framework for understanding the processes involved with experiencing, coping with, and overcoming chronic and traumatic stress (Holmgreen et al., 2017). Accessible resources (i.e., anything a person values) have been found to mediate the effect of the negative experiences (Hobfoll & Walfish, 1984). Specifically, a rich resource base can promote recovery from traumatic stressors by acting as a safeguard against resource loss (Hobfoll, 2012). Personality traits are believed to be personal characteristic resources, or features unique to the individual (Hobfoll, 1989), that may influence PTSD symptoms severity.

Several studies have utilized the COR theory to examine risk factors related to PTSD (Vinokur et al., 2011; Vogt et al., 2011). Vinokur et al. (2011) determined that, in a sample of U.S. Air Force personnel, symptoms of PTSD predicted a loss in resources and a decline in

perceived health and functioning of the service member. Vogt and Tanner (2007) employed principles of COR on Gulf War veterans and concluded that direct and indirect effects of deployment-related risk factors aligned with the COR theory.

Vogt et al. (2011) applied the COR theory to PTSD symptomology on national sample of veterans from Operation Enduring Freedom and/or Operation Iraqi Freedom. The researchers found that several chains of risk accounted for PTSD symptoms and many were present prior to deployment. Similar to Vogt and colleagues (2011), the current study examined exposure to stressful and/or traumatic events prior to deployment in military personnel. The present study found exposure to comparable traumatic events prior to deployment, such as domestic violence, and physical and sexual assault. The researchers of present study expanded their work by also examining the presence of potentially traumatic events for non-deployed personnel. Exposure to similar events was found between deployed and non-deployed participants. However, the measure non-deployed participants completed (i.e., the LEC-5) did not capture when the events occurred. In contrast to Vogt et al.'s (2011) work, the current study did not examine these events as predictors for resource acquisition and utilization. The present study examined Extraversion and Resilience as personal characteristic resources and explored whether Extraversion mediated the relationship between Resilience and PTSD symptom severity.

Extraversion as a Mediator

To determine if Extraversion was a mediator for the relationship between Resilience and PTSD symptom severity, multiple regression was performed. Multiple regression is a four-step procedure that examines the significance of three equations. The implications of the results of the multiple regression are outlined in the following sections, and are broken down by each

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completed step. The PROCESS application was implemented to perform bootstrapping procedures and further examine the effect of Extraversion as a mediator.

Resilience and PTSD symptom severity. The first step of multiple regression examined the strength of the relationship between Resilience and PTSD symptom severity. Results indicated that Resilience scores were significantly negatively correlated to PTSD symptom severity, meaning that the higher the degree of Resilience, the lower the PTSD symptom severity. This finding is consistent with prior research that determined Resilience is a buffer for PTSD symptom severity (Fredrickson et al., 2003; Green et al., 2010; Isaacs et al., 2017). Fredrickson and colleagues (2003) examined degrees of Resilience in college students following the 9/11 terrorist attacks. The current study expanded their work by focusing on a military sample rather than a sample consisting of college students, and by examining exposure to a wide array of stressful and/or traumatic experiences. Just as Fredrickson and colleagues (2003) found, military personnel with higher rates of Resilience from the present study appear to be able to cope with stress/crises more effectively in that individuals with higher rates of Resilience were more likely to have lower PTSD symptom severity. Similar to another study (Green et al., 2010), findings regarding Resilience from the current study are also consistent with those from a study with deployed service members. The current study extends the work of Green and colleagues (2010) by also examining Resilience for non-deployed service members. Schok and colleagues (2010) found Resilience acted as a buffer for PTSD in a sample of Dutch veterans. The present study extends their work by examining Resilience on U.S. service members. Given that Resilience was significantly negatively related to PTSD symptom severity in the current study, the current study supports the conclusion made by Schok and colleagues (2010) that Resilience could lower the stress response that is initiated after exposure to war-zone stressors.

Resilience and Extraversion. The second step of multiple regression examined the strength of the relationship between Resilience and Extraversion. Results indicated that Resilience scores were significantly positively Related to Extraversion scores, meaning that the higher the degree of Resilience, the higher degree of Extraversion. This finding is consistent with prior research that determined Extraversion and Resilience were closely related in military personnel (Isaacs et al., 2017; Park et al., 2016). Isaacs and colleagues (2017) found that the majority of their military sample was psychologically resilient. Although Isaacs and colleagues (2017) also utilized the CD-RISC to measure Resilience, they used a shorter version of the measure (i.e., CD-RISC-10), making comparing results from the current study challenging. The 25-item measure was used in the existing study and determined there were comparable scores of Resilience for deployed and non-deployed personnel, which was decently high for both groups. This finding supports the notion proposed by Isaacs et al. (2017) that U.S. military personnel tend to be Resilient. Isaacs and colleagues (2017) found that Extraversion predicted Resilience, which was also true for the current study. This finding indicates a need for continued exploration into the relationship between Extraversion and Resilience, as it is not possible to determine what aspects of Extraversion are contributing to Resilience in the current study.

Extraversion and PTSD symptom severity. The third step of method of multiple regression examined the strength of the relationship between Extraversion and PTSD symptom severity. Results indicated that the degree of Extraversion was not related to PTSD symptom severity, and Extraversion scores did not predict the severity of PTSD symptomology in the current sample. Therefore, Extraversion did not mediate the relationship between PTSD symptom severity and Resilience. This finding is consistent with the work of several military studies that also found no significant relationship between PTSD symptom severity and

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Extraversion (Bramsen et al., 2000; Card, 1987; Hyer et al., 1994). The current study extended the work of Bramsen and colleagues (2000) by focusing on U.S. military personnel, rather than members of the United Nations Protection Force. A unique finding from the current study was that deployed participants displayed higher rates of Extraversion compared to non-deployed participants. Because deployed personnel are at increased risk of exposure to traumatic events, it is possible that the higher rate of Extraversion by deployed personnel is due to a risk-taking element of Extraversion, as hypothesized by Schnurr and Vielhauer (1999). Of note, each of the studies indicated above used different tools to measure Extraversion, such as a Dutch version of the Minnesota Multiphasic Personality Inventory (Bramsen et al., 2000), and the NEO Personality Inventory (Hyer et al., 1994). The current study utilized the BFI. The use of various measures with similar conclusions indicates that Extraversion is not a significant predictor of PTSD symptom severity.

Variable Correlations with Gender

At present, the U.S. military remains a male-dominated field, with women comprising 16.8% of the U.S. military by 2015 (Military One Source, 2015). With the lifting of the 1994 Direct Ground Combat Definition and Assignment Rule Combat Exclusion Policy in 2013 (DoD, 2013), the number of female service members is expected to increase. Given the expected increase in female recruitment and enlistment, it is important to identify and understand whether Gender differences exist in the U.S. armed forces in the development of PTSD, particularly in relation to the utilization of personal resources, such as Extraversion and Resilience. The current study examined the relationship of Gender with each of the variables (i.e., PTSD symptom severity, Extraversion, and Resilience).

Gender and PTSD symptom severity. The current study found Gender to be significantly related to PTSD symptom severity. In the current sample, women were more likely to endorse higher rates of PTSD symptom severity compared to their male counterparts. This finding is consistent with the meta-analysis completed by Crum-Cianflone and Jacobson (2014), which concluded that were at a moderately higher risk for developing PTSD. When examining various types of trauma exposure, women were more likely to identify sexual assault as their "worst" trauma. This finding is similar to the work of Cortina and Kubiak (2006), who found that women were almost twice as likely to experience sexual violence, as well as more severe symptoms of PTSD. It is important to note that the information provided here from the present study regarding exposure to sexual assault is based upon what participants identified as their "worst" trauma and does not necessarily mean other participants were not exposed to sexual assault. Breslau and Anthony (2007) examined Gender differences and sensitivity to PTSD based upon type of trauma exposure in a sample of young adults, finding that assaultive trauma (e.g., shot/stabbed, physical, or sexual assault) was strongly associated with PTSD symptom severity. The current study expanded their work by examining exposure to traumatic events in a military sample. Combat experience was the most common "worst" traumatic event identified by men, whereas assaultive traumas (i.e., physical or sexual assault) were the most common for women. Similarly, in a sample of National Guard troops, women were more likely to experience a history of emotional maltreatment and a history of sexual violence (Carter-Visscher et al., 2010). The current study extends the work of Carter-Visscher and colleagues (2010) by examining service members from various wars/conflicts, in addition to service members who were not deployed.

Gender and Extraversion. Gender was not significantly related to Extraversion in the current sample; therefore, one Extraversion was not Gender-specific. The current study builds

upon the previous work of Lynn and Martin (1997) and Costa and colleagues (2001) by focusing on a military sample. Although significant Gender differences were not found in the current overall sample, there were slight differences between men and women based on deployment status. Women who were deployed indicated slightly higher rates of Extraversion compared to their male counterparts. In contrast, for non-deployed participants, men indicated slightly higher rates of Extraversion.

Gender and Resilience. Gender was not significantly associated with Resilience in the current sample, meaning that Gender identification did not play a role in the degree of Resilience. Men were more likely to report slightly higher rates of Resilience compared to women, and the range of degrees of Resilience was also larger for men. Findings from the current sample provide further support that Resilience is not Gender-specific (Zeidner & Endler, 1996). The current study was able to address Isaacs and colleagues' (2017) comment regarding unequal Gender distributions in the military and the subsequent difficulty in obtaining accurate assessment of Resiliency by achieving nearly double (i.e., 30.3%) the representation of female service members in the current sample. Although the Gender distribution was not equal in the present study, the Gender distribution was more diverse compared to prior research, and therefore in a stronger position to address questions regarding Gender differences.

Limitations

Limitations of the current study include a lack of cultural diversity in the sample, as the majority of participants identified as Caucasian, and an unequal Gender distribution. Although Mturk provides access to a large and diverse pool of participants (Paolacci & Chandler, 2014), the finding that the cultural makeup of the sample was not representative of the sample they were drawn from is consistent with notes made by Berinsky and colleagues (2012). It is recommended

that future researchers utilizing MTurk to recruit military participants implement additional measures to ensure a diverse and representative sample. Regarding the use of MTurk as a researcher, it is recommended that researchers be well versed in the various technological procedures of MTurk (e.g., creating qualifications) to avoid issues with obtaining quality data. For example, the researcher of the current study was not aware that an additional qualification needed to be created to ensure participants could not take the survey multiple times. Although data was re-collected to ensure the integrity of the data, it is possible various participants from Round 1 of data collection also took part in Round 2 of data collection. Their familiarity with the instruments could have influenced their response patterns and completion time, thus providing an inaccurate reflection of completion times, etc..

An additional limitation includes the inability to confirm participant presentation with a clinical interview, increasing the risk of false positives or false negatives with PTSD symptom severity. For example, all participants were asked to identify their "worst" trauma experience. However, several participants identified events that are not consistent with the Criterion A requirements of a PTSD diagnosis (e.g., loss of a loved one, divorce, or loss of a job) set forth by the DSM-5. Although each non-Criterion A event is accompanied by varying degrees of distress, asking participants to keep their "worst" event in mind as they complete the PCL-5 may have led to an inaccurate presentation of current PTSD symptom severity for some participants. It is possible that the BFI, the instrument used to measure degrees of Extraversion, did not fully encompass all factors of Extraversion. For example, Extraversion was operationally defined in the current sample as a construct that encompassed a tendency toward positive emotional expression (John & Srivastava, 1999). However, Extraversion questions of the BFI do not explicitly address hope or optimism, which are personal characteristic resources identified by

Hobfoll (1995). Therefore, more comprehensive measures of Extraversion may prove useful in future research.

Future Directions

The present study found a significant relationship between PTSD symptom severity and Resilience, as well as Extraversion and Resilience. As indicated by Costa et al. (2001), rates of Extraversion for Gender can vary based upon the tool used to measure Extraversion. This conclusion is also true for all measures of the constructs in the current study, as participant responses may change based on how a question is asked. Therefore, it would be advantageous to identify separate measures for Resilience, PTSD symptom severity, and Extraversion that provide balanced views of the constructs being assessed.

The current study did not find a significant relationship between PTSD symptom severity and Extraversion; Extraversion did not mediate the relationship between PTSD symptom severity and Resilience. Given that this finding contradicts prior research (Caska & Renshaw, 2013; Clark & Owens, 2012; Peng et al., 2011); it is possible that the measure used to assess for Extraversion in the current sample (i.e., the BFI) did not fully encompass all factors of Extraversion. For example, Extraversion was operationally defined in the current sample as a construct that encompassed a tendency toward positive emotional expression (John & Srivastava, 1999). However, Extraversion questions of the BFI do not explicitly address hope or optimism, which are personal characteristic resources identified by Hobfoll (1995). Therefore, more comprehensive measures of Extraversion may prove useful in future research.

As indicated previously, the COR theory proposes that people are intrinsically motivated to protect, maintain, and accrue resources (Hobfoll, 1991). An individual's resource base is influenced when the individual encounters a stressful and/or traumatic experience. To further

assess the role of personal characteristic resources, a longitudinal study may be effective in determining changes in resources over time based upon circumstances/stressors. Personal characteristic resources are unique to the individual. However, determining the presence of common characteristics in individuals who overcame the impact of a traumatic stressor can aid in treatment determinations, or help identify individuals who are at increased risk for PTSD.

Results from the current study indicate that Resilience acts as a protective factor when faced with a traumatic event. Aspects of Resilience, such as self-esteem, optimism, and perceived control (Schok eta l., 2010), promote recovery (Richardson, 2002). The strong positive relationship that was found between Extraversion and Resilience indicates that Rresilient individuals tend to portray more assertive characteristics, and are more likely to demonstrate positive emotional expression, features that may be utilized to protect and accrue resources when faced with a traumatic stressor. While Extraversion was not found to mediate the relationship between Resilience and PTSD symptom severity, other factors may be influencing symptom presentation, warranting further investigation. Findings from the current study support the notion that Resilience is a personal characteristic resource that can help an individual grow and adapt in the face of traumatic events.

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