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Psychosocial Predictors of Resilience in a Military Sample

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Dissertation submitted to the College of Physical Activity
and Sport Sciences at West Virginia University
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy
In
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With an emphasis in Sport and Exercise Psychology

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Abstract

Predictors of resilience, specifically optimism, social support, coping self-efficacy, and physical activity were explored in a sample of United States Army Active Duty service members and Veterans ($N = 302$). The participants were a predominantly white (86%) sample of 191 males and 111 females, age 19 to 74 ($M= 39.94$, $SD= 10.31$). A cross-sectional survey design was used to identify predictors of resilience, examine differences in resilience based on demographic factors, and differences in resilience scores between those who had and had not completed resilience training. Regression analyses revealed that optimism and self-efficacy were significant predictors of resilience, [$F(5, 287) = 76.90$, $p = .00$] and accounted for 57.7 % of the variation in resilience, while controlling for gender, education, and participation in resilience training. Male participants reported statistically significantly higher resilience scores ($M = 32.13$, $SD = 6.31$), than female participants ($M = 30.11$, $SD = 5.86$), $t(308) = 2.78$, $p = .006$), age was not a significant predictor, education had a slightly significant relationship with resilience [$\beta =0.20$, 95% CI (.40, 1.41), $t=3.52$, $p = .001$]. Participants who reported completing resilience training scored higher on resilience than those who reported not having completed the training. These findings carry strong support and additional considerations for existing resilience training efforts. The research supports the notion that resilience can be developed and this could happen through identifying paths to an optimistic mindset and supporting internal (visualization, meditation, problem-solving, self-talk) and external (unit support, recreational activities, friends and family) resources.

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Introduction

Extreme stress and adaptation to adversity are common for individuals serving in combat and non-combat military environments (Bowles & Bates, 2010). Stressors can be caused by repeated deployments, interpersonal difficulties, combat exposure, transition following service, and lack of coping resources. Chronic stress, particularly within service-members, can lead to numerous physiological and psychological concerns, (Kaylor, King, & King, 1987; Stanley, Schaldach, Kiyonaga, & Jha, 2011) including disturbed sleep (Winwood & Lushington, 2006), chronic pain (Beckham et al., 1997), PTSD, depression, and anxiety disorders (Adler, Vaitkus, & Martin, 1996; Milliken, Auchterlonie, & Hoge, 2007). Therefore, understanding ways to promote resilience, or the ability to bounce back in the face of adversity, and cultivate a greater ability to positively adapt to stress within military populations is an important undertaking.

The United States Army recognized that American soldiers were accumulating stress, specifically during Operation Iraqi Freedom (OIF; 2003-2011) and Operation Enduring Freedom (OEF; 2001-2012). The stress associated with these and possible multiple deployments can weigh on an individual's mental health, physical well-being, and interpersonal relationships (Griffith & West, 2013; Meredith, Sherbourne, & Gaillot, 2011). Resilience training programs, such as The Army's Comprehensive Soldier and Family Fitness Program (CSF2), have rapidly grown in the past several years within the military and other workplace contexts (Bowles & Bates, 2010; Vanhove, Herian, Perez, Harms, & Lester, 2015). The CSF2 program is a proactive approach to cultivating resilient traits in soldiers, family members, and civilian support staff for armed forces (Casey Jr, 2011; Harms, Herian, Krasikova, Vanhove, & Lester, 2013). The program focuses on building personal and psychological strengths; the mission is to provide support so soldiers can be more mentally fit prior to deployment to combat.

According to Army Regulation 350-53, as of June 2014, all enlisted soldiers must complete annual training of CSF2 Resilience and Performance Skills (Odierno, 2014). Resilience training programs have been supported through evaluations that identified positive mental and behavioral outcomes of soldiers who have completed resilience training (Harms et al., 2013). The CSF2 program consists of modules designed to address six core competencies: connection, optimism, mental agility, self-awareness, self-regulation, and character strength (Griffith & West, 2013).

In one study, researchers used the Global Assessment Tool (GAT) to measure resilience and psychological health at multiple time points in a large sample of soldiers ($N = 7230$), some of which completed the resilience training through CSF2 ($n = 4983$), some of which had not ($n = 2247$) (Peterson, Park, & Castro, 2011). Mediation analyses revealed that resilience training was associated with increases in optimism, adaptability, coping, friendship, and character. Also, adaptability and optimism mediated the effects of the resilience training on mental health diagnoses. Another central finding was that the resilience training had a direct negative effect on substance abuse in the sample. The findings were congruent with the goal of the program to use a strength-based approach to indirectly reduce depression, anxiety, and PTSD symptomology (Reivich, Seligman, & McBride, 2011a).

What follows is a review of conceptual, theoretical, and empirical literature pertinent to the study of resilience and related psycho-social constructs.

Resilience

Resilience is the ability to "bounce back" or rebound from stressful or adverse events and maintain a stable or even enhanced level of well-being and psychological health (Cornum, Matthews, & Seligman, 2011; Reivich & Shatte, 2002). Resilience has been defined in various

ways depending on the social, cultural, and historical context within which it is defined, researcher perceptions, and characteristics of the sample population (Fletcher & Sarkar, 2013; J. H. Lee et al., 2013; Meredith et al., 2011; Windle, 2011). However, two factors appear to be most salient: the presence of adversity and an adaptation response which could be a return to normal functioning or flourishing. Resilience has been defined in the military context as the culmination of psychological processes that allow individuals to maintain or return to existing levels of functioning and well-being following adversity (Crane et al., 2012). In the military, the adaptation response could manifest as post-traumatic growth or the adoption of resilience-related skills (Pietrzak & Southwick, 2011).

It is vital to explore what predicts resilient traits in military populations due to the combined physical and psychological nature of military involvement and the need to positively adapt to stress in occupational and interpersonal situations. Resilience should also be explored both conceptually and operationally to be clear as to how it might be developed in a military population. Conceptually, resilience is rooted in developmental psychology as a construct built over time through experiences and adversity such as extreme poverty, trauma, and stress (Garmezy, 1991; Meredith et al., 2011). However, the culmination of chronic and acute stressors informs the need to operationally define resilience as a trait and a construct extending beyond an individual becoming resilient after a single event. Instead, resilience constitutes coping strategies that alleviate or even prevent detrimental emotional consequences of difficult experiences (Ano & Vasconcelles, 2005). It is important to consider resilience as an interaction between dispositional aspects of one's personality (such as optimism), and responses to environmental cues (such as coping and social support) also in conjunction with adaptive behaviors (physical activity). Resilience is a multidimensional construct and while the situational component of

stressful events may induce state-like coping, the adaptation response of resilience over time from adversity warrants a more general form of operational definition and measurement.

Military personnel encounter both acute and chronic stressors related to their service and in other aspects of their life, informing the need to examine protective factors related to resilience and clarify demographic differences that may inform resilience-oriented interventions.

Demographic Considerations of Resilience

The study of age and gender differences in resilience has received empirical attention with inconsistent findings. A meta-analytic method was used to uncover a large effect of protective factors (optimism, self-confidence, positive affect), a medium effect from risk factors (depression, PTSD), and the smallest effect from demographic factors such as age and gender as contributors to resilient qualities (J. H. Lee et al., 2013). Some studies found that as people age, they exhibit fewer resilient qualities (Beutel, Glaesmer, Decker, Fischbeck, & Brähler, 2009; Lamond et al., 2008), while other studies found that consistent with theories of resilience increasing over life experiences with adversity, resilience scores increased with age (Campbell-Sills, Forde, & Stein, 2009; Gillespie, Chaboyer, & Wallis, 2009). Lastly, Connor and Davidson (2003) found no correlation between age and scores on the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003), the CD-RISC is not designed to measure resilience (which is a dynamic process), but rather the presence of resilient characteristics.

Additionally, researchers have proposed that there are significant differences in resilience scores between males and females. One meta-analysis found that across 60 international studies on trait resilience and mental health, females scored lower on resilience than males (Hu, Zhang, & Wang, 2015). The authors speculated that these differences were due to different means of socialization, lower scores on self-efficacy and self-confidence measures, lower perceptions of

support (Costa, Terracciano, & McCrae, 2001), weaker senses of mastery, and a rumination style of coping (Nolen-Hoeksema, 1991). Other studies reported that females were more resilient than males (Davidson et al., 2005; McGloin & Widom, 2001). The employment of small homogenous samples could have contributed to the mixed findings in these studies. It is clear that while the exploration of demographic characteristics in a military sample is beneficial, empirical support for most prominent contributors to resilience lies in protective factors, or predictors of resilience over demographic features.

Predictors of Resilience

Psycho-social correlates of resilience are also important for understanding this construct. Early studies of resilience focused on what factors contributed to positive adaptation and included factors such as self-efficacy, internal rather than external locus of control, humor (Rutter, 1985), optimism, and social support (Masten, Best, & Garmezy, 1990) . More recent examinations of resilience describe the construct associated with a constellation of psychological characteristics including optimism (Lamond et al., 2008; H. Lee, Brown, Mitchell, & Schiraldi, 2008; J. E. Lee, Sudom, & McCreary, 2011; Min et al., 2013; Petros, Opacka-Juffry, & Huber, 2013; Steinhardt & Dolbier, 2008), coping self-efficacy (Benight & Bandura, 2004; Campbell-Sills, Cohan, & Stein, 2006; Cody, 2013; Hamill, 2003; Southwick, Litz, Charney, & Friedman, 2011) social support (Benight, Swift, Sanger, Smith, & Zeppelin, 1999; Hourani et al., 2012; Mummery, Schofield, & Perry, 2004; Smith, Benight, & Cieslak, 2013) and physical activity (Deuster & Silverman, 2013; Hegberg & Tone, 2015; Southwick & Charney, 2012; Taylor et al., 2008). Empirical and theoretical justification for the study of these psychological and behavioral correlates of resilience will be explored in the following subsections.

Optimism. Optimism has been defined as the extent to which individuals retain generally positive or favorable expectations for the future (Carver, Scheier, & Segerstrom, 2010). In a cross-sectional study, researchers examined correlations between resilience and positive characteristics, depressive symptoms, trait anxiety, and early life stress (Petros et al., 2013). This non-clinical sample (N = 196) completed a battery of psycho-social questionnaires to measure resilience, self-efficacy, optimism, anxiety, depression, well-being, social support, and early life stress. The researchers found strong positive correlations between resilience, optimism ($r = .61$), and self-efficacy ($r = .78$). It is suggested that optimism, or the anticipation of generally positive outcomes, may improve the opportunities for one to cope successfully.

Other researchers sought to assess how community-dwelling older women (N = 1395) adapt to adversity and how this could be an important part of aging (Lamond et al., 2008). In an effort to explore psychometric aspects of the CD-RISC in a large sample of women over 60, the aim was to see if CD-RISC scores would correlate positively with aspects of successful aging, including cognitive functioning, social engagement, and optimism. The measures used included the CD-RISC (Connor & Davidson, 2003), a self-rated scale of successful aging, number of days per week visiting with friends and family, a measurement of physical functioning, a measure of emotional health/well-being, two cognitive functioning tests, and lastly The Life Orientation Test (Scheier & Carver, 1985). CD-RISC scores were positively correlated with education ($r = .06$), emotional health/well-being ($r = .49$), optimism ($r = .44$), successful aging ($r = .43$), social engagement ($r = .14$), and physical functioning ($r = .12$). In stepwise regression analysis with the positively correlated variables, the final model, which accounted for 38% of the variance in CD-RISC scores, included emotional health/well-being, cognitive functioning, successful aging, optimism, and social engagement.

Coping self-efficacy. Coping self-efficacy (CSE) is a specific form of self-efficacy and can be defined as one's perception of his or her capability to manage threatening or stressful demands of the environment (Benight et al., 1999). Research shows clear links between resilient characteristics and general self-efficacy (Connor & Davidson, 2003; Hegberg & Tone, 2015). However, the relationship between coping self-efficacy and resilience has not been systematically explored which is surprising given that coping self-efficacy has been identified as a critical mediator in post-traumatic recovery (Benight & Bandura, 2004). Research and use of the Coping Self Efficacy Scale (Chesney, Neilands, Chambers, Taylor, & Folkman, 2006) has been limited to acute instances of natural disasters, bombings, and motor vehicle accidents (Benight et al., 2000; Benight, Ruzek, & Waldrep, 2008; Benight et al., 1999; Sumer, Karanci, Berument, & Gunes, 2005) rather than continuous or ongoing circumstances that would require the development of coping skills.

A recent study explored whether coping self-efficacy, as an underlying mechanism of resilience, changed over time following a traumatic event (Waldrep, 2015). Participants included adults ($N = 74$) that had been admitted as hospital trauma in-patients, with traumas including but not limited to motor vehicle accidents, assault, gunshot wounds, serious fires, natural disasters, and military combat exposure. Participants filled out an instrument designed to measure coping self-efficacy by assessing the self-perceived ability of respondents to meet demands of coping after a traumatic event. Researchers also measured social support, posttraumatic stress symptoms, peritraumatic dissociation, and depressive symptoms. Coping self-efficacy (examined as an underlying component of resilience) presented a negative correlation with posttraumatic stress symptoms and peritraumatic dissociation, and a strong positive correlation with social support (Waldrep, 2015).

In a meta-analysis examining 33 studies of resilience and psychological factors with 31,071 participants, researchers found that it was more effective to enhance protective factors such as coping self-efficacy and optimism to improve resilience rather than try to reduce risk factors such as anxiety and depression (J. H. Lee et al., 2013). The emphasis on the positive and adaptable qualities over identifying the illness of PTSD or symptoms of trauma exposure is a prominent theme in the field of positive psychology, which formed the foundation for both research and training in resilience (Seligman & Csikszentmihalyi, 2000). Studies that extend beyond risk factors and explore positive social-cognitive mechanisms may influence critical outcomes such as resilience and post-traumatic growth (Benight & Bandura, 2004). Social cognitive theory (SCT) helps build a framework for understanding the connection between social-cognitive constructs and environmental factors such as social support.

Social support. Social support can enhance functioning by facilitating the adaptation of effective coping strategies (Holahan, Moos, Holahan, & Brennan, 1995). Studies focusing on external coping resources such as social support suggest that strong social bonds in Veterans can lead to lower PTSD symptomology (Charuvastra & Cloitre, 2008; Tsai, Harpaz-Rotem, Pietrzak, & Southwick, 2012). High perceptions of social support have been significantly correlated to higher resilience scores (Bonanno, 2004; Bonanno, Galea, Bucciarelli, & Vlahov, 2007) . In both a longitudinal study of resilience (Hourani et al., 2012) and mental health and a cross-sectional study of soldiers post-deployment (Cunningham et al., 2014), social support was cited as a critical piece of resilience and adjustment in soldiers as they transition out of service.

Hourani and colleagues (2012) examined both risk and protective factors in Marines who had been exposed to combat and were participating in a transition assistance program. Data were collected while the participants were in the workshop and again at a six-month follow-up into

their civilian life ($N = 475$). Researchers measured resilient characteristics using the CD-RISC

(Connor & Davidson, 2003), social support using the Multidimensional Scale of Perceived Social

Support (Zimet, Dahlem, Zimet, & Farley, 1988), along with measuring stressors, life events,

physical health problems, overall stress index, number of pain sites, previous trauma, risk

taking, and health behaviors (physical activity and smoking). Social support and resilience were

statistically and significantly correlated, even though the relationship was weak ($r = .17, p < .01$).

Within the four mental health outcomes, controlling for other variables in the model, the most

significant variables were gender, pre-separation combat exposure, resilience, number of pain

sites, stress, and social support at follow up. Additionally, those who scored high on social

support at follow up were 5.3 times more likely to have improved from baseline to the six month

follow up on self-reported mental health symptoms (Hourani et al., 2012).

In another study, researchers sought to identify the role of resilience, social support,

exposure to combat, stressful deployment environments, and life stress in predicting post-

deployment adjustment (Cunningham et al., 2014). A relatively healthy sample of Navy service

members ($N = 128$) completed measures for post-deployment adjustment, resilience, post-

deployment social support, deployment environment, combat exposure, and life events. A central

hypothesis was that service members with low exposure to combat, stressful deployment

environments, and additional life stress and high in social support and resilience would have

better adjustment post-deployment. Even after controlling for covariates (gender, marital status,

number of land-based deployments, MOS, IA experience, and perceived threat while deployed),

the results of a logistic regression revealed that post-deployment social support and resilience

were significant predictors of adjustment (Cunningham et al., 2014). Pietrzak and colleagues

(2010) supported this by finding a full mediation effect of resilience in the relationship between

unit support and PTSD, supporting the strong positive association between social support and resilience (Bonanno, Galea, Bucciarelli, & Vlahov, 2007; Pietrzak et al., 2010).

Physical activity. Physical fitness is a vital component of military training and ongoing service through regular fitness testing. Additionally, the psychological and physical benefits of regular physical activity are well-documented in the literature and can specifically buffer the stressful effects of transition and exposure to trauma (Gerber & Pühse, 2009; Hegberg & Tone, 2015; Roth, Wiebe, Fillingim, & Shay, 1989). Physical fitness and regular exercise can contribute to the development of resilient qualities by buffering physical and psychosocial stress reactivity, protecting against chronic illness and stress disorders, and providing multiple physiologic, psychological, and social benefits (Deuster & Silverman, 2013). Literature on exercise and stress revealed that regular physical activity contributes to lower risks for developing stress-related mental and physical health issues (Gerber & Pühse, 2009; Hegberg & Tone, 2015).

In an examination of college students ($n = 222$), researchers examined if the association between physical activity and stress resilience was moderated by trait anxiety (Hegberg & Tone, 2015). The Connor Davidson Resilience Scale 10 (Campbell-Sills & Stein, 2007), was used in conjunction with a global physical activity questionnaire and a measure for trait anxiety. Hierarchical linear regression analyses revealed that anxiety significantly moderated the association between resilience and physical activity, after controlling for age, gender, and race. Across all levels of trait anxiety, there was evidence that those who reported high recreational physical activity also scored higher in self-perceived resilience, with the most significant trend for the association between physical activity and resilience in the individuals with high trait anxiety ($ß = .063$, t [215], $p = .001$).

In addition to physical activity, physical fitness has been suggested as having a powerful role in attenuating stress reactions in the military and even buffering the effects of PTSD due to the relationship between physical fitness and stress reactivity (Crews & Landers, 1987). Researchers examined whether physical fitness had an impact on participants ($N = 31$) responses to stressful events during a Survival, Evasion, Resistance, and Escape (SERE) training (Taylor et al., 2008). Physical fitness was measured using the most recent Physical Readiness Test (push-ups, sit-ups, and run), along with measurements of trait anxiety and a measure of current subjective distress surrounding a life event. Physical fitness was inversely related with scores on the Impact of Events Scale (Horowitz, Wilner, & Alvarez, 1979) when measured 24 hours after SERE training. It was demonstrated that aerobic fitness may buffer stress symptoms associated with highly stressful situations in military contexts, additionally these effects may be mediated by a relationship between fitness and reductions in trait anxiety (Taylor et al., 2008).

In summary, the psychosocial factors optimism, coping self-efficacy, and social support play a major role in contributing to overall resilience through various mechanisms. To date, no studies have explored all of these constructs simultaneously, particularly while also examining self-reported physical activity behavior. Both physical activity and social support can help buffer the effects of stress and enhance one's ability to recover from stressful situations (Deuster & Silverman, 2013; Holahan et al., 1995). Optimism and self-efficacy have been repeatedly cited in the literature as playing a major role in the development of one's resilience (Segovia, Moore, Linnville, Hoyt, & Hain, 2012). Additionally, resilience training emphasizes the benefits of changing one's belief or cognitive appraisal of stressors to reduce negative behavioral and emotional responses (Griffith & West, 2013), thus comparing groups who have or have not received resilience training on these predictors would be beneficial.

Limitations of Previous Research

As individual constructs, research has been conducted with military service members'
physical activity (Baecke, Burema, & Frijters, 1982; Boermans, Delahaij, Korteling, & Euwema,
2012; Deuster & Silverman, 2013; Taylor et al., 2008), optimism (Boermans et al., 2012; Griffith
& West, 2013; Thomas, Britt, Odle-Dusseau, & Bliese, 2011) social support (Cunningham et al.,
2014; Pietrzak et al., 2010; Smith et al., 2013; Tsai et al., 2012) and self-efficacy (Ginzburg,
Solomon, Dekel, & Neria, 2003; Pietrzak & Southwick, 2011; Smith et al., 2013; Solomon,
Benbenishty, & Mikulincer, 1991). However, research has not collectively linked these factors
together as predictors of resilient attributes, and exploration has not been done on what relative
contributions these protective factors make within a sample of military service members and
Veterans resilience qualities or characteristics.

Additionally, resilience has been explored extensively within Active Duty personnel
(Griffith & West, 2013; Hourani et al., 2012; Reivich et al., 2011a; Reivich, Seligman, &
McBride, 2011b), and Veterans (Anestis, Khazem, Mohn, & Green, 2015; Green, Calhoun,
Dennis, & Beckham, 2010; Hendricks Thomas, Plummer Taylor, Hamner, Glazer, & Kaufman,
2015; King, King, Fairbank, Keane, & Adams, 1998; Pietrzak & Cook, 2013). However,
resilience has not been explored comprehensively with both Active Duty service members and
Veterans to see which psychosocial predictors might play the most vital role for the development
of resilient qualities. Furthermore, research on resilience training programs have supported their
efficacy, but there is a lack of identifying differences in resilience scale scores between those
who have versus those who have not received resilience training.

Rationale and Purpose

In the military, resilience has evolved into a central concept in the development of preventative measures that facilitate soldier's management of military demands and stressors. An understanding of what contributes to a soldiers' ability to cope with multiple deployments or a Veterans' re-acclimation to civilian life can be vital for positive physical and psychological health outcomes. Evaluation of resilience training programs have revealed measurable increases in resilience and psychological health and lower rates of reported diagnoses of mental health issues (Harms et al., 2013)**.** As individual constructs, coping self-efficacy, social support, and optimism along with physical activity contribute to overall resilience. It is also possible that age and gender differences exist when examining resilience in this sample. Assessing these variables may allow the identification of which constructs predict the most variance in resilience and help determine whether there are sub-group differences in resilience.

The purpose of this study was to assess psychological predictors of resilience among Veterans and Active Duty military personnel. More specifically, the researchers explored how coping self-efficacy, optimism, social support and physical activity predict variations in resilience. A secondary purpose was to explore differences between those who have or have not participated in a resilience training program. Finally, exploratory analyses were conducted to assess if resilience scores varied based on demographic variables (e.g. age and gender).

Hypotheses

It was hypothesized that social support, coping self-efficacy, optimism, and physical activity would be statistically significant predictors of resilience in this sample. It was also hypothesized that resilience scores would be significantly higher in those who self-report as receiving the resilience training compared to those who have not.

Method

Overview of Study Design

This study was a survey-based cross-sectional survey design with measures administered on a secure website using the Qualtrics research software system. Qualtrics is compatible with any internet browser and all data were stored on secure server. The study was approved by the West Virginia University Institutional Review Board in May 2016 (Protocol #: 1605104858).

Participants

The target sample included any Active Duty (including Reserves and National Guard) and Veteran service members of the United States Army. The Department of Defense registers a total of 1,326,273 Active Duty service members across multiple branches, 504,330 of which are active within the US Army (Military One Source, 2014). It is documented that there are approximately 4.2 enlisted personnel per officer in the Army. Women represent 15.1% of the Active Duty force, and 31.2% of Active Duty service members identify themselves as a racial minority. The average age for Active Duty officers is 34.8 years, and the average age for enlisted personnel is 27.3 years. Compared to 1995, more Active Duty service members are obtaining bachelors' degrees. Lastly, over half of all Active Duty military members are married (55.3%), which is down from 1995. The projected Veteran population is over 21 million, with approximately 91% males and 9% females who have served in various branches of the military (Military One Source, 2014).

The goal was for the sample to represent as closely as possible, the larger military service member population, however this was limited by sampling constraints and included only those with regular internet access. Additionally, individuals were excluded if they self-identified as having serious mental illness.

Sampling and Recruitment

The sample was recruited through both convenience and snowball sampling measures by contacting several university Veteran support groups, social media, outreach through Veteran/military support programs such as Team Red, White, and Blue (non-profit organization that engages Veterans in local community activities), and local Veteran support centers. Snowball sampling was employed by asking all participants to continue to forward the link to those who fit the inclusion criteria.

The inclusion of both Active Duty and Veteran service members was to explore associations between years of service and resilience. The researcher understands that the military-related mandated physical activity will vary vastly within the group but felt it was important to explore a diverse range of military experiences. Additionally, few studies have included large diverse samples of individuals with varying types and lengths of military experience (Anestis et al., 2015).

Measures

All measures can be seen in Appendix B. Participants were sent a link to a questionnaire via email or social media inquiring about their age (in years), sex, marital status, race, ethnicity, level of education, and geographic location. Participants were also asked if they were enlisted, an officer, or warrant officer during their service, the duration of their service (in years and months), and if they self-identify as Active Duty or as a Veteran. Finally, the demographic measure included a question about whether participants have ever completed a formal resilience-training program, and if they had participated in resilience training, if they found it useful.

Resilience. The CD-RISC was used to assess the dependent variable of resilience (Connor & Davidson, 2003). The CD-RISC is a 25-item scale that measures qualities of resilient people. The scale was developed from research in hardiness (Kobasa, 1979); action orientation,

adaptability, and efficacy (Rutter, 1985), patience and stress endurance (Lyons, 1991), and optimism and faith (Alexander, 1998). The present study used the 10-item CD-RISC which comprises items 1, 4, 6, 7, 8, 11, 14, 16, 17, and 19 from the original scale. It is scored out of 40 instead of out of 100 as with the CD-RISC 25. In a community-based survey of 764 adults administered the CD-RISC, mean scores were 31.80 (SD = 5.41) (Campbell-Sills et al., 2009). Responses to questions range along a five-point scale: (4) true nearly all the time, (3) often true, (2) sometimes true, (1) rarely true, and (0) not true at all. The instructions ask participants to indicate how much they agree with the statements over the last month. Scoring is a range from 0 to 40, with higher scores indicative of higher resilience (Connor & Davidson, 2003). Sample questions include: "I tend to bounce back after illness, injury, or other hardships," and "I think of myself as a strong person when dealing with life's challenges and difficulties." Cronbach's alpha for the scale using the current sample was .90, indicating good internal consistency.

Optimism. The Life Orientation Test (LOT-R; (Scheier & Carver, 1985) was used to assess dispositional optimism and pessimism. This measure consists of 10 items rated on a five-point Likert-type scale ranging from 0 "strongly disagree" to 4 "strongly agree," and it consists of three each positively and negatively worded statements (reverse scoring for the negatively worded statements), and four filler items. Sample questions include "In uncertain times, I usually expect the best" and "I'm always optimistic about my future." Using only the three optimism questions and exclusion the filler questions, participants can score anywhere from 0 to 14, with a higher score indicative of higher dispositional optimism. Cronbach's alpha for the scale in the current sample was .76, indicating an acceptable level of reliability.

Coping self-efficacy. The Coping Self-Efficacy Scale (CSE; Chesney et al. (2006) is a 26-item measure designed to assess one confidence in exhibiting coping behaviors in the face of

life challenges. The scale uses an 11-point Likert-type rating, with item responses scored from 0

to 10, with 0 "cannot do at all*"* and 10 "certainly can do." Total scores can range from 0 to 260

in response to these statements. Sample statements include "make a plan of action and follow it

when confronted with a problem" and "get emotional support from friends and family." This

measure demonstrated strong reliability with the current sample $\alpha = .97$.

        Social support. The Multidimensional Scale of Perceived Social Support (MSPSS;

(Zimet et al., 1988) is a 12-item measure using a 7-point Likert-type scale ranging from 1 "very

strongly disagree to 7 "very strongly agree," with higher ratings indicating stronger perceptions of

social support. Three subscales were identified by Zimet et al. (1988) and found to have strong

factorial validity. The three subscales measure (a) Family, (b) Friends, and (c) Significant Other;

a principal components factor analysis confirmed the three 4-item subscale groupings for the 12-

items. Sample statements include "There is a special person with whom I can share my joys and

sorrows," "I can talk about my problems with my family," and "My friends really try to help

me." For the present study, this measure indicated strong reliability $\alpha = .77$.

        Physical activity. A continuous outcome measure was used to assess vigorous, moderate,

and light physical activity using the framework adapted from previously validated self-report

measures of physical activity (Blair, 1984; Grzywacz & Marks, 2001; Kohl, Blair, Paffenbarger,

Macera, & Kronenfeld, 1988; Washburn, Goldfield, Smith, & McKinlay, 1990). This measure

provides an estimated metabolic expenditure (MET) and accounts for seasonal variations in light,

moderate, and vigorous physical activity. with the additional consideration for season. Grzywacz

and Marks (2001) only assessed vigorous physical activity but the existing scale (ranging from 6

"several time a week or more" to 1 "never") in conjunction with assessing winter and summer

ranges was also used to identify light and moderate physical activity as was included in a

previously validated measure (Paffenbarger Jr, Blair, Lee, & Hyde, 1993). Participants are

provided with a description and example of each of the intensity levels of physical activity,

which can then be used to calculate an average MET score (Strohacker, Wing, & McCaffery,

2013).

Procedures

The researchers first obtained approval from the West Virginia University Institutional

Review Board then reached out to several Active Duty military and Veteran contacts previously

described. Individuals were sent a brief advertisement (see Appendix A) for the study and a link

to Qualtrics to participate. In some cases, participants accessed the survey via the link sent out by

a military contact person (see Appendix D for letters of support), on their own through the

postings on social media sites for soldier and Veteran support organizations, or through other

participants or contacts forwarding the survey link. Outreach contacts included professors of

military science, Team Red White and Blue, a local Vet Center, and military colleagues of the

researcher. The researchers employed convenience and snowball sampling to recruit eligible

Active Duty service members and Veterans.

Prior to distribution of the survey to participants, the battery of surveys was pilot tested

on three individuals in the military (two Active Duty, one Veteran) to check for flow of

questions, layout, wording of instructions, and to assess how long the survey may take the

participants. Each participant clicked to a secure link and his or her responses were recorded

anonymously to each question with no identifying information. The survey opened with a cover

letter (Appendix A) which clarified the research purpose and inclusion/exclusion criteria for

participation along with informed consent. The battery of measures (Appendix B) took

participants approximately five to ten minutes to complete. The final page of the survey was a

list of support services and resources (Appendix C) and thank you to the participant for their

time. The survey was open from July 29th, 2016 to August 11th, 2016 or approximately six

weeks, until a sample size of 432 was reached.

Data Analysis

Scoring of all measures were conducted in line with the authors' recommendations. An a-

priori power analysis was performed using G*Power Statistical Software 3.1 Performing this

analysis revealed an approximate sample size of 448. This was a one-tailed test because the

researchers predicted there will be a difference between those who have versus those who have

not received resilience training, and we anticipated the group that has received training to have

higher overall resilience.

The first step of data analysis was data cleaning to decide how to manage missing data.

For the regressions, missing data were evaluated using the option of excluding cases pairwise;

therefore, participants with a missing variable were excluded from the regression.

Descriptive statistics for all measures along with tests for normality were calculated.

Bivariate correlations were computed to examine the relationships between all study variables.

T-tests were utilized to examine resilience scores in those who did or did not receive resilience

training. Multiple regression analyses were used to explore the relationship between resilience

and each predictor (optimism, coping self-efficacy, social support, and physical activity), while

controlling for demographic variables as covariates. Assumptions of normality for multiple linear

regression/logistic regression include sample size, multicollinearity, outliers, and linearity of

outcome variables with predictor variables.

Normality of resilience was evaluated visually, using the Kolmogorov-Smirnov test, and

z-scores for both skewness and kurtosis. The histogram presented a normal curve and the Q-Q

plot appeared normal. Levene's test was used to check for homogeneity of variance; resilience had a nonsignificant ($p = .493$) probability value on the Levene's test, supporting adequate homogeneity of variance for resilience.

Prior to conducting a hierarchical multiple regression, assumptions of regression were tested. First, a sample size of 280 was regarded as sufficient given four independent variables (optimism, coping self-efficacy, social support and physical activity) along with covariates (gender, marital status, and education). Singularity was met due to the independent variables not being a combination of other independent variables. In an examination of the correlation matrix (Table 2), the only independent variables that were highly correlated were optimism and coping. However, the collinearity statistics (Tolerance and VIF) were within acceptable limits and thus the assumption of multicollinearity appears to have been met. Residual and scatter plots indicated the assumptions of normality, linearity, and homoscedasticity were all satisfied.

Results

Participants included males ($n = 191$) and females ($n = 111$), age 19 to 74 ($M = 39.94$, $SD = 10.31$). Most participants were white (86%), married (60.6%), and educated (27.8% had received masters degrees). The sample reported service ranging 1.5 to 42 years. Most participants reported their service status as Enlisted (69.3%), with the remainder of participants serving/had served as Officers (27.9%) or Warrant Officers (2.6%) 66.9% of the participants reported completing resilience training; of those, 65.5% described the training as useful. The sample include Active Duty service members (57.9%) (including National Guard and Reservists), and Veterans (42.1%). Table 1 characterizes the sample based on those who completed the resilience measure; the total number of participants who completed at least one survey item was 432, the researchers used pairwise deletion to characterize the sample and run the main analyses.

Table 1

Demographic Characteristics of the Study Sample

Variable	N	M (SD)
Age	265	39.94(10.31)
Duration of Service	225	12.42 (7.76)

Variable	N	Percentage
Sex		
Male	191	63.2
Female	111	36.8
Marital Status		
Single	32	10.6
Committed Relationship	26	8.6
Married	183	60.6
Separated	4	1.3
Divorced	38	12.6
Divorced and Remarried	16	5.3
Widowed	3	1
Race		
African American	12	4.0
American Indian/ Alaskan Native	2	0.7
Asian	6	2
Biracial	8	2.6
Caucasian	258	86.0
Native Hawaiian	1	0.3
Other	14	4.7
Ethnicity		
Hispanic/Latino	25	8.3
Not Hispanic/Latino	274	90.7
Education		
High School	13	4.3
Some Undergraduate/ Pursuing Degree	78	25.8
Bachelors	82	27.2
Some Graduate/ Pursuing Degree	33	10.9
Masters	84	27.8
Professional/Doctorate	15	4.0
Geographic Location		
Northeast	47	15.6

Midwest	48	15.9
South	168	55.6
West	37	12.3
Other/International	2	.7
Service Status		
Enlisted	194	69.3
Officer	78	27.9
Warrant Officer	8	2.6

Mean, standard deviations, and correlations for the predictor and outcome variables are

presented in Table 2. Coping self-efficacy, optimism, and social support were all correlated with

resilience ($p < .01$). Physical activity was not significantly correlated.

First, t-tests were run to look at gender differences and compare Active Duty service

members and Veterans. Male participants reported higher resilience scores ($M = 32.13$, $SD =$

6.31), than female participants ($M = 30.11$, $SD = 5.86$), $t(308) = 2.78$, $p = .006$). The effect size

($d = .36$) indicated a small to medium effect using Cohen's standard for assessing effect sizes

(Cohen, 1977). The overall mean of scores on the resilience scale were higher in Active Duty

service members ($M = 31.95$, $SD = 6.13$) compared to Veterans ($M = 30.60$, $SD = 6.27$), $t(307) =$

1.88, $p = .061$. The effect size was small ($d = .21$). Although differences in mean scores were

observed between the two groups, they were not statistically significant differences.

Table 2

Correlation Coefficients for Variables Included in the Study

Measure	1	2	3	4	5	6	7	8
1. Resilience	-							
2. Coping Self-Efficacy	.74**	-						
3. Optimism	.63**	.70**	-					
4. Overall Social Support	.38**	.53**	.48**	-				
5. Family SS	.31**	.43**	.42**	.884**	-			
6. Friend SS	.41**	.57**	.47**	.854**	.65**	-		
7. Sig. Other SS	.27**	.40**	.37**	.874**	.64**	.603**	-	
8. Physical Activity	0.06	.16**	0.11	.12*	0.11	0.09	.13*	-

M		31.38	185.69	11.17	65.17	21.53	21.17	22.54	507.96
SD		6.22	48.64	2.48	16.57	6.54	9.94	6.57	93.18

*p < .05, ** p < .01.

A linear regression was used to further examine the difference in resilience scores

between those who did and did not participate in resilience training and found that only 2% of

the variance in resilience scores were explained by participation in resilience training, F (7, 271)

= 3.98, p = .000). For those who participated in training, their predicted resilience score would be

2.03 points higher than those who did not participate in training [β =-2.03 , 95% CI (-3.66, -.39),

t=-2.44, p = .015] while controlling for gender, marital status, and education.

A two stage hierarchical regression was conducted to examine predictors of resilience

while controlling for gender, marital status, education, and resilience training. Demographic

variables were entered in the first stage to examine their relative contribution. The predictors,

optimism, coping self-efficacy, social support, and physical activity were entered in the second

stage. The hierarchical regression revealed that only gender, education, and resilience training

emerged as significant and contributed to 9.4% of variance in resilience scores, F (4, 284) =

7.25, p = .000. The introduction of the predictor variables (optimism, coping self-efficacy, social

support, and physical activity) explained an additional 57.9% of variation in resilience and this

change in R^2 was significant, F(8, 284) =49.89, p = .000.

The researchers used backward selection to create a more parsimonious model to explain

the strongest predictors of resilience scores. The covariates included were: gender, education and

completion of resilience training, along with two predictors: coping self-efficacy and optimism

(Table 3). This regression revealed that coping self-efficacy and optimism were significant

predictors of resilience, [F(5, 287) = 76.90, p = .00] and accounted for 57.7 % of the variation in

resilience. The model addressed both demographic and psychosocial variables in relation to

resilience. For each unit increase in coping self-efficacy, resilience increased by 0.57 [$\beta = 0.57$, 95% CI (.06, 0.09), $t = 10.31$, $p = .00$], while controlling for gender, education, and completion of resilience training. For each unit increase in optimism, resilience increased by .22 [$\beta = .22$, 95% CI (.06, .86), $t = 10.39$, $p = .00$], while controlling for gender, education, and completion of resilience training.

Table 3

Hierarchical Regression Predicting Resilience from Optimism and Coping Self Efficacy, While Controlling for Gender, Education, and Participation in Resilience Training (N = 287)

Predictor	R^2	ΔR^2	β	t	Sig. (p)
Step 1	0.08	0.08			
Gender (Male)			-0.17	-2.87	0.004
Education			0.20	3.52	0.001
Resilience Training (Y/N)			-0.14	-2.43	0.016
Step 2	0.58	0.49			
Optimism			0.22	3.93	0.000
CSE			0.57	10.31	0.000
Total R^2		0.58			

*$p < .05$, ** $p < .01$

Discussion

The purpose of this exploratory study was to examine predictors of resilience in a military sample of Active Duty and Veteran service members of the United States Army. A cross-sectional study design was used to investigate psychosocial and demographic predictors of resilience. The researchers also examined variations in resilience scores between those who self-reportedly had or had not received formal resilience training. In a sample (N=432) of adults who completed the survey, optimism, coping self-efficacy, social support, and physical activity were evaluated for their contributions to overall resilience scores.

Research Question 1

The first research question examined the contribution of predictors to resilience, the researchers hypothesized that social support, optimism, coping self-efficacy, and physical activity would contribute to variance in resilience. However, only optimism and coping self-efficacy proved to be statistically significant predictors. Physical activity was neither correlated with nor a significant predictor of resilience. Social support was correlated with resilience but was not a significant predictor in the regression model. Optimism was the largest predictor and strongest positively correlated with resilience. This finding is consistent in multiple studies examining optimism and resilience (Lamond et al., 2008; H. Lee et al., 2008; Luthans, Avolio, Avey, & Norman, 2007; Segovia et al., 2012). In one longitudinal study in which resilience was defined as the absence of a psychiatric diagnosis over a 37-year follow-up period, dispositional optimism accounted for 14% of the variance in resilience (Segovia et al., 2012), compared to optimism accounting for almost 25% of the variance in resilience in the present study.

Contrary to finding that optimism contributed more to resilience than self-efficacy, a meta-analysis of resilience and protective factors found that self-efficacy emerged as the strongest variable related to resilience, even stronger than life satisfaction, optimism, positive affect, social support, and self-esteem (J. H. Lee et al., 2013). In the meta-analysis overall, the protective factors emerged as having a stronger positive impact on resilience than the weaker negative correlation of risk factors (anxiety, depression, negative affect, stress, PTSD) to resilience. This bolsters the findings from the present study support the focus on protective factors rather than risk factors (such as combat stress, depression, marital problems etc.) when informing the building blocks of resilience (J. H. Lee et al., 2013).

Coping self-efficacy also contributed to significant variance in resilience, also in agreement with the research hypothesis and several previous studies linking coping and resilience (Tsai et al., 2012), and coping self-efficacy specifically with resilience to distress (Benight et al., 2000; Benight et al., 1999; Smith et al., 2013). One study evaluated social support and post-deployment coping self-efficacy in a sample of both active duty and Veteran service members who had served in combat situations. Through a mediation analysis, the researchers found that social support indirectly predicted distress severity by working through post-deployment coping self-efficacy (Smith et al., 2013). It was emphasized that perceptions of social support contributed to healthier adaptation post-deployment through improving individual's perceptions of self-efficacy. Interventions focused on self-efficacy were mentioned as potential avenues to reduce distress, increase resilience, and improve one's ability to access internal (confidence) and external (social support) resources.

Another study examined coping self-efficacy as a mediator of distress after a Hurricane (Benight et al., 2000). While social networks affected by a disaster experience similar challenges and can be supportive of one another, the case is different with combat Veterans and other military personnel since their support networks outside of the service have difficulty understanding the challenges associated with going to war (Smith et al., 2013). In another study, optimism partially mediated the relationship between self-efficacy and perceived social support to well-being (Karademas, 2006). Using similar variables as the present study, it would be beneficial for future researchers to run mediational analyses on a military sample to see how coping self-efficacy, optimism, and social support might interact in relation to resilience.

Multiple factors could have contributed to optimism and coping self-efficacy presenting as the highest predictors of resilience. Additionally, 67.4% of the participants reported that they

had received resilience training, optimism is cited as one of the six MRT core competencies in the resilience training program (Harms et al., 2013). The participants' completion of resilience training might have exposed them to avenues to support their optimism or have a generally more favorable outlook. In an evaluation of outcomes from the Comprehensive Soldier and Family Fitness Program, optimism emerged as a mediator between the effects of resilience training on diagnoses for mental health problems (Harms et al., 2013).

Consistent with hypotheses, coping self-efficacy and optimism were found to be strong predictors of resilience; while social support was correlated with resilience, it was not found to be a significant predictor when controlling for other covariates. In a longitudinal study of resilience and mental health, researchers also used the Multidimensional Scale of Perceived Social Support (Zimet et al., 1988) and the CD-RISC (Connor & Davidson, 2003) to measure resilience. The researchers found a strong positive correlation between resilience and social support ($r = .17$), which was not as strong as in the present study ($r = .38$). Social support emerged as one of the strongest protective factors of resilience that was associated with improvement in mental health over time (Hourani et al., 2012). These findings highlight the importance of implementing "transition buddies" or other social relationships to ease the transition process from service to civilian life (Hourani et al., 2012).

In other studies examining resilience, and more military-specific forms of social support (unit support, post deployment social support), resilience fully mediated the relationship between unit support and PTSD and depressive symptoms (Cunningham et al., 2014; Pietrzak et al., 2010; Smith et al., 2013). Similar to Smith and colleagues (2013) conclusions regarding the interaction between resilience, social support, and self-efficacy, it was suggested that unit increases in

resilience may enhance self-efficacy and feelings of personal control, and efficacious coping styles (Bartone, 2006; Pietrzak et al., 2010; Pietrzak & Southwick, 2011).

A unique feature of the present study is the exploration of both psychosocial and a behavioral predictor of resilience. The researchers hypothesized that physical activity (measured as METs) would both be positively correlated with resilience and significant predictor of resilience. Participation in physical activity and levels of physical fitness were both associated with buffering of stress symptoms (Hegberg & Tone, 2015; Taylor et al., 2008). Researchers had observed that the connection between physical activity and resilience could be attributed to cognitive and emotional experiences during physical activity, such as self-efficacy, social engagement, and increased sense of control (Gaudlitz, von Lindenberger, Zschucke, & Strohle, 2013). Thus, it was surprising that resilience was not significantly correlated with physical activity, nor did it present as a significant predictor in the regression model. These observations could be due to ceiling effects given that the estimated MET values from this study indicate a highly active sample. These speculations are like since much of the sample was recruited from a physical and social activity-based non-profit. Thus the sample may report higher levels of physical activity than general service member and Veteran populations. Self-selection bias from this recruitment process could have also introduced some issues with the data as many highly active individuals may have shown interest in this study. It would be beneficial to have a more objective measure of physical activity to evaluate for the relationship between physical fitness and resilience.

Research Question 2

The second research question compared resilience scores between those who did or did not participate in a resilience training program during their time in the military. Resilience scores

were significantly higher in those who reported that they had received training as opposed to not.

Additionally, within the hierarchical regression, resilience training was also found to be a

significant predictor of resilience when controlling for other demographic variables. The purpose

of the present study was not to evaluate the effectiveness of resilience training programs, rather

explore predictors of resilience and capture an overview of resilience scores compared between

groups using a measurement that had been tested with both military and non-military samples. In

an evaluation of the Comprehensive Soldier and Family Fitness Program (CSF2), units that had a

Master Resilience Training, who delivered resilience training, self-reported higher resilience and

psychological health (Harms et al., 2013). In another study examining the Master Resilience

Training in Army National Guard Soldiers, over 90% of the participants reported that the training

modules were helpful and 96% reported using the MRT skills in their military job (Griffith

& West, 2013). It should also be noted that the sample in the Griffith and West (2013) study

included both military and civilian contractors that completed the MRT program, and may

not be generalizable to only military personnel MRTs or those delivered the unit-based training

from the MRT military leadership.

  Group differences in resilience were recognized between those who had and had not

received training, but the significance of these differences decreased when controlling for other

demographic data. It was surprising to see a high percentage of individuals who had not received

training given that the Army has required all Active Duty service members to complete a certain

number of hours of unit-level resilience training since 2014. There are three central explanations

that could have contributed to this finding. First, the inclusion of both Active Duty and Veteran

service members could mean that many participants could have transitioned out of service prior

to the 2014 resilience training regulation. Secondly, the question was deliberately vague since

the present study was not affiliated or funded by the Department of Defense or military

contractors facilitating the delivery of the resilience. The researcher did not cite the

Comprehensive Solider and Family Fitness program specifically, which has become to primary

source of resilience training in the Army. Lastly, soldiers receive and complete numerous

trainings per year and the sheer volume of training demands on the service members could have

contributed to either the individual not completing the training as of the date of data collection,

or the possible inclusion of resilience training in another titled training course.

Research Question 3

The final research question examined if and how demographic variables might predict

variation in resilience. Statistically significant differences in resilience scores were found for

gender and education. The mean scores of this study were similar to those found in Active Duty

military personnel (Prabhakaran et al., 2012), and slightly higher than a sample of Stryker

Battalion combat troops (Hammermeister, Pickering, McGraw, & Ohlson, 2012), and a

community sample of military Veterans (Green et al., 2014).

Covariates that were controlled for could have represented factors that were an added

buffer for stress from a military standpoint (Cunningham et al, 2014). In the hierarchical multiple

regression, gender and education were found to be predictors of resilience. Using an

independent samples t-test, resilience scores were found to be significantly higher in males than

females which was contrary to a study finding that females scored higher than males (Davidson

et al., 2005). Variation in resilience based on marital status and education have not been explored

extensively in the literature and warrant further examination. Surprisingly, differences were not

significant based on duration of service under the possible assumption that those serving longer

experience more adversity and thus more opportunities to become resilient.

Explanations for the demographic variables emergence as significant or not significant could be attributed to aspects of the sample itself. Research has shown that spousal support is an integral part of the protective network that supports a soldiers resilience (Riggs & Riggs, 2011). The connection between support of a significant (especially married) significant other can contribute to an Active Duty service member or Veteran's resilience. Additionally, the CSF2 resilience training programs include a component to train spouses of military personnel to be Master Resilience Trainers, increasing their role in the development of resilient qualities for their significant other (Dunning & Raymond, 2013). Continued exploration of how spousal support contributes to resilience is warranted.

Education can also act as a buffer to stressors as those who have or are currently engaging in academic pursuits could have added support networks and resources to allow them to effectively manage challenges and contribute to resilience outcomes in the face of daily or military-oriented adversity. A large percentage of the participants had obtained a bachelors' or masters' degree or were currently pursuing a degree. Researchers examining community samples have found a positive relationship between education and resilience (Campbell-Sills et al., 2009), while others did not find the relationship between education and resilience to be significant (Lamond et al., 2008). An additional theory for the high education status is the increase in overall bachelor's degrees obtained by military personnel- particularly officers and warrant officers which made up slightly one third of the sample (compared with approximately one fourth of the overall active military population) (Military One Source, 2014). The GI bill, or opportunity for soldiers to return to school to finish or complete an advanced degree could have also contributed to the higher education status when specifically taking into account Veterans and part-time service members (National Guard and Reservists). Further explorations of military

service members and demographic characteristics that may influence resilient qualities should include inquiries of MOS, or Military Occupation Specialty which designates one's role within the military, and an individual's rank to gather a more complete picture of the military service.

Additionally, gathering MOS could have impacted the data by identifying the types of jobs, responsibilities, experience, and challenges associated with individual tasks of military service. The present study did not differentiate those serving mainly in intelligence analysis or informational technology roles from those engaging in combat more frequently such as those in special operations branches of the US Military. Unique demands, qualifications, and experiences can shape the development of one's resilience over time.

Limitations and Recommended Future Research

This study was a convenience sample of Army service members and Army Veterans and may not be generalizable to the Army as a whole or to other branches of the US military that might have different exposures to resilience training and demands of service. All measures were self-report and subject to social desirability and rater bias. General resilience was only measured at one point which may lack sensitivity to measure variations in acute or chronic stress over time such as those accompanying military service and post-service Veteran transitions. Many of the participants were recruited through Team Red, White, and Blue which is a physical and social activity based non-profit for soldiers and Veterans which could have contributed to the homogenous sample in regards to physical activity, significant relationships between resilience scores and physical activity could have been more visible in a sample that included a more representative population of Active Duty service members and Veterans.

It was noted that there are differences in the quantity and quality of resilience training in the military and there are large differences between Master Resilience Training (MRT) and site-

delivered unit based resilience training which is disseminated by leadership who are certified as MRT trainers. The volume and intensity of the resilience training varies greatly between the two which may not have been adequately accounted for in the present study.

Additionally, the sample included missing data which is inevitable with survey research. The small sample size may have reduced the statistical power and limited our chances of observing significant predictors such as physical activity. One challenge when working with this population is the high volume of studies conducted with the military, thus survey fatigue could be a major concern. Additionally, as with many other studies (see Lee et al., 2013 for review), the sample was relatively homogenous and subject to self-selection bias. The sampling methods of convenience and snowball sampling contribute to the possibility of the sample not being a clear reflection of US Army Active Duty and Veteran service member population as a whole. Lastly, the study could have been strengthened by collecting additional data including rank, MOS, and deployment status/number of deployments to get a more vivid picture of the demands faced, experiences acquired, and qualifications of the sample. This information would be beneficial to collect in the continued study of resilient qualities in the military.

Resilient qualities can also be explored in more specific sub-samples of the US Army or other branches, specifically those who have experienced PTSD, and/or other psychological or physical challenges. Resilient qualities are cultivated through both the experience of and positive adaption to perceived trauma or stress. It would beneficial to further study one's exposure to or perceived exposure to combat situations or other military-specific sources of trauma.

The study predictors of resilience in the military would benefit from longitudinal designs in order to evaluate how resilience might change over a portion of the lifetime, military career, or during pre and post-deployment. This could inform targeted resilience training programs that

support specific skills when they are most needed, i.e. optimism early on in one's career and social support prior to transition out of service. Life stress could be viewed as a potential confounding factor when evaluating predictors of resilience thus future studies could try to control or measure life stress in conjunction with resilience. Inquiries on other branches of the military would be beneficial as they do not have mandated resilience training and perhaps encounter different challenges and demands that could fuel the development of resilience.

As discussed in the expanded review of literature, constructs such as post-traumatic growth, mental toughness, grit, hardiness, and coping can have some overlap or similar characteristics to resilience. It would be beneficial to explore their role in protective factors that buffer the effects of stress and adversity associated with military service. Few studies exist exploring the relationship of related construct to physical activity- thus another path warranted exploration. Researchers seeking to conduct a similar study should consider a longer and more comprehensive measure for social support, a larger sample size for additional power, and more complex analyses such as structural equation modeling to evaluate mediation. In conjunction with a larger sample size, many studies are conducted with white American males and a more diverse sample could help identify how resilience varies across cultural differences (J. H. Lee et al., 2013). In addition to culture, religion could play a vital role in the development of resilient qualities, and it would be useful to examine predictors of spiritual resilience, as designated as a component of the CSF2 resilience training program. The functionality of faith can be vital piece of how soldiers encounter and overcome adversity.

Cross-sectional designs are helpful to show relationships between predictors and a strength of this exploratory study lies in the civilian researcher inquiring the usefulness of the resilience training program. However, more robust experimental designs such as RCTs would be

a valuable effort to uncover the impact that such programs have on soldier well-being,

adjustment, and resilience (Meredith et al., 2011). Additionally, longitudinal and/or RCT studies

could also more empirically navigate if and how physical activity might enhance resilience and

the methods by which this process assuages mental health risks in various military and Veteran

populations (Hegberg & Tone, 2015), this could be particularly beneficial for Veterans as their

occupational physical activity likely decreases following transition into civilian life.

Practical Implications

The above limitations withstanding, the present study has important practical

implications. Specifically, training programs that target optimism as a central pillar to promote

resilience and help soldiers cope with emotional distress are supported (Casey Jr, 2011).

Additionally, programs can benefit from incorporating any means of improving coping self-

efficacy in soldiers. Optimism is one of the core competencies of the resilience curriculum

currently utilized by the United States Army. Optimism is seen as the "engine of resilience" and

is used to help a soldier "hunt the good stuff" in the most challenging of situations. Optimism

could be used in real time resilience to fight back against counterproductive thoughts that get in

the way of optimal performance when it matters most. This could be implemented by self-talk

interventions by sport or performance-focused practitioners.

The ability to help military personnel cultivate both optimism and coping self-efficacy is

beneficial on the front-end, as a proactive strategy rather than reactive in the face of adversity.

Using the tools of cognitive training can contribute to deliberate thinking. For instance, guided

imagery and positive self-talk can be implemented with soldiers in a manner that fosters

optimism and coping self-efficacy. This could be implemented by working with soldiers to

develop guided imagery scripts or audio files that stimulate such images. Over time, these guided

imagery files might be stored as libraries for future use. Once these imagery skills are developed

on the front end, soldiers are armed with additional psychological armor when encountering the

monumental stress of military service. In unknown situations, which are a guarantee in military

service, optimism and coping self-efficacy can help guide an individual to the most controllable

aspects of a situation and persist through difficult times.

Current programming utilizes optimism in this manner, however there are avenues in

which to support these efforts by increasing soldiers coping self-efficacy. This could entail a

reflection on the best performances under pressure, reinforcing the resilience the soldier has

cultivated even early on in training, and discussion of how to handle already-anticipated

adversity. Coping self-efficacy is often about strengthening pathways to support, including social

support from one's unit, family, and friends. It would be helpful to reinforce the importance of

these networks and increase the variance in availability of such resources throughout resilience

training and throughout military service. A critical step in this process is to address and counter

the stigma associated with asking for help or support, and instead see this as a social

strengthening mechanisms of resourcefulness and unity.

Active Duty service members, Veterans, military families and spouses, civilian military

contractors, organizations supporting soldiers and Veterans are all active stakeholders in creating

a military force increasingly capable of coping with stress and adversity. There exists an

enormous personal, institutional, economic, and emotional cost related to challenges that military

personnel and Veterans volunteer to endure and the identification and development of resilient

qualities can be an effort to assuage some of this cost and support the well-being of military

personnel. The findings of the present study contribute knowledge relevant to the movement

towards proactive and preventative measures to enhance resilient characteristics and support our nation's service members.

Conclusions

In conclusion, the present study sheds light on possible demographic differences in resilience of a military sample. Males scored higher on resilience than women, age was not a significant predictor of resilience, education had a slightly significant relationship with resilience, and marital status was a significant predictor- revealing a potentially important piece of social support. Participants who reported completing resilience training scored higher on resilience than those who reported not having completed the training Most critically, it was found that optimism and self-efficacy were significant predictors of resilience, which carries strong support and additional considerations for existing resilience training efforts.

While optimism is a central component of resilience training programs, the addition of programming to bolster soldier coping self-efficacy warrants consideration. To build coping self-efficacy, resilience training can strengthen or create additional resource networks for soldiers to their social community and internal resources. The research supports the notion that resilience *can* be developed and this could happen through identifying paths to an optimistic mindset and supporting internal (visualization, meditation, problem-solving, self-talk) and external (unit support, recreational activities, friends and family) resources. It was clear that optimism and coping self-efficacy were predictors of resilience in this study, however they are not the only predictors of resilience and comprehensive models examining other variables such as Post-Traumatic Growth or grit would be beneficial to support the current resilience research in community, clinical, and military-based samples.

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Appendix A

Participant Recruitment Advertisement and Informed Consent

Research Study on Resilience in the Military

The ultimate measure of a man is not where he stands in moments of comfort and convenience, but where he stands at times of challenge and controversy.
-Dr. Martin Luther King Jr.

- Are you currently serving in the United States Army or a Veteran?
- Are you willing to help further the research on resilience?

If you answered YES to these questions, please consider taking the 10-minute survey (link below). The survey is completely anonymous and confidential. Army Reserves and National Guard are also eligible to participate.

Though you may hear "thank you" often, I don't feel it can ever be enough. Your sacrifices to our Nation have not gone unnoticed. It is an honor to work with amazing men and women who are still serving or Veteran service members of the US Army. Thank you for volunteering to support and defend the Constitution of the United States.

Please email Anna-Marie Jaeschke at ajaeschk@mix.wvu.edu if you have any questions.

****************LINK*********************

West Virginia University IRB Protocol: 1511924190

Dear Participant,

Foremost, thank you for your service to our Nation. Though you may hear "thank you" often, I don't feel it can ever be enough. Your sacrifices to our Nation have not gone unnoticed. It is an honor to work with amazing men and women who are still serving or Veteran service members of the US Army. Thank you for volunteering to support and defend the Constitution of the

United States.

I am a doctoral student in Sport and Exercise Psychology at West Virginia University conducting a study for my dissertation entitled: *Psychosocial Predictors of Resilience in the Military.* I am reaching out to as many US Army service members and Veterans as possible to gather information on how certain factors contribute to resilience.

To complete the survey you must be Active Duty Army, US Army Reserve (USAR), or Army National Guard (ARNG) or be a Veteran of the US Army, USAR, or ARNG. Participants must be over the age of 18 and not have a serious mental illness. The survey ends with a page of mental health resources for service members and Veterans.

Your participation will require approximately 10 minutes. If you would like to participate, click start survey below.

You can stop the survey at any time without penalty. Information you provide will be **completely confidential**. Your responses will be **anonymous** and at no time will the researchers be collecting your name, birth date, or contact information.

I hope you will agree to participate in my study. I am happy to answer any questions you may have. You can reach me by email at ajaeschk@mix.wvu.edu.

Thank you kindly for your time and service.

Sincerely,
Anna-Marie Jaeschke, Doctoral Student
Peter Giacobbi, Faculty Supervisor

Appendix B

Battery of Measures

Demographic Questionnaire

1. Age: Please enter your age in years:

2. Sex:
      Female   Male

3. What is your current marital status:

1. Single
2. In Committed Relationship (Unmarried/Cohabitating)
3. Married
4. Separated
5. Divorced
6. Divorced and Re-Married
7. Widowed

4. Race:
   1. African American/Black
   2. American Indian/Alaskan Native
   3. Asian
   4. Biracial
   5. Caucasian/White
   6. Native Hawaiian/Pacific Islander
   7. Don't Know
   8. Other: (please specify)_____

5. Are you Hispanic or Latino?
   Yes   No

6. Level of Education (select highest degree obtained)
   1. High School Diploma/GED
   2. Some Undergraduate/Pursuing Degree
   3. Bachelors Degree
   4. Some Graduate/Pursuing Degree
   5. Masters Degree
   6. Professional/Doctoral Degree

7. In which general geographic location do you currently live/are stationed? (Regions are based on US Census)
   1. Northeast (Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont)
   2. Midwest (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin)
   3. South (Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Washington D. C., West Virginia)
   4. West (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming)
   5. Other US Territory or International location

Military Involvement Questions

1. How many years have you served/did you serve in the Army?
Please enter the duration of service in years and months:

2. Please check the box that best describes your current military status with the U.S. Army:
Active Duty Soldier
Reserve Service Member
National Guard
Veteran

3. Which best describes your current/former status (for Veterans) in the United States Army?
(Check all that apply)
Enlisted
Officer
Warrant Officer

4. Have you ever been deployed?
Yes
No

5. Have you ever received formal resilience training as part of your military service?
Yes
No

6. (If yes), did you find the resilience training useful?
Yes
No

Physical Activity

The next section asks about various "levels" of physical activity (vigorous, moderate, light) – while at your job, while at home, and during your leisure/free time. Please answer each question thinking first about summertime, then about wintertime. (If the question does not apply to you, for example, because you do not have a paid job or are retired, please circle 6 for "Never".)

1. How often do you engage in **vigorous** physical activity that causes your heart to beat so rapidly that you can feel it in our chest **and** you perform the activity long enough to work up a good sweat **and** are breathing heavily? (Examples: competitive sports like running, vigorous swimming, or high intensity aerobics; digging in the garden, or lifting heavy objects).

	Several Times a week	Once a week	Several times a month	Once a month	Less than once a month	Never
While at your paid job...						
a. During the Summer?	1	2	3	4	5	6
b. During the Winter?	1	2	3	4	5	6
While performing chores in and around your home...						
a. During the Summer?	1	2	3	4	5	6
b. During the Winter?	1	2	3	4	5	6
During your leisure or free time...						

	Several Times a week	Once a week	Several times a month	Once a month	Less than once a month	Never
a. During the Summer?	1	2	3	4	5	6
b. During the Winter?	1	2	3	4	5	6

How often do you engage in **moderate** physical activity, that is not physically exhausting, **but** it causes your heart rate to increase slightly **and** you typically work up a sweat? (Examples: leisurely sports like light tennis, slow or light swimming, low impact aerobics, or golfing without a power cart; brisk walking, mowing the lawn with a walking lawnmower)

	Several Times a week	Once a week	Several times a month	Once a month	Less than once a month	Never
While at your paid job...						
a. During the Summer?	1	2	3	4	5	6
b. During the Winter?	1	2	3	4	5	6
While performing chores in and around your home...						
a. During the Summer?	1	2	3	4	5	6
b. During the Winter?	1	2	3	4	5	6
During your leisure or free time...						
a. During the Summer?	1	2	3	4	5	6
b. During the Winter?	1	2	3	4	5	6

How often do you engage in **light** physical activity that requires little physical effort? (Examples: light house keeping like dusting or laundry; bowling, archery, easy walking, golfing with a power cart or fishing)

	Several Times a week	Once a week	Several times a month	Once a month	Less than once a month	Never
While at your paid job...						
a. During the Summer?	1	2	3	4	5	6
b. During the Winter?	1	2	3	4	5	6
While performing chores in and around your home...						
a. During the Summer?	1	2	3	4	5	6
b. During the Winter?	1	2	3	4	5	6
During your leisure or free time...						
a. During the Summer?	1	2	3	4	5	6
b. During the Winter?	1	2	3	4	5	6

Multidimensional Scale of Perceived Social Support

(Zimet, Dahlem, Zimet & Farley, 1988)

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

Circle the "1" if you Very Strongly Disagree
Circle the "2" if you Strongly Disagree

Circle the "3" if you Mildly Disagree
Circle the "4" if you are Neutral
Circle the "5" if you Mildly Agree
Circle the "6" if you Strongly Agree
Circle the "7" if you Very Strongly Agree

1. There is a special person who is around when I am in need.
2. There is a special person with whom I can share my joys and sorrows.
3. My family really tries to help me.
4. I get the emotional help and support I need from my family.
5. I have a special person who is a real source of comfort to me.
6. My friends really try to help me.
7. I can count on my friends when things go wrong.
8. I can talk about my problems with my family.
9. I have friends with whom I can share my joys and sorrows.
10. There is a special person in my life who cares about my feelings.
11. My family is willing to help me make decisions.
12. I can talk about my problems with my friends.

*Are there other forms of social support you receive? If so, please list them here:

Coping Self-Efficacy Scale

When things aren't going well for you, or when you're having problems, how confident or certain are you that you can do the following:

Cannot do at all   Moderately certain can do   Certain can do

0   1   2   3   4   5   6   7   8   9   10

For each of the following items, write a number from 0 - 10, using the scale above. When things aren't going well for you, how confident are you that you can:

1. Keep from getting down in the dumps. _____
2. Talk positively to yourself._____
3. Sort out what can be changed, and what cannot be changed. _____
4. Get emotional support from friends and family._____
5. Find solutions to your most difficult problems._____
6. Break an unsettling problem down into smaller parts. _____
7. Leave options open when things get stressful. _____
8. Make a plan of action and follow it when confronted with a problem. _____
9. Develop new hobbies or recreations. _____
10. Take your mind off unpleasant thoughts. _____
11. Look for something good in a negative situation. _____
12. Keep from getting sad. _____
13. See things from the other person's point of view during a heated argument. _____

14. Try other solutions to your problems if your first solutions don't work. _____
15. Stop yourself from being upset by unpleasant thoughts. _____
16. Make new friends. _____
17. Get friends to help you with the things you need. _____
18. Do something positive for yourself when you get discouraged. _____
19. Make unpleasant thoughts go away. _____
20. Think about one part of the problem at a time. _____
21. Visualize a pleasant activity or place. _____
22. Keep yourself from feeling lonely. _____
23. Pray or meditate. _____
24. Get emotional support from community organizations or resources. _____
25. Stand your ground and fight for what you want. _____
26. Resist the impulse to act hastily when under pressure. _____

Revised Life Orientation Test (LOT-R)

Instructions: Please answer the following questions about yourself by indicating the extent of your agreement using the following scale:
[0] = strongly disagree
[1] = disagree
[2] = neutral
[3] = agree
[4] = strongly agree

Be as honest as you can throughout, and try not to let your responses to one question influence your response to other questions. There are no right or wrong answers.

_____ 1. In uncertain times, I usually expect the best.

_____ 2. It's easy for me to relax.

_____ 3. If something can go wrong for me, it will.

_____ 4. I'm always optimistic about my future.

_____ 5. I enjoy my friends a lot.

_____ 6. It's important for me to keep busy.

_____ 7. I hardly ever expect things to go my way.

_____ 8. I don't get upset too easily.

_____ 9. I rarely count on good things happening to me.

_____ 10. Overall, I expect more good things to happen to me than bad.

Connor-Davidson Resilience Scale 10 (CD-RISC-10)

*For each item, please mark an "**x**" in the box below that best indicates how much you agree with the following statements as they apply to you over the last **month**. If a particular situation has not occurred recently, answer according to how you think you would have felt.*

| not true | rarely | sometimes | often | truly nearly |
| at all (0) | true (1) | true (2) | true (3) | all the time (4) |

1. I am able to adapt when changes occur.
2. I can deal with whatever comes my way.
3. I try to see the humorous side of things when I am faced with problems.
4. Having to cope with stress can make me stronger.
5. I tend to bounce back after illness, injury, or other hardships.
6. I believe I can achieve my goals, even if there are obstacles.
7. Under pressure, I stay focused and think clearly.
8. I am not easily discouraged by failure.
9. I think of myself as a strong person when dealing with life's challenges and difficulties.
10. I am able to handle unpleasant or painful feelings like sadness, fear, and anger.

Appendix C:

Resource Page for All Participants

Resources for Veterans and Active Duty Service Members

Military One Source
Central hub and go-to place for the military community, including:
-Access to confidential counseling, financial and legal support
-Health and wellness service providers
-Deployment and transition resources
-Live chat feature
http://www.militaryonesource.mil

Operation We Are Here
Resources for the military community and military supporters including:
-Educational materials and coping resources for PTSD
-links to dozens of other services (housing, employment, stress management)
http://www.operationwearehere.com/PTSD.html

Team Red, White and Blue
Connects Veterans to their community through physical and social activity
-Locally based free group exercise classes (Yoga, Crossfit, etc), Veteran athletic camps, and group flag runs
http://www.teamrwb.org

Free Mental Health Smart Phone Apps for Veterans
-Offering free apps to help with:
-Stress, cope with PTSD, gain access to a counselor or therapist, quit smoking, improve sleep, increase positive thinking, work on concussion symptoms, lose weight, track emotional states and triggers, and more.
http://gov.texas.gov/files/disabilities/Vets_SmartphoneApps.pdf

General Sources for Relaxation, Anxiety Management, and Stress Reduction Guided Exercises, Worksheets
http://www.innerhealthstudio.com
http://www.calmclinic.com/anxiety/treatment/relaxation

Veterans Crisis Line
1-800-273-8255 Press 1
https://www.veteranscrisisline.net/ForVeterans.aspx

Crisis Text Line
Counselors on call 24/7, average response time two minutes
471-471

Physical and Psychology Benefits of Physical Activity
http://www.cdc.gov/physicalactivity/basics/pa-health/

Appendix D:

Letters of Support

DEPARTMENT OF THE ARMY
RESERVE OFFICERS' TRAINING CORPS (ROTC)
WEST VIRGINIA UNIVERSITY
PO BOX 6767
MORGANTOWN, WV 26506-6767

REPLY TO
ATTENTION OF

ATCC-DDW-VWV   18 April 2015

MEMORANDUM FOR RECORD

SUBJECT: Survey Personnel

1. I will be able to help Anna Jaeschke in getting her survey to at least 35-50 active duty US Army personnel who will be able to provide her with the numbers of personnel required to support her data analysis for her survey on predictors of resilience.

2. Me being an active duty officer preparing to take command of an battalion of more than 800 personnel as well as having a large group of peers who are on active duty I am more than confident that I can provide her with enough personnel to take the survey to help with her data analysis.

3. If you have any questions or concerns please contact me at steven.m.clark30.mil@mail.mil or steven.m.clark@outlook.com. I can also be reached on my personal cell phone at 760-887-7424.

STEVEN M. CLARK
Lieutenant Colonel, U.S. Army
Professor of Military Science

BAE Systems
8201 Greensboro Drive
Suite 1200
McLean, VA 22102
www.baesystems.com

BAE SYSTEMS
INSPIRED WORK

To Whom it May Concern,

I am willing to help Anna-Marie Jaeschke collect data for her dissertation by sending her survey out to peers, friends, colleagues, or other individuals I know who fit the inclusion criteria for her research. I have been informed that her project is on psychosocial predictors of resilience in the military.

I understand that signing this letter is not a binding contract, obligation, or promise. I understand that any active duty service member (including reserves and National Guard) and any veteran can participate in the 15-minute online survey. I am aware that the survey is anonymous and confidential and the researchers will have no identifying information of who has completed the survey.

I know I can send the survey link, (after approval from Institutional Review Board and her committee) via email, social media, or other electronic methods. I am aware that I will receive no financial incentive or reward for helping with this research project and am doing this to further research on resilience in the military. Finally, I know I can contact Anna-Marie or Peter Giacobbi at any point if I have questions about this research study.

Print Name:

Cordeiro, Joshua

Signature:

Credentials (Current/Retired Rank or Class):

SGT E-5

Date:

05-21-16

Appendix E:

Expanded Literature Review

Expanded Literature Review

The following literature review will examine historical roots of resilience, how resilience in defined, theoretical foundations and models of resilience, and how resilience is measured. Conceptually similar constructs such as post-traumatic growth, grit, and mental toughness will be discussed. Resilience will also be explored from a military perspective, including a closer look at resilience training programs. Literature on how resilience is developed within the military and in a general context will also be discussed.

Historical Roots of Resilience

The study of psychological resilience was fueled by a paradigm shift from a disease-model to recognizing and nurturing human strengths (Richardson, 2002). Early resilience research used a developmental approach to understand how some children were able to develop to be fully functional adults despite a difficult childhood (Garmezy, 1975). Noticing that many children did not develop psychopathology despite these adverse circumstances and risk factors lead to the term resilience, or the ability to cope with and bounce back from adversity. Researchers followed with longitudinal studies examining high-risk children and found that most children developed resilient qualities despite environmental instability (Bernard, 1997; Garmezy, Masten, & Tellegen, 1984; Rutter, 1979; Werner & Smith, 1992). Protective qualities or developmental emerged from this research that include both environmental and personal characteristics (Richardson, 2002). Werner and Smith (1992) studied high-risk children after 30 years and found that despite perinatal stress, poverty, parental psychopathology, and daily instability, 72 of the 200 children studied were doing quite well. Protective factors included personal characteristics (being female, robust, adaptable, tolerant, a good communicator, socially responsibly, and self-esteem). Additionally, inside or outside of the family caregiver-quality was

a valuable buffer to high risk conditions (Werner & Smith, 1992). Rutter (1979, 1985) found

despite stressors and disadvantage that resilient youth had particular qualities including easy

temperament, self-mastery, self-efficacy, positive climate at school, planning skills, being

female, and a warm relationship with a supportive adult. Garmezy, Masten, and Tellegen (1984)

looked at the children of schizophrenic parents and found that most children adapted well as

adults and became competent and warm people. The researchers developed a triad of resiliency

that included personality disposition, supportive home environment, and external support

system(s)(Garmezy et al., 1984; Rutter, 1979, 1985).

   While beneficial to identify and recognize resilience, Werner (1995) explored the link

between protective factors and successful adaptation in high risk children to see what could

inform interventions for at-risk children. Multiple protective factors emerged across studies that

contributed to children's ability to overcome adversity, individual characteristics such as

socializing behaviors with both adults and peers, problem-solving and communication skills,

having a talent or hobby that is valued by others, and a belief that they can initiate actions that

have a positive impact on their own life. Environmental protective factors included ties with

extended family or the community that reinforce trust, autonomy, and initiative. Caring

neighbors, teachers, elders, youth workers, and peers were powerful influences and reinforced

resilient children (Werner, 1993, 1995). Characteristics such as social support, self-belief, and

problem solving remain prevalent themes in current resilience literature (Connor & Davidson,

2003; Hu et al., 2015; J. H. Lee et al., 2013). Finally, in an exhaustive review of the literature,

Bernard (1997) found that 50-70% of children globally labeled as "high-risk" grow up to either

meet or exceed expectations of societal indicators such as confidence and caring for others

(Bernard, 1997).

This first wave of resiliency captured a comprehensive list of traits, states, characteristics, and qualities that allow people to recover from adverse circumstances and events. This paradigm shift also helped researchers realize that concepts of self-efficacy or esteem do not exist devoid of contextual variables such as supportive environments (Richardson, 2002). Research on resilient children laid the foundation for a continued shift towards studying more of what positive outcomes are gleaned from stress rather than contributors to stress or trauma in a variety of populations.

The second and third waves of resiliency literature focused on how resilient qualities are acquired through coping with stressors and the third wave explored how motivational forces within people and systems drive self-actualization and harmony between biological, psychological, and spiritual sources of strength (Richardson, 2002). However, the third wave has been criticized by researchers as overstating the role resilience plays in dictating universal outcomes (Windle, 2011; Fletcher and Sarkar, 2013). Richardson (2002) and his colleagues (1990) also developed a linear model describing the process of balance, imbalance, and protective factors and developed the metatheory of resilience which greatly influenced the sport resilience model (Galli and Vealey, 2008) and means of measuring resilience in a variety of populations (Connor & Davidson, 2003).

The field of positive psychology offered a new perspective and focus on individual strengths and this supported a rapid growth of resilience research in several branches of psychology (Seligman & Csikszentmihalyi, 2000). Particularly over the past two decades, psychologists' exploration of how people function under demanding circumstances has been examined in business (Riolli & Savicki, 2003), education (Condly, 2006), communities (Campbell-Sills et al., 2009; Lamond et al., 2008), athletic performance (Galli & Vealey, 2008),

and military (Meredith et al., 2011; Reivich et al., 2011a). Across many of these settings the term

resilience is difficult to study because it can be relative to the situation and researchers often

disagree on a uniform definition (Davydov, Stewart, Ritchie, & Chaudieu, 2010). These

conceptual challenges will now be explored.

Definitions of Resilience

Complexities are evident in the process of defining resilience (Luthar, Cicchetti, &

Becker, 2000; Masten, 2007) however two characteristics remain salient across various resilience

contexts and ways of defining resilience- the presence of adversity and the positive adaptation as

a result (Fletcher & Sarkar, 2013). Definitions have been comprised in an adapted table below:

Table 4: Adapted Table of Definitions of Resilience from Fletcher & Sarkar, 2013	
Agaibi & Wilson, 2005, p. 197	"Complex repertoire of behavioural tendencies"
Bonanno, 2004, p. 20-21	"The ability of adults in otherwise normal circumstances who are exposed to an isolated and potentially highly disruptive event such as the death of a close relation or a violent or life-threatening situation to maintain relatively stable, health levels of psychological and physical functioning, as well as the capacity for generative experiences and positive emotions"
Connor & Davidson, 2003, p. 76	"The personal qualities that enables one to thrive in the face of adversity"
Lee & Cranford, 2008, p. 213	"The capacity of individuals to cope successful with significant change, adversity, or risk"
Leipold & Greve, 2009, p. 41	"An individual's stability or quick recovery (or even growth) under significant adverse conditions"
Luthar, Cicchetti, & Becker, 2000, p. 543	"A dynamic process encompassing positive adaptation within the context of significant adversity"
Masten, 2001, p. 228	"A class of phenomena characterized by good outcomes in spite of serious threats to adaptation or development"
Masten, Best, & Garmezey, p. 426	"The process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances"
Rutter, 1987, p. 316	"Protective factors which modify, ameliorate or alter a person's response to some environmental hazard that predisposes to a maladaptive outcome"

Resilience has been described as a trait, outcome, and a process. One point of view uses a psychoanalytic approach and describes ego-resilience, or as a personality trait; this trait being fixed and allows one to manage and adapt to situations of trauma or stress (Block & Block, 1980). This definition fails to take into account the development of resilience as a process in which an individual interacts with sources of adaptation in their environment. Resilience is constructed from the combination of individual traits and external social influences. Another approach sees resilience as a behavioral or functional outcome that one gains from adapting and recovering from adversity (Masten, 2001). Another common definition of resilience is as a dynamic process in which individuals consciously adapt to adverse circumstances and notes the role in which contextual and environmental factors contribute to positive adaptation (J. H. Lee et al., 2013; Masten, 2001). Research most favors the third conceptualization of resilience as a dynamic process.

Windle (2011) provides the most comprehensive definition of resilience culmination from a review and concept analysis of resilience across multiple disciplines. The definition encompasses components present in resilience: significant adversity/risk, existence of assets or resources, and positive adaptation. Fletcher and Sarkar (2013) emphasize the significant adversity and positive adaptation, but Windle (2011) adds the presence of resources or assets piece in the middle as the vehicle for the development of resilience. Based on the synthesis of these three conceptualizations and many proposed definitions, resilience can be described as "the process of effectively negotiating, adapting to, or managing significant sources of stress or trauma. Assets and resources within the individual, their life and environment facilitate this capacity for adaptation and 'bouncing back' in the face of adversity. Across the life course, the experience of resilience will vary" (Windle, 2011, p. 12).

Several researchers defined resilience or implied it is measured through the absence of PTSD symptomology (Agaibi & Wilson, 2005; Meredith et al., 2011; Segovia et al., 2012). One study explored resilience following direct exposure to the September 11th, 2001 terrorist attack on the World Trade Center in New York City in a sample of residents surveyed six months after the attack (Bonanno et al., 2007). Resilience was initially examined as the absence of PTSD symptoms, but further analyses examined sociocontextual factors (demographics, availability of resources, and past and current life stressors). Gender emerged as a strong predictor of resilience, with females showing a lower likelihood of resilience.

Models and Theory of Resilience

Theories can explain or predict processes based on more broad ideas and patterns of concepts in human behavior (Klein & Zedeck, 2004). In the past few decades, several theories of resilience have been proposed across multiple realms including nursing (Polk, 1997) family adjustment (Patterson, 2002) trauma studies (Agaibi & Wilson, 2005) community youth (Brennan, 2008), military families (Palmer, 2008), medical students (Dunn, Iglewicz, & Moutier, 2008) and sport performance (Fletcher & Sarkar, 2012; Galli & Vealey, 2008) Most of these theories describe resilience as a dynamic process that incorporates a range of factors. Variation lies in how the theories emphasize factors such as personality, temperament, social support, and coping.

Only the metatheory of resilience (Richardson, 2002) has been touted as a generic theory of resilience that applies across disciplines and has been cited frequently in the literature (Campbell-Sills et al., 2006; Connor & Davidson, 2003; Fletcher & Sarkar, 2013; Galli & Vealey, 2008; Sinclair & Wallston, 2004; Windle, 2011). However, this theory is not without its flaws and criticism. The view of resilience as a developing process fueled the creation of a

metatheory of resilience centered on postmodern thinking (Richardson, 2002). The theory

dictates that people have the opportunity to consciously or unconsciously choose reactions to

life's disruptions and resilience occurs through reintegration. Reintegration is the actual coping

process that occurs following the disruption that contributes to self-understanding, growth,

knowledge and stronger resilient qualities. While similarities are drawn between this theory and

resilience research emphasizing adversity (disruption), and adaptation (reintegration),

Richardson (2002) has been heavily criticized for being too linear, and having multiple

conceptual flaws with a lack of empirical examination of their explanatory potential (Fletcher &

Sarkar, 2012, 2013)

Theoretical foundations of resilience have also emerged from the stress and coping

literature. Social stress theory offers a distinction between stress associated with the

consequences of social order or social organizations from stressful antecedents of a

psychological disorder such as PTSD (Aneshensel, 1992). Drawing parallels to disagreements in

research defining resilience as either protective factors or the absence of psychopathology. In this

theory, self-efficacy is also recognized as a mediator between social position and stress.

Another approach is the cognitive motivational relational theory of stress, coping, and

adaptation, which views stress as a person-environment relationship perceived as taxing or

exceeding one's available resources (Lazarus & Folkman, 1984). In situations of stress, this

theory persists that one will conduct a primary appraisal, or evaluate the potential of the situation

and impact or interference with personal objectives. Primary appraisals are distinguished as

harm/loss, threat, challenge, or benign. The key to resilience lies in the challenge appraisal-

which offers an opportunity for mastery or personal growth. A benign appraisal leads to no

further appraisal or action. These appraisals are linked to factors related to resilience including

beliefs about control and goal commitment. The secondary appraisal involves appraising control over the situation and employing coping resources.

A final theory associated with resilience is the Broaden-and-Build theory of positive emotions (Fredrickson, 2001, 2004). This theory is rooted in the strong positive relationship between resilience and positive affect. Positive affect has been associated with improvements in individual's ability to bounce back physiologically and psychologically from stressful life experiences (Campbell-Sills et al., 2006; Tugade & Fredrickson, 2004). The broaden-and-build theory of positive emotions hypothesizes that positive emotions contribute to resilience through broadening a method of flexible thinking, or "thought action repertoires" that become available to someone under stress. Flexible thinking can lead to more expansive options of action and can increase personal resources available to an individual during times of adversity. Additionally, this theory draws on extraversion in the five-factor personality trait model and persists that extraverted people are more likely to have strong support network systems which can be a powerful protective factor when encountering stress (Campbell-Sills et al., 2006; Fredrickson, 2001; Rutter, 1985).

The present study most connects with the cognitive motivational relational theory of stress, coping, and adaptation because although it did not necessarily guide the selection of the variables, the theory describes a primary appraisal and then behavior based on personal characteristics. An appraisal of one's available resources to handle a challenging situation is similar to the process of coping self-efficacy. Additionally, optimism can be described as a personal characteristic that affects one's viewpoint of their world and glean meaning from generally positive outcomes. The conceptualization of resilience as a dynamic process at the intersection of environmental and situational characteristics presents challenges in measurement

of resilience, however several researchers have developed empirically based instruments to assess for one's ability to bounce back, utilize support systems, and access beneficial internal characteristics.

Measurement of Resilience

The desire to understand how resilience is relevant to treatment outcomes of clinical conditions such as anxiety, depression, and PTSD sparked interest in developing a means to measure resilience and understand correlates of this construct (Connor & Davidson, 2003). Coinciding with complexities in defining resilience, researchers are encountering challenges in how to measure resilience in a psychometrically-sound manner (Windle, Bennett, & Noyes, 2011). Windle, Bennett, and Noyes (2011) conducted a methodological review of resilience measures and found that the Connor-Davidson Resilience Scale, Brief Resilience Scale, and the Resilience Scale for Adults presented the best psychometric ratings. The researchers used a criterion for quality assessment that assessed each scale's: content validity, internal consistency, criterion validity, construct validity, agreement, reliability, responsiveness, floor and ceiling effects, and interpretability. It was noted that the CD-RISC could have benefited from additional items encompassing resilience and stronger theoretical clarity (Windle et al., 2011).

The Connor-Davidson Resilience Scale (CD-RISC) was developed using a combination of research on hardiness (Kobasa, 1979); action orientation, strong self-efficacy, adaptability when coping with change, problem solving skills, past success, and humor (Rutter, 1985); patience and tolerance of negative affect (Lyons, 1991), and anecdotal interactions with optimism and faith from Sir Edward Shackleton's heroic expeditions in the 1912 Antarctic expedition (Alexander, 1998). This measure of resilience has been used extensively with both athlete and non-athlete populations. The researchers developed this measure in response to

continued research on PTSD, instead of continuous measurement of risk factors, Connor and

Davidson (2003) aimed to identify protective factors and be applicable both within and outside

of clinical settings.

Since the inception of the 25-item CD-RISC in 2003, it has been translated into several

languages and used in a varied of populations including survivors of trauma, large community

samples, patients in treatment for PTSD, children, elders, university students, nurses, military

personnel, athletes, and missionaries (Davidson & Connor, 2015). Relationships between CD-

RISC score and age, ethnicity, marital status, and gender were reported as inconsistent across

several studies. The CD-RISC is increasingly used when measuring resilience to identify

protective factors as opposed to risk factors, as some research to measure resilience describes it

as the absence of PTSD or depressive symptoms (Bonanno et al., 2007; Segovia et al., 2012).

The CD-RISC has been used in several studies to describe resilience of military personnel

(Green et al., 2014; Hourani et al., 2012; Johnson et al., 2011; Maguen et al., 2008).

Constructs Related to Resilience

Despite an increase in research on resilience, it remains a challenging concept to define

and conceptualize due to its dynamic nature. A challenge in the resilience literature is

distinguishing it from other constructs such as post-traumatic growth, hardiness, grit, coping, and

mental toughness. All of these concepts identify specific attributes that may allow people to

better manage adversity but they are not synonymous (Tedeschi & Calhoun, 2004). Each

construct will be explored briefly below and distinctions are drawn between each and resilience

to hopefully offer clarity about resilience.

Post-traumatic growth is defined as "the experience of positive chance that occurs as a

result of the struggle with highly challenging life crises" (Tedeschi & Calhoun, 2004, p 1-2).

The key with this term is "growth," while resilience is characterized by the continued living or rebound to an original state following adversity: PTG emphasizes a transformation or distinct change in functioning from prior to the adverse circumstance (Tedeschi & Calhoun, 2004). The emphasis is not on the process of adaptation or recovery, but rather in the transformative growth as a result of the trauma. Resilience has been coined as the ability to "bounce back" while post-traumatic growth refers to the process of "bounding forward." Some definitions of resilience mention growth but most definitions emphasize the ability to overcome and thrive despite adversity. Perhaps in situations of trauma, resilience is the initial response that enables the ability to cope, while PTG is the later process built on the initial resilience response.

Hardiness is described as a personality trait that uses commitment, control, and challenge in response to stress (George A. Bonanno, 2004; Kobasa, 1979). Hardiness means commitment toward finding meaningful purpose in the situation, believe that one can control the surroundings and outcome of events, and the belief that the challenge contributes to learning and growth. Hardiness appears to differentiate from resilience in two ways, firstly in the characterization of hardiness as a personality trait, while resilience has been described as a dynamic process. Secondly, the research more thoroughly documents what contributes to one's resilience (optimism, social support, faith, etc.) while the literature on hardiness focuses more on outcomes that result when hardy people encounter adversity (e.g. problem-solving, lower stress, opportunities for growth) (Maddi, 2005). In that, post-traumatic growth and hardiness could be similar with the emphasis on positive outcomes rather than returning to an original state. The main distinction between the two is that hardiness emphasizes personality traits that are relatively fixed and stable while PTG views resilience as a more dynamic and changing process as individuals grow and adapt.

Grit is a relatively new concept derived from research in positive psychology and is defined as a trait-level characteristic of passion directed towards long-term goals and perseverance towards those and other pursuits (Duckworth, Peterson, Matthews, & Kelly, 2007). In addition to hardiness, grit is also focused more on relentless stubbornness and persistency to achieve a goal, with less emphasis on the adversity, barriers, or rewards associated with the goal. Beyond the ability to bounce back or recover in the face of failure, the researchers emphasize that grit is also having intense commitment and loyalty to a pursuit over a long period of time (Perkins-Gough, 2013).

The founders of the term grit developed a Short Grit Scale which included questions on consistency of interest and perseverance of effort (Duckworth & Quinn, 2009). The measure includes two questions which mention overcoming setbacks: "Setbacks don't discourage me" and "I have overcome setbacks to conquer an important challenge." The inclusion of such questions can create confusion in trying to distinguish these constructs. However, grit is a *trait* that allows one to persist and remain consistently focused, while resilience is a *process* in which someone may be persistent and focused while they overcome adversity in pursuit of a goal. Grit can be a contributing factor to resilience, i.e. grittier people could be more resilient, but they remain distinctive in their conceptualization of trait versus process.

Additionally, grit has been studied extensively with those pursuing academic-related goals (spelling competitions, novice teacher retention, and admission into Ivy League Institutions) without taking into account adverse circumstances that could have contributed or hindered goal attainment (Duckworth, Kirby, Tsukayama, Berstein, & Ericsson, 2011; Eskreis-Winkler, Shulman, Beal, & Duckworth, 2014; Robertson-Kraft & Duckworth, 2014). Similar to hardiness, grit is described as a personality trait but both are distinct from the process of

surviving and thriving in the face of adversity. To review, certain personality traits can contribute

to resilience- such as hardiness and grit, and resilience as a process can help someone both

rebound and bound forward from trauma, such as in post-traumatic growth.

Resilience has been described as the process by which people adapt, and can often be

used interchangeably with coping, one definition of resilience describes as "the process of coping

with stressors, adversity, change, or opportunity" (Richardson, 2002, p.308). However, a

growing empirical approach distinguishes resilience and coping as conceptually different

(Campbell-Sills et al., 2006). In one study, women who drew on more personality resources

(perceptions of control, optimism, self-esteem) appraised an upcoming medical procedure as

stressful. While women who scored lower on those resilient qualities had appraisals that directed

them to use coping strategies to deal with the upcoming procedure (Major, Richards, Cooper,

Cozzarelli, & Zubek, 1998). The process of coping was described more as means to manage

environmental demands that were perceived as greater than one's available resources (Lazarus &

Folkman, 1984). Therefore, resilience has an impact on how a situation is appraised but coping is

the process following this appraisal wherein someone employs strategies to manage the stressful

situation. Resilience could be viewed as a phenomenon defined by the success of the coping

process in challenging circumstances (Leipold & Greve, 2009).

Another approach views coping as a range of strategies employed by an individual to

navigate the demands of a situation, with resilience as an adaptive outcome following the

management of the adverse circumstance (Folkman & Moskowitz, 2004). Researchers found that

coping styles contributed to resilience, and relationships were significant after controlling for

personality traits. An additional interesting finding was the distinction between task and

emotion-focused coping. Task-oriented coping had a positive relationship with resilience while

emotion-oriented coping was associated with low resilience. It was concluded that an active

problem-solving form of coping with adversity would promote resilience (Campbell-Sills et al.,

2006). In conclusion, both resilience and coping are described as processes rather than traits,

resilience influences appraisal while coping is the employment of a response to the appraisal

(Fletcher & Sarkar, 2013).

      Mental toughness carries similar contextual difficulties in regards to a consistent

definition, means of measurement, and process for its development (Crust, 2007). One factor that

could separate the two is that mental toughness has been referred to something that could

develop from both positive and negative situations (Jaeschke, Sachs, & Dieffenbach, 2016),

while resilience is unique in that it requires the presence of an adverse event (Windle, 2011).

Another suggested approach is that resilience is the dynamic process of bouncing back from

adversity while mental toughness is the strength present to allow one to rebound, much like how

grit could be present in resiliency and play a role while the cultivation of resilience is the actual

process. Resilience could be described as a learned process of coping via rebounding from

challenge, while mental toughness is the ability to unexpectedly manage overcome unexpected

stressors even without adequate resources (Gonzalez, 2013). Lastly, resilience was listed as a key

characteristics of mental toughness along with self-belief, commitment, self-motivation, thriving

on challenge, perseverance, and focus (Crust, 2007; Crust & Azadi, 2010; Gucciardi, Gordon, &

Dimmock, 2008).

      It would be remiss to describe resilience, hardiness, coping, grit, and mental toughness as

completely unrelated constructs due to their conceptual similarities. A more appropriate

description would be that each construct has unique qualities- whether it is a process or trait,

requires the presence of adversity, or has been researched in a specific context. Clearly, more research is needed to tease out distinctions.

Resilience Research in the Military

The pursuit of identifying protective factors over exploration of risks became a focus of the military as rates of PTSD have increased (Yehuda, Vermetten, McFarlane, & Lehrner, 2014). Research has focused both on building the resilience of active duty service members including part time soldiers such as national guard (Griffith & West, 2013), and Veterans (Hendricks Thomas et al., 2015; Pietrzak et al., 2010; Pietrzak & Southwick, 2011). The military often focuses on identifying protective factors such as social support and resilience in conjunction with traumatic stress symptoms (Cunningham et al., 2014; Green et al., 2010; Hourani et al., 2012; Pietrzak et al., 2010). In one study, researchers explored the relationship between trauma exposure and resilience and found a significant interaction; higher scores on the resilience measure appeared to be protective among those who had experienced high combat exposure. Resilience was associated with lower suicidality, fewer problems with alcohol, lower severity of depressive symptoms, and overall fewer medical issues and complaints after controlling for age, gender, minority status, PTSD diagnosis, and trauma exposure (Green et al., 2010). Pietrzak and colleagues (2010) also found that resilience mediated the relationship between PTSD, depressive symptoms, and unit support.

Post-deployment social support in conjunction with resilience have shown to be significant predictors of post-deployment adjustment. Results from one study suggest that those with high post-deployment adjustment found meaningful ways to integrate their transition experiences into healthy relationships, social interactions, and stress coping skills (Cunningham et al., 2014). Of note with this study was that the sample were considered generally healthy and

those who screened positive or probable for PTSD or those at risk for self-harm were excluded.

To support these cross-sectional articles, other researchers conducted a longitudinal study of

resilience and mental health in Marines that were close to the conclusion of their military service

and then measured resilience and mental health an average of 6 months after returning to civilian

life (Hourani et al., 2012). Resilience was found to have a greater impact on functional

impairment rather than mental health symptoms. Protective factors that were associated with

those not meeting screening criteria for mental health problems included higher scores on pre-

separation resilience (resilience measured before retirement), and perceived social support at

follow-up (on average after 6 months of civilian life). Soldiers that scored high in social support

at time of retirement were 5.3 times more likely to see improvement in mental health and

functional impairment after 6 months of civilian life. This informs the importance of including a

social support component in resilience programming for military personnel as they transition into

civilian life (Hourani et al., 2012).

Resilience Training Programs in the Military

Psychological resilience is particularly important to the military to both keep military

service members and military leaders psychologically ready for duty and enhance the well-being

of both service members and their primary support systems (Meredith et al., 2011). There exist

longstanding concerns with perceptions of vulnerability and stigma associated with help-seeking

behaviors in military culture. Resilience training programs can offer support and teach coping

skills that can buffer the effects of inevitable stressors encompassing military service-particularly

multiple deployments. Resilience training is gaining traction in multiple branches of the military

(see Meredith et al., 2011 for review). The United States Army has incorporated resilience

training into their unit and leadership-level mandatory training under the umbrella of the Army

Readiness Initiative. Under Army Regulation 350-53, all enlisted soldiers must complete annual

training of Comprehensive Soldier and Family Fitness Resilience and Performance Skills

(Odierno, 2014).

It is important to distinguish the Master Resilient Training (MRT) program from the

standard unit-level resilience training program. The MRT training takes place at the University

of Pennsylvania center for positive psychology and is an intense week long training for Non-

Commissioned Officers (NCOs) to then take the resilience curriculum back to their unit. The

program is based on a train the trainer model in which leadership are trained and then bring the

resilience curriculum back to their unit. The CSF2 program is designed to help soldiers become

stronger physically, socially, spiritually, and in their family relationships. The program

emphasizes six core competencies: self-awareness, self-regulation (emotional regulation),

optimism, mental agility, strength of character, and connection (Meredith et al., 2011; Reivich et

al., 2011a).

In summary, research on resilience is supported by continued exploration of historical

context, definitions of resilience based on various study samples, theoretical foundations that

help describe resilience, psychometrically-sound means of measuring resilience, and constructs

that are similar but can be distinct from resilience. It is clear that more research is warranted in

this area, especially as it pertains to applications of resilience training within high stress

environments such as the military.