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A Comparison of Resilience and Performance Among Returning Veterans of the Wars in Afghanistan and Iraq

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This is to certify that the doctoral dissertation by

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Walden University
2016

Abstract

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By

Roy T. Walker

M.S., Columbus State University, 2002

B.S., University of the Cumberlands, 1984

Proposal Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Psychology

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Abstract

Helping individuals develop, foster, and maintain resilience skills is particularly important with Service members as they face multiple deployments and the stress caused by long periods of separations from home and support systems. These separations and prolonged time spent in dangerous environments with the possibility of death and injury can make soldiers more susceptible to stressors that might affect their morale and ability to perform necessary duties required in combat. This study used a quantitative research method approach to better understand how resilience influences performance outcomes among combat veterans. The study was comprised of 76 participants that have served at least one year in combat in Afghanistan or Iraq. Research instruments used to gather data included three psychometric instruments The Connor-Davidson Resilience Scale (CD-RISC), The General Self-Efficacy Scale (GSE), and The Multidimensional Scale of Perceived Social Support (MSPSS). In addition, participant's Army Physical Fitness Test and Weapons qualification scores, taken within a year of the study, were collected. The results of this study indicated two significant correlations exist. Results of this study revealed that increased levels of resilience and self-efficacy shared a positive correlation with greater accuracy with the M16 rifle. Findings from this study indicated that soldiers with strong problem solving skills and confidence in their abilities tend to perform at a higher level with the M-16. Findings from this study should be useful in providing military leaders, soldiers, and health care providers a better understanding of how soldier's resilience influences their ability to perform core tasks.

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Dedication

This dissertation is dedicated to my family. Specifically, it is dedicated to my hero, role model and father, Mr. Robert L. Walker II. Dad, thank you for being a model single parent, for teaching us to dream and driving us to reach what we could not see and believing in us. Thank you to my brothers and sisters for your love and support throughout the years. We truly have come this far by Faith! Last and certainly not least, thank you to my supportive and loving wife Cindy. You have proof read more papers than you wanted and spoken more soft words of encouragement than I could have ever hoped. I love you! To our loving children, Amanda and John thank you for believing in Dad. You mean more to me than you could ever know. To my entire family, thank you for your encouragement and inspiration throughout this academic journey. We did it!

Acknowledgments

I would like to extend my heartfelt appreciation to my dissertation committee: Dr. Matthew Fearrington for his encouraging words, professionalism, timely feedback and his helping me to establish reasonable and realistic goals. He made me feel like I was capable of finishing this journey even when I doubted myself. His expertise in both methods and content were instrumental in helping me reach my goal. Thank you to Dr. Joseph Grillo for his words of encouragement and expertise in content and the APA style of writing which proved invaluable. Likewise, his constant words of encouragement and faith in my abilities gave me courage to keep going.

I would like to extend my utmost gratitude to LTC Paul Hilaski and the US. Army for allowing me to use members of the greatest fighting force in the world in this study. I am grateful for what each of these men and women do daily and count myself blessed to serve by your side.

Thank you to Dr. Kathryn Connor and Dr. Jonathan Davidson for the use of the Connor-Davidson Resilience Scale (CD-RISC)**.** They graciously waived the cost in the name of academic advancement and furthering the understanding of resiliency in the field of psychology.

I extend a very special thank you to my entire family. First, to my supportive and loving wife Cindy and our loving children, Amanda and John and secondly to my Walden friends that encouraged and identified with my struggle. I really appreciate you all! Each of you encouraged me through this academic journey and a tour of duty in Iraq. Thank you for believing in me and being patient with all the sacrifices required to make

this dream a reality. Last but not least, thank you to my Lord and Savior Jesus Christ for given me strength, without You, none of this would have been possible.

Table of Contents

List of Tables

Chapter 1: Introduction to the Study

Background of the Study

For over a decade, the United States' armed forces have fought wars in Iraq, Operation Iraqi Freedom (OIF), currently known as Operation New Dawn (OND), and Afghanistan, Operation Enduring Freedom (OEF). In the course of these wars, over 2.1 million service members have deployed into combat zones in either Iraq or Afghanistan or both (Department of Defense, 2010; Veteran's Children, 2009). Deployments within these Areas of Operations (AORs) ranged from 3 month to 15-month tours, with many service members serving multiple tours of duty in the AOR since the onset of the wars. Veteran's Children (2009) noted that at least 42% of service members have served two or more tours in combat. Multiple tours means more time spent away from friends, family and established social support networks and these separations represent a major source of stress for service members and their families (Riggs & Riggs, 2011).

Soldiers in the United States Army have a significantly higher likelihood of experiencing multiple deployments due to a restructuring of forces and spending (Reed & Segal, 2000). Since the Gulf War, the United States Army experienced a reduction in troops of 35% and a reduction of spending by 38%. Despite these reductions, the Army's operational tempo has increased by nearly 300% (Reed & Segal, 2000). Reductions in personal and the increase of deployments have created a significant level of stress on service members and their families (Esposito-Smythers et al., 2011; Gewirtz, Erbes, Polusny, Forgatch, & DeGarmo, 2011; Reed & Segal, 2000; Riggs & Riggs, 2011).

Service members experiencing multiple deployments reported symptoms of Post Traumatic Stress Disorder (PTSD), major depression, anxiety, substance abuse, and physical illness at significantly higher levels than those with a single deployment (Gottman, Gottman, & Atkins, 2011; Polusny et al., 2009; Shen, Arkes, & Williams, 2012; Voss Horrell, Holohan, Didion, & Vance, 2011). Mental health disorders are significantly higher among service members returning from long and short-term deployments in Iraq and Afghanistan (Gewirtz et al. 2011; Smith et al. 2011). As the Army faces increased demands with a smaller force deploying multiple times, soldiers must possess the ability to bounce back from adversity and traumatic events (Cacioppo et al., 2011; Tedeschi, & McNally, 2011). In this study, that ability is referred to as resilience.

The concept of resilience is a recent and growing area of interest in psychology (Cui, Teng, Li ,& Oei, 2010; Kuiper, 2012) and the United States Army (Cacioppo et al., 2011; Tedeschi, & McNally, 2011). In battling increased mental health disorders, multiple deployments, and stress on a strained force, the United States Army has turned to programs like the Comprehensive Soldier Fitness program to help foster resilience skills in returning soldiers (Cornum, Matthews, & Seligman, 2011; Tedeschi & McNally, 2011). This program promotes resilience through personal growth and increasing soldier's emotional, social, family and spiritual fitness (Cornum et al., 2011). Even with such a program, understanding resilience among this population is in its very infancy (Cacioppo et al., 2011; Tedeschi, & McNally, 2011). A primary goal of this study was to note if a relationship exist between work performance and a person's level of resilience.

In particular, I examined if a positive or negative relationship exist between resilience, self-efficacy, and social support and veteran's ability to perform two require physical task associated with being a soldier, performance on the Army Physical Fitness Test (APFT) and annual weapons qualification. In order to measure these variables, I used three psychometric scales to measure the variables of resilience, self-efficacy, and social support. Each of these scales is listed and discussed in detail below.

Problem Statement

Multiple deployments, separations from friends, family, and other support networks weigh heavily on veterans of all branches of service (Air Force, Army, Navy, and Marines) of the wars in Afghanistan and Iraq. Over 42% of nation's veterans will serve two or more deployments (Veteran's Children, 2009). As a result, nearly 17% to 19% of these returning veterans, regardless of branch of service, will develop PTSD (Freedy & Brock, 2010; Polusny et al., 2009). These veterans also are at an increased risk of conditions such as substance abuse, major depression, anxiety, and traumatic brain injury (TBI; Shen et al. 2012). Additionally, 12% to 22% of all OIF, OEF, and OND veterans will be diagnosed with a TBI (Voss Horrell et al., 2011).

As a result of serving longer tours in combat, providing greater number of personnel, a greater chance of engaging enemy forces off duty, and providing the most and more frequently deployed fighting troops in these combat zones, 15% of soldiers and Marines are diagnosed with depression (Shen et al., 2012). In addition, 10% to 12% of Soldiers reported experiencing significantly higher rates of substance abuse disorder difficulties (Shen et al., 2012). These constant stressors can wear on soldier's ability to

bounce back from trauma and stress. Resiliency and positive psychology could provide a proactive and empowering alternative.

Positive psychology and resilience emphasizes human strengths and potential, the power of social networks and connectedness to others as means of bouncing back from adversity and trauma (Cornum et al., 2011). By nurturing a person's positive personality traits and growing positive communities and institutions, positive and resilience could serve as a deterrent to the development of pathology and lost person hours and decreased work performance.

Nature and Purpose of the Study

I used a correlational approach to measure the relationship between resilience factors (resilience/hardiness [ability to bounce back], self-efficacy, and perceived social support) and performance outcomes (Army Physical Fitness Training [APFT] and weapons qualification scores). Participants completed the Connor-Davidson Resilience Scale (CD-RISC; Conner & Davidson, 2003) to measure resilience, the General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995**)** to measure self-efficacy, and the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet & Farley, 1988) to measure perceived social support.

Participants' scores from current APFT and weapons qualifications were used to measure performance outcomes. The APFT consist of three events (push-ups, sit-ips, and the 2 mile run). Participants received a score of 0 – 100 in each event. Likewise, soldier's weapon qualification scores range from 0 – 40 and had three qualification categories, (Expert, Sharp Shooter, and Marksmen). Chapter 3 will contain a more detailed

discussion of the research design, the purposed instruments to measure resilience factors and performance outcomes.

Significance of the Study and Implications for Social Change

An estimated 17-19% of veterans returning from OEF/OIF/OND will screen positive for PTSD, depression or anxiety (Polusny et al., 2009). Better understanding those factors that make individuals more resilient could mean a healthier force and the ability to train more resilient leaders (Jarrett, 2008; Stanley & Jha, 2009). The intent of this study was to explore factors that might correlate with resilience and a soldier's ability to perform his or her mission free of psychopathology. PTSD alone cost the American economy an estimated $ 3 billion or more per year in lost productivity within the civilian workforce and a projected 2 year cost of $3.98 billion within the Department of Defense (DoD; Freedy & Brock, 2010). This study's finding may help society and military leaders better understand, develop, and nurture those traits that help veterans remain resilient. Such research may result in healthier, more resilient, and higher performing persons and institutions.

As a result, leaders might better structure programs like the Warrior Resiliency Program which teaches soldiers and their families skills and strategies for remaining resilient before, during and after deployments (Seligman & Csikszentmihalyi, 2000; White et al. 2008). Families, communities and institutions can use these lessons learned to develop and nurture healthier more resilient citizens. This research could provide information toward achieving a more proactive approach in buffering against pathology and significant economic cost.

Research Questions

I sought to answer this general research question

Does resilience among returning veterans of the wars in Iraq and Afghanistan (in the ranks of E- 1 to E-8) influence their physical performance and accuracy as marksmen?

There are six specific research questions in this study. Each question is listed below. A listing of the question and related null and alternative hypothesis are addressed in detail in Chapter 3.

Research Question 1: Is resilience, as measured by the CD-RISC (Conner & Davidson, 2003), related to soldier's performance on the APFT?

Research Question 2: Is self-efficacy, as measured by the General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995), related to soldier's performance on the APFT?

Research Question 3: Is social support, as measured by the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988), related to soldier's performance on the APFT?

Research Question 4: Is resilience, as measured by the CD-RISC (Conner & Davidson, 2003), related to soldier's performance on weapons qualification?

Research Question 5: Is self-efficacy, as measured by the General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995), related to soldier's performance on weapons qualification?

Research Question 6: Is social support, as measured by the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988), related to soldier's performance on weapon qualification?

Theoretical Framework

I used a positive psychology approach towards understanding resiliency. A positive psychology approach best exemplify how a person's level of optimism, hope, self-efficacy, connectedness to a community, and ability to learn positive coping skills can influence a person's ability to perform in the work place (Aspinwall & Tedeschi, 2010; Avey et al. 2011; Crowder, Ferrara, & Levinbook, 2013; Niks, De Jonge, Gevers, & Houtman, 2013; Yu-Fen, 2009). Individuals, groups, cultures, and institutions possess the ability to overcome life's traumatic events and remain health mentally and emotionally (Chapman, & Thompson, 2011; Kuiper, 2012; Seligman & Csikszentmihalyi, 2000; Wong, 2011). Resilience can be empowering and boast psychology's ability as a science to foster and teach those traits which are often found in resilient people (Chapman, & Thompson, 2011; Kuiper, 2012; Seligman & Csikszentmihalyi, 2000; Wong, 2011). The ability to teach and foster resiliency through psycho-education and counseling could produce individuals with a greater ability to adapt when exposed to traumatic events (Herrman et al., 2011; White et al., 2008). A positive psychology approach provided a useful means of assessing an individual's ability to remain resilient despite stressful and traumatic events. The theory of this study will be discussed in greater detail in Chapter 2.

Key Terms and Definitions Associated With Resiliency

The following terms will appear throughout this study. These terms are important in clearly understanding the concept of resiliency and the sample population used to conduct this research.

Active Duty: Refers to service members serving in any branch of service fulltime.

Armed Services: A term used to refer to any of the branches of service (Air Force, Army, Coast Guard, Marines, or Navy).

Army Service Component Command (ASCC): Army Service Component Commands (ASCCs) are operational level units designated by the Secretary of the Army. These units serve as higher headquarters and Joint Task Forces headquarter commands to other units in land operations. Each ASCC has a specific area of responsibility (i.e. North America, South and Central America, Africa, Europe or the Pacific Theater; United States (2007).

Battle Buddy: Refers to fellow service members that depend on each other for emotional and morale support. This person is chosen by the service member and used as a means of gauging each other's morale.

Combat Deployment: For purposes of this study, a combat deployment is defined as relocating into a hostile area of conflict within another country. This relocation occurs without family members, social support system and presents a significant likelihood of serious injury and death.

Combat Zone: The area of hostile conflict one relocates because of a combat deployment. This study limits the term combat zone to the wars Iraq and Afghanistan.

Commissioned Officer: Commissioned officers provide the overall management of task and functions. Commissioned Officers possess at least a 4-year college degree and receive direct and indirect commissions.

Enlisted: Enlisted service members entered military serve by means of a contract of service and are free to depart government service after the completion of the service obligation. There is no educational requirement for enlisted service members upon entering beyond completion of high school. Enlisted service members serve as the means carrying out the orders of commissioned officers.

Hardiness: The process in which an individual develops problem-solving skills/abilities, possess a more optimistic attitude toward life and adversity and views themselves as being in control. Adversity and traumatic events become a challenge and a natural part of life rather than a problem (Bartone, 1999; Herrman et al., 2011).

Mental Toughness: The ability to remain in control and maintain confidence that enables one to view traumatic and stressful situations as challenges instead of threats (Kuiper, 2012).

Military Occupational Skill (MOS): The MOS is a service member's occupational specialty within the service.

National Guard: Refers to members of each state's defense force. These men and women operate under the control of their governor until called to active federal service. These service members normally meet once a month for 2 days and 2 weeks in the summer.

Operation Enduring Freedom (OEF): Refers to the war efforts in Afghanistan.

Operation Iraqi Freedom/Operation New Dawn (OIF/OND): These terms reference the war in Iraq.

Personal Resilience: An individual's ability to adapt and recover from adversity and traumatic situations (Cui, Teng, Li & Oei, 2010; Kobau, et al. 2011; Mak, Ng, & Wong, 2011; Neill & Dias, 2001; Notario-Pacheco et al., 2011; Osran, Smee, Sreenivasan, & Weinberger, 2010; Trask-Tate, Cunningham, & Lang-DeGrange, 2010; Yehuda, Flory, Southwick, & Charney, 2006).

Psychological Well-being: Refers to a person being absent of psychopathology an experiencing the highest functioning in a physical, emotional and social context (Kuiper, et al., 2012).

Reservist: Federal service members serving on a part-time status; like National Guard, these service members normally meet once a month for 2 days and 2 weeks in the summer.

Service Member: The term used to represent any member of the Air Force, Army, Coast Guard, Marines, or Navy to include Reserves and the National Guard.

Social Support Systems: Refers to support systems such as family, friends and other social institutions of support such as one's religious/faith or ethnic community.

Social Resilience: Is a person's ability to build, engage in and maintain healthy relationships that enable recovery from adversity, stress and trauma (Cacioppo, Reis, & Zautra, 2011; Cashman, 2011; Henley, 2010; Waxman, 2011; Obrist, Pfeiffer, & Henley, 2010). For purposes of this paper, social resilience will encompass resilience developed

as a part of a group, system or institutions. This includes families, social groups, worship communities, acedemic institutions, professiona and social organizations.

Traumatic Event: Refers to an event that could lead to serious injury, physical or sexual assaults, possible loss of limbs or life.

Veteran: Refers to any member of the Armed Services that have served in a combat zone.

Assumptions

It is assumed that resilience is and will remain an important part of wellness and mental health. The ability to teach persons how to live more resilient lives could reduce pathology and cost associated with treatment (Herrman et al. 2011; Seligman & Csikszentmihalyi, 2000). It is also assumed that participants answered all surveys and scales as honestly as possible. Ensuring participant's confidentiality and volunteer participation could enhance truthful responses. It is also assumed that the surveys and scales used in this research to measure resilience are valid for adequately measuring resilience in the selected sample population. Although the sample population for this study is a sample of convenience, it contains members from all three categories of the Army's unit. It is assumed that the sample population for this research will adequately reflect the general population of the U. S. Army. These categories of Army units will be discussed in greater detail in Chapter 3.

Limitations

This study has several limitations. First, the use of a correlational approach, as opposed to an experimental design, is a limitation. An experimental approach would

make use of a control group and experimental group. In doing so, the conditions remain under the direct control of the researcher (Horgen, 2008). Using an experimental approach would determine causation, while using the correlational approach determines relationships rather than cause (Creswell, 2009; Horgen, 2008). However, the variables used in this study do not lend themselves to manipulation and are beyond the control of the researcher. A correlational design was the most appropriate means of measuring these variables (Creswell, 2009; McLeod, 2008).

Time is a limitation. Because the time to conduct this research is limited, a correlational approach best allows for accomplishing this research in a timely manner. Given more time, I may have used a longitudinal approach involving before, during, and after observations. The longitudinal approach would provide greater observation and correlational ability (Creswell, 2009; Horgen, 2008). However, the time required to observe participants before, during and after combat would be extraordinary. Likewise, it would be almost impossible to obtain a control and experimental group over a prolonged time period due to frequent moves in a military environment.

The third limitation of this study is the sample population. The sample population consisted of only active duty Army soldiers. As a result, findings from this study might not be consistent or applicable to other active duty branches of service such as the Air Force, Coast Guard and Marines, Navy. Likewise, the findings of this study might not be consistent with National Guard and Reservists.

The fourth limitation of this study is using a sample of convenience rather than a random sample population. I used a sample of convenience rather than a random sample

because of the availability of this sample population to the researcher. Random sampling is a probability-based method which ensures all subsets of a population are taken into consideration (Guo & Hussey, 2004; Yu & Cooper, 1983).

It is more time consuming and often more costly than convenience sampling. However, random sampling is considered to be a more thorough form of collecting data. Sample of convenience is a Nonprobability method (Guo & Hussey, 2004; Yu & Cooper, 1983). Unlike random sampling, sample of convenience do not taken into consideration all subsets of the population. Sample of convenience populations are common in developmental science studies (Hultsch, MacDonald, Hunter, Maitland, & Dixon, 2002) and are still considered effective in research (Guo & Hussey, 2004; Yu & Cooper, 1983). Samples of convenience allow researchers to study smaller population that often more available (Guo & Hussey, 2004; Hultsch et al. 2002; Yu & Cooper, 1983). Due to the size of this available population the sample of convenience method was most applicable.

Delimitations

The focus of this study revolved around resilience among active duty Army OIF/OND and OEF war veterans. Participants in this study consisted of enlisted service members in the rank of E-1 – E-8 and with at least one consecutive 12-month tour in Afghanistan or Iraq. The purpose in choosing soldiers E-1 – E-8 and soldier that served 12-month tours was based upon existing literature. Enlisted members are the highest risk population for developing and displaying less than resilient behavior (Yu-Fen, 2009). Gottman et al. (2011) noted more that soldiers E-1 – E-4 are at a greater risk for developing pathology. Enlisted soldiers deployed for 9 months or have a greater chance

of being less resilient in their relationships and displaying behavior that might affect performance (Gottman et al. 2011, McCarroll et al., 2010, Yu-Fen, 2009). For these reasons, the above demographics were chosen.

Those serving shorter tours were less likely to face the stressor of relocations within the combat zone and prolonged combat stress associated with 12 to 15 month tours. Those serving 12 to 15 month tours were more like to miss birthdays, anniversaries, and traditional family holiday events. Missing these special family celebrations can produce a certain amount of stress and emotional fatigue on service members. By ensuring service members have a common time frame in combat, I was able to measure a common experience.

This study did not include service members with tours of duty in Kuwait or other Middle Eastern countries used as staging locations. These locations were excluded because there was no conflict or immediate chance of danger in these areas. These locations present a different setting than Iraq and Afghanistan. Participants in this study consisted of male and female soldiers from diverse racial and cultural backgrounds ranging from 17 to 60 years of age. This study did not include service members from the Air Force, Coast Guard, Marines, Navy, Reserve, and National Guard in order to focus on one central group. Participant's rank ranged from Private (the lowest Army rank) to Master Sergeant.

Summary

Since the beginning OIF in March of 2003, service members have faced a rapid pace which included multiple deployments to both OIF/OND, OEF. These deployments

have come at a cost to service members and their families. With almost a fifth returning veterans expected to screen positive for PTSD, symptoms of depression and anxiety (Freedy & Brock, 2010; Polusny et al., 2009) and a cost to the American public of over $ 4.99 billion a year in lost productivity (Geiling, Rosen, & Edwards, 2012); research in the area of resiliency is highly necessary. Constant exposure to the loss of fellow service members, loss of limbs, sight, possible harm and death are weighing heavy on many returning veterans (Esposito-Smythers et al., 2011; Gewirtz et al., 2011; Reed & Segal, 2000; Riggs & Riggs, 2011).

Studying how resilience influences performance among returning veterans of OIF, OND and OEF could help increase performance and lead to a better understanding of those factors commonly associated with resilience. As a result, the understanding gained from this research could help create stronger and more adaptable members of society. This concept is vitally important as the wars in Iraq and Afghanistan end and the military forces draw down in size. Many of these men and women will depart the military and return to society. Achieving a better understanding of resiliency and those factors most associated psychological well-being is of significant importance to society as a whole and the military community.

Chapter 2 is a detailed literature review of sources used to complete this study. Specifically, these sources will discuss positive psychology and the concept of resiliency, noted effects of deployments and which population is most affected by deployments. Chapter 2 is also an examination of specific studies on resilience and performance. Chapter 3 is a detail of the research design used to address the research questions,

hypotheses, the research population and setting, scales used to measure resiliency and the demographic questionnaire. Chapter 3 includes the complete methodology for conducting the study. Chapter 4 is a report of the results and Chapter 5 interpretations and conclusions of the study.

Chapter 2: Literature Review

Introduction

This chapter is a summary of studies on resilience factors and performance from a variety of settings, including universities, high schools, law enforcement, caregivers, mental health, home environments, and the Armed Forces. These studies are diverse in nature and represent scientific studies and findings from various countries around the world. Specifically, I examined how resilience factors among veterans of the wars in Afghanistan and Iraq that affect their performance at work. Sources used in this study examined individual's ability to bounce back from adversity and traumatic events through the use of social resources and facets such as optimism and problem solving abilities.

Data Collection

Data bases used to collect literature for this paper were EBSCO, Psych. ARTICLES, Academic Search Complete, Thoreau, Google Scholar and Military collections. Search topics used in searches were: *resilience, personal resilience, social resilience, social support, Iraq and Afghanistan veterans, wars in Afghanistan and Iraq, adverse action, violent behavior, substance abuse, divorce, relationships, soldiers, United States Army, resilience traits, positive psychology, performance, veteran performance studies, performance studies,* and *performance of veterans.*

Background of the Study

The intent of this study was to examine if a relationship exists between resilience and performance among returning veterans of the wars in Afghanistan and Iraq. For

purposes of this study, performance encompassed the ability to function effectively at work. I explored both home and work environments because a soldier's home life and relationships influenced work place performance (Gottman, Gottman, & Atkins, 2011; Polusny et al., 2009; Yu-Fen Chen, 2009). I measured work performance through variables, such as physical fitness test scores and weapon qualifications scores. The methods of measuring these variables are discussed in detail in Chapter 3.

Service members experiencing multiple deployments reported symptoms of PTSD, major depression, anxiety, substance abuse, and physical illness at significantly higher levels than those with a single deployment (Gottman et al., 2011; Polusny et al., 2009; Shen, Arkes, & Williams, 2012; Voss Horrell, Holohan, Didion, & Vance, 2011). Mental health disorders are significantly higher among service members returning from a single long or short-term deployment in Iraq and Afghanistan (Gewirtz et al. 2011; Smith et al. 2011). Multiple deployments and constant separations from friends and family can have an adverse effect on returning veterans (Arincorayan, Applewhite, & Robichaux, 2010; Gottman et al., 2011; Eisen et al., 2012; McCarroll et al., 2010).

Exposure to combat can adversely affect psychological functioning and increase the likelihood of persons engaging in aggressive behavior, illegal activities and experience relationship difficulties (Booth-Kewley, Larson, Highfill-McRoy, Garland, & Gaskin, 2010; Smith et al., 2011; Voss et al., 2011). Because of continuous deployments, veterans are more likely to suffer from alcohol abuse, tobacco use, and drug use or addiction (Bowen & Martin, 2011; Smith et al., 2011). Such behavior can lead to an

increased need for mental health treatment, affect veteran's short and long-term ability to function and quality of life (Smith et al., 2011).

These behaviors can lead to legal concerns such as disciplinary actions, corrective training, and possible court appearances, all of which require time away from work. In addition, such outcomes can create negative stress, affect a person's ability to concentrate, level of optimism and overall quality of life (Smith et al., 2011). Such concerns can result in extensive time away from work and lost productivity in terms of monetary cost and lost labor hours (Freedy & Brock, 2010; Stappenbeck, Hellmuth, Simpson, & Jakupcak 2013). Resilience can provide a buffer against the development of pathology and adverse behaviors (Gottman et al., 2011; Seligman & Csikszentmihalyi, 2000; Wong, 2011). Resilient persons tend to exhibit a greater sense of optimism, self-confidence and problem solving skills that seem to result in more positive reactions toward stress and traumatic events (Gottman et al. 2011; Seligman & Csikszentmihalyi, 2000; Wong, 2011).

Soldiers and Performance

According to Yu-Fen (2009), performance refers to a person's ability to achieve a given task that includes the effectiveness and outcome of each behavior necessary to accomplish a job. Although performance has two distinct categories, task, and contextual, Yu-Fen viewed task performance in the work place. Yu-Fen examined performance task by using physical fitness (PT) and weapons qualifications scores. The scores on these Army task were correlated with scores on the Connor-Davidson Resilience Scale (CD-RISC).

In terms of task performance, soldiers must meet several requirements to remain proficient. These requirements include maintaining a certain height and weight ratio, achieving required scores on physical fitness test, marksmanship and tactical proficiency skills (Ford, Campbell, Campbell, Knapp, & Walker 2000; Iraq, 2004). Soldiers are required to maintain overall level of physical fitness (Heinrich, Spencer, Fehl, & Poston, 2012; HQDA, 2012) and proficiency with their weapon (HQDA, 2008; Iraq, 2004). Soldiers are tested in these areas annually to ensure they are in compliance with Army standards.

The APFT is designed to measures upper and lower body strength (Crowder, Ferrara, & Levinbook, 2013; HQDA, 2012). Events hosted on the APFT are the push-up, sit-up and the two mile run (Heinrich et al., 2012; HQDA, 2012). Push-ups and sit-ups are used to measure upper body strength and the two-mile run to measure lower body strength and endurance (HQDA, 2012). Soldiers must complete a certain number of pushups, sit-ups within 2 minutes for each event.

The number of push-ups and sit-ups is decided by the participant's age and gender (HQDA, 2012). Soldiers must complete a 2 mile run within a certain time that is determined based upon the soldier's age and gender (HQDA, 2012). A copy of the APFT will be included in Appendix I. Scoring well on the APFT provides an indication of soldier's ability to perform similar task required in combat (Heinrich et al. 2012; HQDA, 2012).

In addition to physical performance on the test, soldier must meet a proper height and weight ratio. This ratio is determined by the soldier's age, gender and height (HQDA,

2013). Immediately following the APFT, soldiers are measured to ensure they have not exceeded recommended weight limit for his or her age and height. Soldiers are weighted on a scale and measured for their height. Afterward, these measurements are compared with the Army height and weight chart found in (HQDA, 2012; HQDA, 2013) to determine if soldiers are in compliance with the prescribed weight for his or her height.

Likewise, weapon qualification provides an indication of a soldier's ability to engage and bring down enemy targets. Soldiers are required to qualify with their weapon each year in order to display a maintained ability to bring down enemy targets (HQDA, 08). Soldier can qualify at one of three levels: Expert, Sharpshooter or Marksmen. Expert is the highest level of qualification followed by Sharpshooter and Marksmen (HQDA, 08). These levels are determined by the number of targets soldiers shoot (chapter 3 will provide greater detail). Soldier's ability to effectively engage enemy forces and accurately fire his or weapon is key to a survival and successfully performing his or her job (HQDA, 08; Iraq, 2004). A copy of the weapons qualification chart is included in Appendix J.

Although I did not study contextual performance, it is important to mention because soldiers are routinely asked to place the needs of others ahead of his or her needs and desires (McKay, Buen, Bohan, & Maye, 2010; Nabirye, Brown, Pryor, & Maples, 2011; Niks, De Jonge, Gevers, & Houtman, 2013; Pandya, Deshpande, & Karani, 2012; Wang, 2010; Yu-Fen, 2009). Contextual task define how willing soldiers are to volunteer for additional work, follow organizational policies and procedures, and work harder to meet task performance requirements, such as the APFT and weapon qualifications despite

personal inconvenience. Soldiers operate in an environment that often requires him or her to do selfless acts.

The willingness to go over and beyond the call of duty is an important characteristic of being a service member. It is required to enter willingly into a combat environment or a profession with certain possibility of death or physical injury. This category of performance requires a commitment from soldiers beyond simply completing a given task. Contextual performance requires soldiers to work together and place the good of the team and battle buddies ahead of his or her own safety, to put mission accomplishment ahead of self and to support and defend the goals of the organization (McKay et al., 2010; Nabirye et al., 2011; Niks et al., 2013; Pandya et al., 2012; Wang, 2010; Yu-Fen, 2009). Such commitment to the organization can be difficult if soldiers are overwhelmed with relationship and mental health difficulties.

The ability for soldiers to perform their jobs effectively is a matter of team/unit and personal safety. In many situations, others' lives can depend upon the ability of a battle buddy to function effectively (Maguen et al., 2010). In combat, soldiers perform tasks that require the greatest level of concentration and attention to detail. These tasks include conducting foot patrols and engaging enemy forces in urban terrain, breeching minefields, transporting people and supplies over dangerous terrain and maintaining sensitive equipment (Geiling, Rosen, & Edwards, 2012; Maguen et al., 2010). These tasks require soldiers to differentiate between friendly civilians and enemy forces hidden among the local population, detecting improvised explosive devices (IED) while traveling long distances over dangerous terrain (Geiling et al., 2012; Maguen et al.,

2010). A soldier's ability to concentrate and perform his or her job is critical to the military mission and overall personal safety.

The following sections are an examination of performance in a variety of settings, such as student academic performance, teaching abilities of university professors, performance among nurses and student nurses, performance in hospital care, job stress and performance in police officers, military cadets, and employ performance relationships. Although these settings differ from that of a combat environment, these studies helped demonstrate the effect of stress on an individual's ability to perform and note key variables used to measure performance.

Personal Effects of Deployments

The personal effects of combat are among the most challenging experiences any individual could encounter. Life in a combat environment is not only dangerous, but places a great level of physical, emotional, cognitive and psychological stress on soldiers (Rizzo et al., 2011). As a result, returning veterans often experience increased rates of depression, anxiety, substance abuse, suicidal ideation, relational conflict and aggressive behavior (Arincorayan et al., 2010; Riggs & Riggs, 2011; Yu-Chu et al., 2012). Likewise, the frequency and length of these deployments are closely associated with the increased divorce and suicide rates and greater financial challenges among returning veterans (Arincorayan et al., 2007; Geiling et al., 2012; Gottman et al., 2011; Riggs & Riggs, 2011). Yu-Chen et al. noted that enlisted soldiers were most at risk. However, Gottman et al. specified the population most at risk for experiencing mental health difficulties as married male soldiers E1 – E4 with 9 or more months in the combat theater.

In a 2012 study of airmen, Marines, sailors, and soldiers, Yu-Chu et al. noted that Army enlisted were at greater risk of developing mental health problems. It was also noted that soldiers served on average longer combat tours. Enlisted soldiers were noted as 4.05 times more likely to receive a substance use disorder diagnosis compared to soldiers not deployed in support of OIF/OEF. These findings are supported by Eisen et al.'s (2012) study of mental health, substance abuse and depression among service members. Eisen et al. found a significantly higher rate of poor mental health, relationship difficulties and alcohol use among Army enlisted soldiers than any other branch of service.

The length of a soldier's deployments were closely associated with substance use disorders. Soldiers deploying in support of OIF/OEF for 120 to 180 days were 1.08 times more likely to suffer from a substance use disorder after returning from deployment), while solders serving for more than 180 days were 1.31 times more likely to receive a substance use disorder diagnosis after returning (Yu-Chu et al., 2012). Length of deployment did not increase the risk of substance use disorder for any of the other services (Yu-Chu et al., 2012). Likewise, deployments to OIF/OEF significantly increased soldier's chance of suffering from major depression. In fact, the mental health functioning of veterans returning from OIF/OEF is significantly worse than the general population (Eisen et al. 2012). Veterans returning from Iraq are more likely to suffer from higher rates of major depression, PTSD, generalized anxiety relationship difficulties and substance abuse than those returning from Afghanistan (Eisen et al. 2012; Osran, Smee, Sreenivasan, & Weinberger, 2010; Rizzo et al., 2011). Osran et al. attributed these

differences in rates of pathology to varying levels of exposure to combat. Soldiers returning from the war in Iraq were exposed to higher levels of combat than soldiers serving in support of the war in Afghanistan (Osran et al., 2010).

Arincorayan et al. (2010) noted that 17% of the soldiers are at-risk of devolving mental health disorders such as PTSD, depression, alcohol misuse upon their return. As a result, an estimated 300,000 active duty service members and discharged veterans will display symptoms of PTSD and major depression (Rizzo et al. 2011). The constant cycle of deployments, separations and reintegration into social support network often results in a continuous cycle of stress (Bowen & Martin, 2011; Gottman et al., 2011; Voss Horrell, Holohan, Didion, & Vance, 2011). The situation is greater complicated because OIE, OIF, and OND veterans are less likely to seek assistance and more likely to develop symptomology (Bowen & Martin, 2011; Gottman et al., 2011; Voss Horrell et al., 2011). According to Bowen and Martin, soldiers, like other service members, view seeking assistance as a sign of weakness. As a result, many soldiers hurt privately and continue to carry the stress of combat exposure whether in a combat or a noncombat environment (Bowen & Martin, 2011; Gottman et al., 2011). Some become aggressive and engage in violent behavior against partners and other persons (Arincorayan et al., 2007; Geiling et al., 2012; Gottman et al. 2011; Voss Horrell et al., 2011).

The constant cycle of deployments and exposure to combat with no emotional outlet or end in sight can present soldiers and their families with continuous occupational and deployment related stress (Bowen & Martin, 2011; Gottman et al., 2011; Smith et al., 2011). This continuous occupational and deployment related stress, increases the chances

of soldiers displaying maladaptive behavior (e.g., excessive drinking, smoking, suicidal ideations, violent behavior and hostility) that can significantly affect soldier's performance (Griffin et al., 2000; Johnson, 2001; Johnson, 2001; Smith et al., 2011; Yu-Fen, 2009).

While serving in Iraq and Afghanistan, troops face physical dangers such as roadside bombs or IEDs, snipers and suicide bombers. These threats create constant concerns and need for soldiers to operate at a maximum attention to detail (Geiling et al., 2012). The real possibility of death or dismemberment is a daily reality for soldiers. Current combat related statistics such as amputations occur at double the rate of previous wars and traumatic brain injuries (TBI) are on the rise, giving soldiers a great deal of concern for their, and other's wellbeing (Geiling et al., 2012). Today's soldiers face unique challenges over a longer period of time (Geiling et al., 2012; Gottman et al., 2011; Maguen et al., 2010).

As a result, soldiers operate at a heightened sense of vigilance and hyper alertness (Gottman et al., 2011). These skills help protect soldiers in battle and enhance their concentration and focus. However, these same skills can cause difficulties when soldiers are trying to reintegrate into their families and society (Gottman et al., 2011). Regardless of rank, age, and combat experience, soldiers and their families face a constant rollercoaster of emotions associated with the deployment cycle (Arincorayan et al., 2007; Gottman et al., 2011; Morgan & Bibb, 2011; Riggs & Riggs, 2011). This cycle does not begin with the deployment itself. It begins with a notification and anticipated

deployment. Even this stage of the deployment cycle can build stress that develops into anxiety and unhealthy behavior.

The official name for this deployment cycle is the Army Force Generation (ARFORGEN). ARFORGEN is a rotational readiness model designed to ensure soldiers and combat commanders at all levels remain trained and ready to perform combat missions (Arincorayan et al., 2007). The ARFORGEN model has three primary phases of operation: The Ready Phase (predeployment), Available Phase (Deployment) and the Reset Phase (Post Deployment). The Ready Phase involves extensive training and unit preparations and culminates with a training exercise at one of two training centers (Arincorayan et al., 2007). Even in this phase, soldiers spend significant amounts of time away from family and support systems training to deploy. In the second phase or Available phase, soldier deploy to the war zone for combat tours up to a year (Arincorayan et al., 2007). During this phase, soldiers can operate under daily operational stressors, the fear of death, the morale dilemma of killing all while trying to balance life at home (Arincorayan et al., 2007; Gottman et al., 2011). In the Reset Phase, soldiers redeploy back to the families and local units. During this phase, soldiers attempt to reintegrate with their families and friends all while trying to identify lessons learned and prepare to reenter the Trained Ready Phase (Arincorayan et al., 2007). As a result, of constant conflict and multiple deployments soldiers might not have a great deal of time to process their war time experiences and effectively reintegrate into their families before preparing for the next conflict (Arincorayan et al., 2007; Gottman et al., 2011). Operating under such conditions can generate feelings of anticipation, emotional, and physical

separation from loved ones and frustration (Arincorayan et al., 2007; Gottman et al., 2011).

Killing in combat can result in returning veterans struggling with feelings of shame of taking lives in war (Maguen et al., 2010). Because of this, soldiers need a safe environment to explore these feelings without judgment and condemnation (Maguen et al., 2010). A lack of validation can result in soldiers suppressing their wartime experiences, which can lead to difficulties, such as depression, substance abuse, violent/aggressive behavior, and difficulties reintegrating with loved ones and society (Doyle & Petterson, 2005; Gottman et al., 2011; Maguen et al., 2005). Because the deployment cycle is continuous, soldiers and their families ride a continuous cycle of emotions and stressors on their job and in their relationships.

Deployments Effect on Performance

The greatest influence of performance is stress (Chen, 2009; McKay et al., 2010; Nabirye et al., 2011; Niks et al., 2013; Wang, 2010). When stress or stressors outnumber a person's perceived resources and ability to function cognitively or physically, it becomes negative stress (McKay et al., 2010; Nabirye et al., 2011; Niks et al., 2013; Wang, 2010). Negative stress can impair a person's ability to form new memories, hinder motor performance, cause the hypothalamic-pituitary-adrenal axis response to become more sluggish which can impair academic performance, motivation becomes low and mental and physical illness such as depression, sleeping disorders, backaches, heart disease and sexual difficulties can occur (McKay et al., 2010; Pandya et al., 2012; Yu-Fen, 2009).

Soldiers, like other occupations, face both positive and negative stressors. However, the difficulty is determining when stress moves from positive to negative; specifically when this limit differs for each soldier based on how he or she perceives the changes and events in his or her life (McKay et al., 2010; Nabirye et al., 2011; Niks et al., 2013; Yu-Fen, 2009). Today's Army faces multiple deployments, constant separations and re-integrations providing soldiers little to no relief from occupational pressures. As a result, soldiers are in a constant cycle of deploying or training to deploy or re-deploy (Eisen et al. 2012; Geiling et al. 2012; Gottman et al. 2011, Rizzo et al. 2011). Such an environment can set a foundation for soldiers to feel overwhelmed and experience anxiety. It is at this point that soldier might lose the ability to bounce back from stress and traumatic events. Therefore, resilience might be an integral part of optimum performance.

I examined the relationship between resilience and performance. Likewise, a person's ability to remain resilient has much to do with how he or she perceives their current stressors and if that level exceeds his or her available resources and ability to properly function (Cui, Teng, Li, & Oei, 2010; Kasler, Dahan, & Elias, 2008; Linley, Joseph, Harrington, & Wood, 2006; Mak et al., 2011; Neill & Dias, 2001; Osran et al., 2010; Notario-Pacheco et al., 2011; Yehuda et al., 2006). Combat deployments can directly affect veterans by generating constant, high stress level and multiple stressors. War, death, and life changing physical and psychological injuries are a real possibility associated with military life. These factors become more challenging with multiple deployments and few breaks between them.

Physical Effects

Rizzo et al. (2011) noted 5,836 service members died in support of the wars in Afghanistan and Iraq. Likewise, 41,583 service members were wounded in action, of those, 1,222 were major limb amputations and 399 minor amputations (Rizzo et al. 2011). Geiling et al. (2012) noted that amputations occur at twice the rate of previous wars. Geiling et al. also noted that amputations present soldiers with the greatest financial, physical and social challenge. Amputees have an increased chance of developing cardiovascular difficulties, osteoarthritis, back and phantom pains (Geiling et al. 2012). Such difficulties can require numerous hours of therapy and prevent soldier from returning to duty.

Another physical danger faced by veterans of OEF/OIF is TBI. Rizzo et al. noted that as of 2012, an estimated 178,876 service members have suffered TBI. Geiling et al. (2012) noted that TBI is so common that it is becoming known as the signature wound of the Iraq war. However, between the wars in Afghanistan and Iraq, TBI represents almost 22% of total casualties (Geiling et al., 2012; McAllister, 2009). Geiling et al. noted a correlation between TBI and poor health, days away from work, and increased medical visits.

The physical effects mentioned above represent a challenge for soldiers and can affect multiple areas of their lives. These potential dangers can affect soldiers work performance, home and social lives, mobility and ability to provide and care for themselves (Geiling et al., 2012; McAllister, 2009; Rizzo et al., 2011). As a result, the increased chance of experiencing or witnessing such a traumatic event can lead soldiers

to develop psychopathology (Eisen, 2012; Geiling et al., 2012; McAllister, 2009; Rizzo et al., 2011; Voss et al., 2011).

Psychological Effects

The stress-filled environment in which soldiers and other service members operate appears to increase the risk of developing metal illnesses (Eisen et al., 2012; Geiling et al., 2012; Gottman et al., 2011: Morgan et al., 2011; Polusny et al., 2009; Shen et al., 2012; Rizzo et al., 2011; Voss et al., 2011). However, one of the most common disorders associated with OEF/OIF is PTSD. PTSD can occur when soldiers either witness or experience a life-threatening event (Geiling et al., 2012; McAllister, 2009; Sharpless & Barber, 2011; Van Winkle & Safer, 2011).Voss et al. estimated that between 12% and 22% of returning veterans will receive a PTSD diagnosis, while McAllister estimated around 17% of returning veterans will receive a diagnosis of PTSD. However, research indicates most veterans will present PTSD like symptoms along with one or more other disorder such as substance abuse, TBI, suicidal ideation, depression, anxiety and mood disorders (Geiling et al., 2012; McAllister, 2009; Sharpless & Barber, 2011).

PTSD and combat related stress is often associated with higher suicide rates, domestic violence, increased smoking, substance use, heart disease, diabetes, gastrointestinal, dermatologic and musculoskeletal disorders, chronic fatigue, and increased dementia (Eisen et al., 2012; Geiling et al., 2012; Zen, Pietrzak, Goldstein, Southwick, & Grant, 2012; Whooley, Shoujun, & Cohen, 2012). These disorders and illnesses can have negative implications in areas of unit readiness, physical, social and the overall emotional health of soldiers (Eisen et al., 2012). Likewise, the constant cycle

of deployments and redeployments with an increased possibility of developing any of these conditions can influence a soldier's ability to remain resilient and therefore affect performance.

Interpersonal/Relationship Effects

Stress associated with constant deployments and separations can affect soldiers in a variety of areas of daily performance such as professionally, socially, and interpersonally (Eisen et al., 2012; Geiling et al., 2012; Gottman et al., 2011). However, a major source of depression, anxiety and suicidal ideation results from failed relationships (Arincorayan et al., 2010; Gottman et al., 2011). Longer and more frequent separations from established social networks and family can disrupt family functioning and alter family roles (Arincorayan et al., 2010; Gottman et al., 2011; Morgan et al., 2010). Likewise, combat deployments can strain soldier's adaptive coping skills, weaken resilience and increase the likelihood of child abuse and domestic violence (Gottman et al., 2011; Morgan et al., 2010).

Enlisted soldiers are at the greatest risk of displaying violence behavior and the risk increases with the length of the deployment (Arincorayan et al., 2010; Gottman et al., 2011; McCarroll et al., 2010). Gottman et al. noted that enlisted members at the ranks of E-1 – E-4 who serve in combat theaters for nine months or more are at greatest risk for displaying aggressive behavior and experiencing divorce. McCarroll et al. noted a significant increase of 5% in severe aggression when soldier deployments went from 6 to 12 months. In a comparison with the civilian population, McCarroll et al. noted Army

rates for moderate violence rates at 13.5 compared to a civilian rate of 10.8. Likewise, the Army had a 2.9% rate of severe violence compared to the civilian rate of 0.7%.

Gottman et al. noted that of soldier suicide among those serving in Iraq, 68% suffered an intimate relationship failure and 56% of non-Iraq-war suicides were relationship related. Stress and anxiety are a normal part of deployments and military life. However, constant stress without relief in sight appears to affect soldier's ability to communicate with their partner (Arincorayan et al., 2010; Gottman et al., 2011). Service members often withhold deployment experiences in order to protect their spouse, child, family, and friends. However, service members in doing so, can alienate him or her intimate partner. This frustration can lead to anger and aggression (Arincorayan et al., 2010; Gottman et al., 2011).

These interpersonal and relational effects of multiple deployments and separations not only affect service members and their families. They also have the possibility of influencing soldier's job performance (Gottman et al., 2011; McCarroll et al., 2010). Every stressor associated with deployments, separations and reintegration has the potential to distract and overwhelm soldiers and therefore affect his or her ability to remain resilient.

Despite the difficulties mentioned above, many soldiers and their families navigate these stressful times and manage to adapt to change and avoid developing pathology (Parmak, Euwema, & Mylle 2012). These persons possess certain skills and traits that help buffer against the negative outcomes mentioned above (Cornum, Matthews, & Seligman, 2011; Gottman et al., 2011; Riggs & Riggs, 2011). One's

environment and proactive programs teach valuable problem solving skills and traits needed to endure adverse and traumatic events (Cornum et al., 2011; Gottman et al., 2011; Huffman, Culberson, & Castro, 2008). The sharpening, developing, and maintaining of skills and traits are known as resilience. The section below is a discussion of the concept of resilience in more detail.

Resilience

The concept of resiliency is rooted in work of Seligman and his positive psychology movement. Seligman suggested that psychology should emphasize those skills and traits that each person possess that help get them through life's difficult times (Linley, Joseph, Harrington & Wood, 2006; Kobau et al. 2011; Seligman & Csikszentmihalyi, 2000; Wong, 2011). By doing so, caregivers would focus on what is right or working in the person's life rather than becoming fixated on pathology. Psychology has three primary functions as seen by Seligman. They are to cure mental illness, assisting members of society to lead healthier, productive and fulfilling lives, and to nurture talents that allowed individuals to adapt and overcome adversity (Linley et al., 2006; Kobau et al., 2011; Seligman & Csikszentmihalyi, 2000). The third function of nurturing skills and talents is important to resilience as it asserts that people possess and can learn skills to overcome adversity (Seligman & Csikszentmihalyi, 2000; Wong, 2011). I sought to measure resiliency levels of returning veterans and noted relationships between soldier's resilience levels and their ability to perform the job and at home.

For purposes of this study, resilience suggests that people possess the ability to recover or adapt to adversity or trauma (Cui, Teng, Li, & Oei, 2010; Kasler, Dahan, &

Elias, 2008; Linley et al., 2006; Mak et al., 2011; Neill & Dias, 2001; Osran et al., 2010; Notario-Pacheco et al., 2011; Yehuda et al., 2006). Resilience is the ability to use positive emotions such as self-confidence, optimism and a positive worldview to rebound from adversity (Mak et al., 2011; Notario-Pacheco et al., 2011). Resilience serves a protective buffer by equipping people with the mind set of adapting to life's changing circumstances and challenges (Cui et al., 2010; Mak et al. ,2011; Notario-Pacheco et al., 2011; Yehuda et al., 2006).

Traits Associated With Resilience

Sources used in this study indicated three primary characteristics most associated with resilience. They are available resources, problem solving skills and locus of control (Cornum, Matthews, & Seligman, 2011; Gottman, Gottman, & Atkins, 2011; Gottman et al., 2011; Mak et al., 2011; McCarroll et al., 2010; Notario-Pacheco et al., 2011; Tedeschi & McNally, 2011). These three primary characteristics seem to influence resilience on a subjective level and influence experiences like happiness, well-being, satisfaction, optimism, and contentment (Linley et al., 2006; Seligman & Csikszentmihalyi, 2000).

Available Resources

Available resources can include anything from supportive friends and family, appropriate occupational skills training, income, education to faith and religion (Cacioppo et al., 2011; Cornum et al., 2011; Gottman et al., 2011; Tedeschi, & McNally, 2011). These resources can provide individuals with readily available tools to help overcome stressors and traumatic events (Cornum et al., 2011; Gottman et al., 2011; Tedeschi & McNally, 2011). Increasing available resources or what the individual

perceives as resources can help foster resilience despite undergoing a traumatic life event (Cornum et al., 2011; Gottman et al., 2011; Nabirye et al., 2011; Tedeschi & McNally, 2011).

A supportive environment and increased problem solving skills can increase one's sense of hope and optimism about the future (Benzies & Mychasiuk, 2009; Cornum et al., 2011; Gottman et al., 2011; Nabirye et al., 2011; Tedeschi & McNally, 2011). Persons experiencing supportive and sensitive early caregivers are more likely to possess well-developed resiliency skills, such as a healthy self-worth, keen problem solving skills, and other positive personality traits (Benzies & Mychasiuk, 2009; Herrman et al., 2011; Hobfoll et al., 2009; Johnson, 2003; Seligman & Csikszentmihalyi, 2000). The most basic beginning of the resilience process starts with a strong parent-child relationship (Bhana & Bachoo, 2011; Henley, 2010; Kobau et al., 2011). Children raised in homes with perceive parental support are more likely to display resilient traits such as self-confidence, sociability, frankness, positive interpretation of events, intellectual abilities, positive self-steem, optimism, hope, resourcefulness, and adaptability (Bhana & Bachoo, 2011; Cacioppo et al., 2011; Herrman et al., 2011; Trask-Tate, Cunningham, & Lang-DeGrange, 2010). Resilience continues to develop through one's life and despite an individual's early environment (Benzies & Mychasiuk, 2009; Bhana & Bachoo, 2011; Cacioppo et al., 2011; Herrman et al., 2011; Hobfoll et al., 2009; Trask-Tate, Cunningham, & Lang-DeGrange, 2010).

A recent study of 136 African American high school students tended to support the influence perceived parental support can have in a child's life even into adulthood

(Trask-Tate et al., 2010). Trask-Tate et al. noted the impact of social support systems on distress in African American girls by examining what made these young girls resilient despite living in single parent homes. The findings revealed girls with higher identified resilience felt support from their mothers. However, in girls with lower ego-resiliency, perceived support from their fathers was particularly important (Trask-Tate et al., 2010). Kasler, Dahan, & Maaurice (2008) noted a relationship between PTSD, social support and an individual's sense of hope. This study involved 311 children that experienced through proximity or new reports rocket attacks during the second Lebanon War in Israel. The key findings of this study suggested that children with a greater sense of hope had lower rates of PTSD and higher levels of resiliency. Children that physically experienced rocket attacks displayed greater levels of PTSD symptoms. Likewise, this study indicated a positive relationship between the ability to discuss the experiences of war and a sense of hope. Supportive environments that encourage discussion of traumatic events correlate with increased sense of hope and optimism (Hobfoll et al., 2009; Kasler et al., 2008; Trask-Tate et al., 2010).

Hobfoll et al. (2009) worked with 709 participants comprised of Arab and Jews persons living in Israel participated in a longitudinal exploration of resilience and resistance. Hobfoll et al. examined resilience and resistance amongst a national sample living under the constant threat of mass casualties. Researchers interviewed participants twice during the 2004 and 2005 terrorist and rocket attacks. The findings of this study determined that being Jewish and having greater support from family, friends, and community correlated with higher resilience and resistance. Being Jewish provided a

greater national network of support (Hobfoll et al., 2009) and the support of family and friends help nurture participant's positive personality traits at an early age (Hobfoll et al., 2009; Kasler et al., 2008; Trask-Tate et al., 2010). Hobfoll et al. noted being Jewish provided a stronger sense of community support. However, being Arab in a Jewish culture provided less community support and sense of belonging, which rendered Arab participants less resilient and resistant. Each of the researchers mentioned in this section indicated a strong need for support networks, acceptance and the ability to share one's experience in order to achieve higher levels of resilience.

Problem Solving

Problem solving is a cognitive-affective-behavioral process by which individuals identify, learn, or create effective and adaptive responses for specific problematic situations (Erozkan, 2013). Problem solving skills can include the ability to solve a basic or complex mathematical equation or interpersonal competence such as effective conflict resolution and effective communication skills (Ahlert & Greeff, 2012; Erozkan, 2013). Communication and interpersonal competence are two of the most fundamental aspects of human performance (Erozkan, 2013). A person's ability to solve problems through effective communication skills can directly influence the quality of intimate and interpersonal relationships and the individual's self-perception (Erozkan, 2013; McKay, 2011). McKay argued that these skills are developed each time individuals are given opportunities to encounter difficult situations in a nonthreatening environment. As a result, these experiences become rehearsals for later life difficulties. Researchers cited in this study indicated that these problem-solving skills develop over time, are learned

rather than inherited and can be taught (Ahlert & Greeff, 2012; Erozkan, 2013; Linke, 2010; Madsen, Hicks, & Thompson, 2011; Syafii & Yasin, 2013).

Basic problem solving skills are developed early in life and sharpened each time individuals encounter stressful or adverse situations (Bartone, 1999; Herrman et al., 2011; Hobfoll et al., 2009; Yehuda et al., 2006). The development of sharpened life skills and personality traits, such as hardiness, tends to change a person's view of the world and life's events (Bartone, 1999; Herrman et al., 2011). Hardy people tend to possess a more optimistic attitude toward life and adversity. They tended to see themselves as having options rather than being helpless. Adversity and traumatic events become a challenge and a natural part of life rather than a problem (Bartone, 1999; Herrman et al., 2011).

Locus of Control

The locus of control is either internal or external and refers to a person's perception of the power he or she has regarding life events (Benzies & Mychasiuk, 2009; Mak et al., 2011). Persons that exhibit an internal locus of control tend to be optimistic, view themselves as controlling their life rather than being controlled by life's events, and possessing the power to change and adapt to life situations (Benzies & Mychasiuk, 2009). Persons with an external locus of control tend to view others or outside forces as having control of life situations; they view themselves as having no control of what happens to them (Benzies & Mychasiuk, 2009). Persons with an external locus of control see forces such as one's environment, other people or a higher power being in control. As a result, this person might sense less control in life and no ability to change or adapt to life's situations (Benzies & Mychasiuk, 2009).

The locus of control is an important element in understanding resiliency as it influences how an individual will respond to stress, crisis, adversity and serve as a building block for future experiences (Benzies & Mychasiuk, 2009; Mak et al., 2011; McKay, 2011; White et al., 2008). Likewise, people with an internal locus of control tend to view themselves as having the ability to problem solve or reach out to other resources needed to overcome adverse situations (Benzies & Mychasiuk, 2009; White et al., 2008). Persons with an internal locus of control are less affected by crisis, feel a greater sense of control, are more optimistic and tend to take control of situations and make positive changes (Benzies & Mychasiuk, 2009; McKay, 2011; White et al., 2008).

Resilience Effect on Performance

Several resiliency factors are closely associated with job performance (Avey, Reichard, Luthans, & Mhatre, 2011; Crowder, Ferrara, & Levinbook, 2013; Huffman et al., 2008; Luthans, Norman, Avolo, & Avey, 2008; Niks, De Jonge, Gevers ,& Houtman, 2013; Yu-Fen, 2009). These factors include: level of job stress, family friendly work environments, job resources, employee self-value, optimism, self-efficacy, emotional support, spirituality, problem solving skills, and off the job recovery. Work environments and employees that exhibit the factors mentioned above often correlate with greater job satisfaction and work performance (Avey et al., 2011; Huffman et al., 2008; Luthans et al., 2008; Niks et al. 2013). Used in a proactive manner, these factors can increase productivity, job satisfaction, and employee's level of commitment to an organization (Luthans et al., 2008).

Providing a work environment that is understanding of potential family issues such as the need for reliable onsite childcare, good sick leave policies, vacation time, paid, and unpaid leave help create greater wellbeing and more optimistic in workers (Huffman et al., 2008). Likewise, providing adequate job resources such as necessary tools, information, training and advancement opportunities increase workers level of self-efficacy and help decrease stress caused from job demands (Luthans et al., 2008; Niks et al., 2013; Yu-Fen, 2009). This resilience approach can be helpful, as job demands often cannot be reduced. In addition, a proactive approach can serve as a protective buffer against the strains of heavy job demands (Luthans et al., 2008; Niks et al., 2013; Yu-Fen, 2009).

In a 2008 study of 404 students from two midwestern universities, Luthans et al. (2008) explored the relationship of positive capital (hope, resilience, optimism, and efficacy) and supportive organizational climates' ability to facilitate employee outcomes. The findings indicated a positive relationship between a person's level of hope, resilience, optimism and efficacy and their performance on the job, level of job satisfaction, and commitment. Likewise, there was a positive relationship between a supportive work climate and employee performance. Resilience can serve as a proactive means of confronting stress from heavy job demands.

In another study of 787 police officers in central Taiwan, Yu-Fen (2009) explored the relationship between job stress and job performance. Yu-Fen noted that on the job pressures can lead to increased productivity or have a negative impact when it becomes excessive. When stress is positive, employees display effective concentration, improved

physical performance, and more often achieve expected goals even in the midst of change and challenge. Job stress displayed a higher correlation with task performance than with contextual performance, meaning higher job stress leads to lower job performance. Participants in this study came from all ranks and ages. Resilience serves as a buffer against job stress and can help increase job performance. Yu-Fen indicated a need for advanced training on a regular basis to help elevated job stress. Officers with more job training displayed more resilience and less negative effects from job stress.

Resilience is an individual's ability to recover from or adapt to adverse or traumatic situations (Cui, Teng, Li, & Oei, 2010; Kasler, Dahan, & Elias, 2008; Linley et al., 2006; Mak et al., 2011; Neill & Dias, 2001; Osran et al., 2010; Notario-Pacheco et al., 2011; Yehuda et al., 2006). Resilience is particularly important within the population used in this study.

Soldiers in the US Army face multiple deployments in combat operations that present a high risk of death due to the proximity of combatants and the civilian population and the chaos of urban warfare (Maguen et al., 2010). As a result, soldiers experience the trauma of direct and indirect killings as well as secondary trauma from witnessing death, handling remains or helping those severely wounded (Geiling et al., 2012; Maguen et al., 2010).

Constant exposure to chronic stress can weaken resilience, thereby affecting performance on the job and weaken family and interpersonal relationships (Gottman, Gottman, & Atkins, 2011; Morgan & Garmon Bibb, 2011). Recent soldier suicide rates might be an indication of weakened soldier resilience. In 2012, more soldiers died from

suicide than combat related deaths; 177 by suicide compared to 176 combat deaths (MacLeish, 2013; Star and Stripes, 2012). Chronic exposure to combat has the greatest effect on married enlisted soldiers (E4 – E5) (Gottman et al. 2011; MacLeish, 2013; Shen, Arkes, & Williams, 2012; Star and Stripes 2012). In their 2012 study of active duty service members and the effects of deployments to Iraq and Afghanistan, (Shen et al., 2012) noticed a relationship between longer deployments and increased rates of major depression and substance abuse diagnosis. Substance abuse rates among deployed soldiers more than doubled those of nondeployed soldiers and major depression rates were significantly higher in deployed soldiers (Shen et al., 2012). Also of importance, increased rates of substance use among Army soldiers were higher than all other branches of service and increased with the length of the combat tour (Shen et al., 2012). This trend was not present in any other branch of service.

Combat stresses and frequent deployments can affect soldiers' resilience causing soldiers to suppress their emotions and traumatic wartime experiences in order to shield their partners (Arincorayan, Applewhite, & Robichaux, 2010; Gottman et al., 2011; MacLeish, 2013). As a result, soldier's communication skills diminish; stressing social and intimate relationships which weakening soldier's resilience. Soldiers that suppress the details of wartime experiences and stressors often find it difficult to connect with the ordinary stresses of their families (Gottman et al., 2011).

Soldiers have operated in a heighted sense of hypervigilance and have little to no time to process their experiences before reentering their families (Doyle & Petterson; Gottman et al., 2011). Likewise, they struggle to listen, identify and interact positively

with their family's emotional world (Gottman et al., 2011). As a result, soldiers become less responsive to their partner's needs for affection, humor, support and experience increased physiological arousal (Gottman et al., 2011).

Chan and Wan (2012) argued that such self-regulating or self-control impairs a person's ability to perform on subsequent self-regulatory task. Self-regulating involves making a conscious effort to align one's behavior with established or preferred standards by inhibiting forbidden reactions and encouraging desire responses (Chan & Wan, 2012). Soldiers often self-regulate at work and at home. Soldiers tend to suppress emotions at work in order to display the hard emotional exterior perceived necessary to survive in the military system (Gottman et al., 2011). Likewise, soldiers self-regulate at home to protect loved ones (Applewhite et al., 2010; Gottman et al., 2011). As a result, soldier's intimate relationships can suffer and mental health issues occur (Gottman et al. 2011). These relationships are important because research indicated functioning relationships significantly influences a person's resilience or adaptive skills (Arincorayan et al., 2010; Gottman et al, 2011; MacLeish, 2013). Through relationships, individuals learn to problem solve, support and receive support. Likewise, healthy relationships and interpersonal interaction can present opportunities to develop understanding, compassion and compromise (Gottman et al., 2013). However, strained relationships can become argumentative struggles for power and control.

Healthy relationships and interpersonal skills can provide characteristics that facilitates adaptive skills such problem solving, belief systems/spirituality, effective coping skills, hardiness, optimism, self-confidence, self-work cooperatively efficiency,

work ethic, desire for learning, interpersonal relationship skills, and ability to resolve adversity (Bhana & Bachoo, 2011; Hobfoll et al., 2009; Hsieh & Shek, 2008; Trask-Tate et al., 2010; White et al., 2008). These skills, combined with the social interactions provided by positive relationships, help shape a person's ability to adapt and recover in the face of adversity. Healthy relationships can provide supportive, cohesive environment of acceptance thereby creating a nurturing and cognitive stimulating environment (Bhana & Bachoo, 2011). Likewise, families systems and other social support systems can provide members effective examples of conflict resolution and collaboration (White et al., 2008). Resilience could prove significant in assisting today's Army. Unlike medical models that wait for symptoms to treat pathology and personal weaknesses, resilience takes a proactive and preventive approach (Cacioppo et al., 2011; Gottman et al., 2011; Poulou, 2007; Seligman & Csikszentmihalyi, 2000; Tjeltveit & Gottlieb, 2010). Through resilience, soldiers and their families can learn skills that will provide valuable tools and resources that can boost performance (Tinsley, 2013). As a result, soldier will be more focused, creative and productive and miss less work (Tinsley, 2013).

Resilience Programs Used by the United States Army

Because the demands of war are often beyond military leader's ability to control, the United States. Army has embraced the idea of increasing resources and sharpening problem solving skills of soldiers and their families to help buffer against potential pathologies and negative outcomes to wartime stressors. In order to battle increased mental health disorders, multiple deployments, and stress on a strained force, the United States Army has turned to programs and strategies that are proactive and develop

adaptive skills in soldiers and their families (Cornum et al., 2011; Gottman et al., 2011; Tedeschi & McNally, 2011).

Currently, the Army uses programs like the Warrior Resilience Program, Family Advocacy, and The Comprehensive Soldier Fitness Program to teach soldiers and their families' positive proactive means of working through stressful life events (Arincorayan et al., 2010; Cacioppo et al., 2011; Cornum et al., 2011; Gottman et al., 2011; Lester et al., 2011). Soldiers and their families are offered predeployment, deployment and postdeployment training modeled after the Army deployment cycle and which address commonly faced issues (Arincorayan et al., 2010; Cacioppo et al., 2011; Cornum et al., 2011; Gottman et al., 2011; Lester et al., 2011). These programs equip soldiers and their families with skills that enrich relationships and can help them more successfully confront the stressors of separations and reunions. As a result, the training, interactions and positive relationships developed between soldiers and their families can in turn build a stronger Army community (Arincorayan et al., 2010; Cacioppo et al., 2011; Cornum et al., 2011; Gottman et al., 2011; Lester et al., 2011).

These resilience efforts promote personal and relational growth through increasing soldier's coping skills, emotional wellbeing, social networks, family relationships, and spiritual fitness. Since research also indicated that environmental factors such as perceived parental, family and social support, caring and supportive teachers/school systems, involvement in community activities and peer acceptance can positively influence resilience; the Army has expanded these resources to assist families as well (Bhana, & Bachoo, 2011; Poulou, 2007; Trask-Tate et al., 2010).

Summary

The effects of combat can have a significant effect on soldier's ability to remain resilience, deal with challenges and manage stress in a healthy manner. Resilience is particularly important within the United States Army because of the 13 years of persistent conflict and multiple deployments in combat operations in Afghanistan and Iraq. Soldiers encounter a constant risk of death, trauma from direct and indirect killings, secondary trauma from witnessing death, handling remains or helping the severely wounded and long periods of separation from families and support systems.

This constant exposure to prolonged stress can weaken soldier's ability to cope with job related stressors and demands. However, through increasing resilience traits and skills in individuals and the organization, soldiers might experience positive outcomes despite the demands of military life and constant deployments. Because resilience is learned and developed over time, individuals can learn and develop resilience skills through support networks/systems and institutions like families, communities (Bartone, 1999; Herrman et al., 2011; Seligman, 2011; Seligman & Csikszentmihalyi, 2000; Seligman & Fowler, 2011).

As the Army faces increased demands with a smaller force deploying multiple times, soldiers must possess the ability to bounce back from adversity and maintain the ability to performance effectively in stressful and traumatic environments. Exploring possible relationships between resilience and performance could prove important and worthy of studying. The next chapter is the method used to conduct this study such as

data collection and analysis. Chapter 3 is a detailed description of how participant's resilience scores, physical fitness and weapon qualifications scores will be used.

Chapter 3: Research Method

Introduction

The purpose of this quantitative correlation study was to explore factors related to resilience (Hardiness, Self-efficacy, and Perceived Social Support) and to determine if these factors influence performance outcomes (APFT and weapons qualification scores) among returning veterans of the wars in Afghanistan and Iraq. I used self-report data from a demographic survey, psychometric scales measuring hardiness, self-efficacy and perceived social support, and scores obtained from participant's APFT and weapons qualifications scores. In this chapter, I will discuss in detail how data will be collected and those instruments that will be used. Particularly, the chapter will provide information supporting the reliability and validity of each psychometric scale. I will explain how the sample size for this research study was determined, as well as the limitations and ethical concerns associated with this study.

Research Questions and Hypotheses

I sought to determine if resilience, self-efficacy, and social support among returning veterans of the wars in Iraq and Afghanistan influence their physical performance on the APFT and accuracy as marksmanship. I sought to better understand how resilience influences enlisted soldiers and their ability to meet physical standards and accuracy as marksmen. Resilient people most often possess resilience factors (resilience, self-efficacy, and perceived social support; Gottman et al. 2011; Seligman & Csikszentmihalyi, 2000; Wong, 2011). I sought to answer the following research questions:

Research Question 1: Can resilience, as measured by the CD-RISC (Conner & Davidson, 2003), be used to predict soldier's performance on the APFT?

$H1_0$: There will be no significant predictive relationship between resilience scores and performance.

$H1_a$: There will be a significant predictive relationship between resilience scores and performance when comparing results of the CD-RISC (Conner & Davidson, 2003) and APFT scores.

Research Question 2: Can self-efficacy, as measured by the General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995), be used to predict soldier's performance on the APFT.

$H2_0$: There will be no significant predictive relationship between self-efficacy scores and performance.

$H2_a$: There will be a significant predictive relationship between self-efficacy scores and performance when comparing results of the General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995) and APFT scores.

Research Question 3: Can social support, as measured by the Multidimensional Scale of Perceived Social Support (MSPSS), (Zimet, Dahlem, Zimet & Farley, 1988), be used to predict soldier's performance on the APFT.

$H3_0$: There will be no significant predictive relationship between perceived social support scores and performance.

$H3_a$: There will be a significant predictive relationship between social support scores and performance.

Research Question 4: Can resilience, as measured by the CD-RISC (Conner & Davidson, 2003), be used to predict soldier's performance on weapons qualification.

$H4_0$: There will be no significant predictive relationship between resilience scores and performance.

$H4_a$: There will be a significant predictive relationship between resilience scores and performance.

Research Question 5: Can self-efficacy, as measured by the General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995), be used to predict soldier's performance on weapons qualification.

$H5_0$: There will be no significant predictive relationship between self-efficacy scores.

$H5_a$: There will be a significant predictive relationship between self-efficacy scores and performance.

Research Question 6: Can social support, as measured by the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet & Farley, 1988), be used to predict soldier's performance on weapons qualification.

$H6_0$: There will be no significant predictive relationship between social support scores and performance.

$H6_a$: There will be a significant predictive between social support scores and performance.

Research Design

I used a correlational research design and a quantitative approach to examine if relationships existed between resilience factors (hardiness, self-efficacy, and perceived social support) and veterans' performance. A correlational approach offered the best means of exploring these variables since they cannot be controlled or manipulated (Creswell, 2009; McLeod, 2008). In particular, a demographic survey was used to ensure participants met inclusion criteria and three psychometric scales were used to measure the three areas of resilience. Surveys are often used in correlation designs to measure variables as opposed to manipulating them (Creswell, 2009). Because the variables used in this study (hardiness, self-efficacy, and perceived social support) were characteristics of personality, these variables were almost impossible to test using an experimental design (McLeod, 2008). The correlational research design provided a practical and ethical means of exploring these variables, as they exist within the population.

Method Used to Collect Data and Sampling Strategy

Prior to collecting data, I obtained permission from the United States Army IRB and soldiers' unit commanders to conduct research using the soldiers. I collected data in such a way that did not reveal personal identifiable information (PII) about participants. Such information included: names, social security numbers or email addresses. These restrictions ensured information obtained during the study cannot be used to identify participants. Excluding PII allowed participants the freedom to answer as truthfully as they desire without the fear of being identified and repercussions. This protected participants just in case they provided responses that might be deemed criminal or ethical

by the military. Otherwise, a participant's response could lead to his or her being place at risk of criminal or civil liability, financial damages, loss of employment or damage the participant's reputation (United States, 2012).

I did not initiate direct contact with participants unless requested by participants. The acceptable means to accomplish this task was to collect data online through the my Survey Monkey account. Since military members and their families are a protected population, an online method offered the greatest opportunity to protect their privacy and confidentiality. Most important, an online collection of data provided the researcher the ability to honor this agreement made with the United States Army IRB while providing participants anonymity. Copies of this agreement are included in Appendix A.

I e-mailed unit 1st Sergeants a scripted email with an information paper attached. The information paper contained clear instructions, intentions of the study, participant's rights, inclusion criterion and a hyperlink to access the survey monkey accountThe information paper stressed that the study is for educational purposes and confidential. Both the scripted e-mail and information letter were approved by the Army IRB and are included in Appendix B.

Upon receiving this e-mail, unit 1st Sergeants forwarded the e-mail and information paper to all soldiers meeting the inclusion criterion within their commands. The scripted e-mail instructed 1st Sergeant to forward the scripted portion of the e-mail in bold print along with the information paper. Also, the e-mail instructed unit 1st Sergeants to place each potential participant's e-mail addresses in the bcc. In doing so, participants

would not see other participant's information. This action helped maintain the privacy of all potential participants.

Potential participants were asked to use the hyperlink provided in the information paper to enter the researcher's website. Once on the website, participants were asked to read an informed consent form before proceeding to the questionnaire and scales. The inform consent form contained information which defined the limits to confidentiality and any potential risk associated with the study. A copy of the informed consent form is included in Appendix C.

Potential participants were informed that proceeding into the study is an indication of consent. By doing so, participants indicated that he or she understood his or her rights, how the collected data would be used, and agreed to take part in the study. After reading the inform consent statement, participants proceeded to the demographic survey and provided the requested information to verify he or she met the inclusion criterion for the study. The demographic survey noted if potential participants have served at least one consecutive 12 month tour in either Afghanistan or Iraq, were between the rank of E-1 to E-8, if they have taken a three event APFT (Push-Up, Sit-Up and 2 Mile Run) and qualified with the M-16 riffle. Before entering each portion of the requested information, potential participants read a statement clearly outlining inclusion criteria. After reading the inclusion criteria, the potential participant determined if he or she met those requirements.

At any time a potential participant's information did not merit what is requested in the demographic survey, he or she was thanked for their willingness to participate and

informed that the he or she was not eligible for the study. Those potential participants that do not meet the inclusion criteria were asked to exit the study. Potential participants that meet inclusion criteria in the demographic survey were asked to proceed to the next section which contained each of the three psychometric scales. Participants completed each scale and proceeded to the following scale until all three scales were completed. Once all three scales were completed, participants were thanked for their participation in the study.

Description of Participants and Sample Size

Sample Population

The sample population for this study was a sample of convenience. A sample of convenience is a nonprobability method of selecting samples based upon convenience rather than random selection (Guo & Hussey, 2004; Yu & Cooper, 1983). The purposed unit for this study was chosen because of its easy accessibility to me and the unique opportunity it provided to study this protected population.

The sample population of this study consisted of Active Duty Army veterans in the rank of Private (E-1) to Master Sergeant (E-8) ranged from 17 to 60 years of age and from a Headquarters Battalion of an Army Service Component Command (ASCC). This unit consisted of 300 soldiers that ranged in rank form PV1 (E-1) to Major General (O-8) and consisted of three companies. The total number of soldiers within the desired rank group for this study was 189 and those meeting the inclusion criteria were unknown.

Participants for this study were male and female soldiers of diverse ethnicities, backgrounds, education levels and military skills, which reflected the Army's diverse

population. The Army consists of the three general categories of Army units: Combat, Combat Support (CS) and Combat Service Support (CSS; FM 3-90). By using this type of unit, this study hosted participants from each of these categories and better reflex the makeup of the Army.

Sample Size

Parameters for determining the sample size for this study was set at an Alpha level of 5%. This level of significance grants a 95% level of confidence and helped avoid a Type II error (Creswell, 2009; Rudestam & Newton, 2007). An 80% power test was selected to guarantee the study had a p value of less than 5% and because 80% is a widely accepted level of power in (Cohen, 1988; Fritz et al., 2012; Keppel & Wickens, 2004). By measuring effect size, I was provided a quantitative means of determining just how large differences were between factors (Cohen, 1988; Creswell, 2009; Fritz, Morris, & Richler, 2012; Keppel & Wickens, 2004). Because the effect size measures mean differences and correlations, it is commonly used in studies seeking to determine the degree of relationship between multiple variables (Cohen, 1988; Fritz et al., 2012; Keppel & Wickens, 2004).

The use of effect sizes provides future researchers a guideline for calculating the power and sample size for their studies (Fritz et al. 2012). This researcher used similar studies as a guide to determine the appropriate effect and sample size for this study. In a 2013 study of student satisfaction in online education, Kuo, Walker, Belland, and Schroder (2013) conducted a study involving 75 participants from 11 online courses. I used a sample of convenience and used a medium effect size to determine their sample

size and conducted a multiple regression. Similarly, a 2011 study of nurse's perception of manager leadership styles and outcomes, Casida and Parker conducted a correlational design study using a multiple regression and a small effect size. Likewise, in a study of gender differences in risk and protective factors associated with PTSD, Kline et al. (2013) used Cohen's d to determine effect size and significant predictor of PTSD.

As a result of the literature reviewed for this study, this researcher concluded the use of effect size to determine sample population was acceptable. In particular, the use of medium effect sizes in dissertations studies seemed to be the most common (Reese, Prout, Zirkelback, & Anderson, 2010). Reese et al. 2010 examined 65 school-based psychotherapy and counseling dissertations ranging from 1998 to 2008 and determined a greater number of behavioral studies use a medium effect size. I selected a medium effect size. A medium effect size provided the best opportunity to reach an acceptable sample size, avoid a Type II error and still notice any significant relationships between resilience and performance variables.

Based upon a review of the literature, a power analysis was performed using a priori analysis to determine the necessary sample size for this study. Based on the type of analysis being used (multiple linear regression), G*Power (Faul, Erdfelder, Lang, & Buchner, 1996) calculated a minimum sample size of $n = 77$. Parameters were set at $\alpha = .05$, power = .80, and a medium effect size $f = 0.15$ (Cohen, 1988).

Research Instruments

The following section includes a detailed description of the scales and instruments used to gather and measure data for this study. These instruments consisted of a self-

designed demographic survey, the CD-RISC (Conner & Davidson, 2003), the GSE, (Schwarzer & Jerusalem, 1995**),** and the MSPSS (Zimet, Dahlem, Zimet, & Farley, 1988). All of the scales mentioned above are free and in the public domain except the CD-RISC. However, permission was obtained from the authors of the CD-RISC through email communication (Appendix D). A copy of each scale is included in the following appendix: CD-RISC (Appendix E), GSE (Appendix F) and MSPSS (Appendix G).

Demographic Survey

The self-designed survey consisted of questions designed to gather demographic information to determine if participants meet inclusion criterion for the study (Appendix H). Participants were asked to provide demographic information such as gender, age, number of deployments, length and location of each deployment, Military Occupational Skills, raw APFT scores, weapon qualification scores and marital status. This information helped me verify each participant in fact met the inclusion criterion for this study. Based upon the participant's age, number of push-ups, sit-ups and time on the 2-mile run, I used an AFPT scorecard to determine each participant's raw score.

The APFT is comprised of three events (push-ups, sit-ups and a 2-mile run) each event has a possible score ranging from 0 to 100 points (United States, 1992 & 2012). Points for the each event were awarded by the number of completed push-ups and sit-ups done within 2 minutes for each event. Scores on the 2 mile run were based upon soldier's age and the time the soldier achieves on the run. Younger soldiers must runner faster than older soldiers to obtain higher scores. Males must perform more push-ups and sit-ups and run faster than females. The difference in scoring for male and females on the APFT is

based upon male soldiers usually being stronger female soldiers (United States, 1992, 2012). These events are given in succession starting with the push-up then sit-ups and ends with the 2 mile run. Soldiers are given no less than 10 minutes and no more than 20 minutes to recover between each event (United States, 1992).

Unlike the APFT, the Army weapons qualification test is a single event with a possible score ranging from 0 to 40 points (United States, 2008). The total number of targets hit determines soldier's scoring. Weapon qualification standards and scoring is the same for male and female soldiers. Since weapon qualification is an act of skill and accuracy and not based upon strength, scoring is the same for males and females (United States, 2008).

The Connor-Davidson Resilience Scale (CD-RISC)

The CD-RISC is a self-report instrument designed to measure resilience/hardiness and note symptoms of PTSD. The CD-RISC consists of 25 questions answered using a 5-point Likert scale ranging from 0 to 4. Answers are 0= *not true at all,* 1= *rarely true,* 2= *sometimes true,* 3= *often true,* and 4= *true nearly all the time* (Conner & Davidson, 2003). Scoring for this scale involves adding the scores of each question to achieve a full range score of 0 – 100. A higher score reflects a greater level of hardiness.

The CD-RISC has been tested in with participants from various social economic standings, countries and languages (Ahern, Kiehl, Sole, & Byers, 2006; Khoshouei, 2009; Kjellstrand & Harper, 2012; Mayu, Eun-Jeong, Fong, Catalano, Hunter, Bengston, & Rahimi, 2013; Xiaonan & Jianxin, 2007). The CD-RISC is a five-factor scale which measures the following factors: Personal Competence, Trust in one's abilities, Positive

acceptance of change, Control of one's live, and Spiritual influences (Conner & Davidson, 2003; Xiaonan & Jianxin, 2007).

Reliability of the CD-RISC

A review of literature indicated the CD-RISC demonstrated a strong test-retest reliability of 0.87 among studies conducted in United States populations (Connor & Davidson, 2003; Kjellstrand & Harper, 2012). The CD-RISC demonstrated acceptable test-retest reliability when used in cultural settings outside the United States such as Iran (Khoshourei, 2009), Canada (Mayu et al., 2009) and China (Xiaonan & Jianxin, 2007). These studies included a Persian version used among 323 Iranian college student ages 19 -3483 (Khoshourei, 2009), a Canadian study of 274 persons suffering from spinal cord injuries (Mayu et al., 2009), and a Chinese version used among 560 participants from the Guangdong province and Beijing (Xiaonan & Jianxin, 2007). In these studies, the CD-RISC achieved Cronbach's alpha scores of 0.83 (Khoshourei, 2009), 0.91 (Xiaonan & Jianxin, 2007) and 0. 89 (Mayu et al., 2013).

The test-retest reliability among Iranian college students was .83 over three weeks. Similarly, the CD-RISC demonstrated good test-retest scores in Kjellstrand and Harper's (2012) study of resiliency among middle and upper income women (0.87) and Connor and Davidson (2003) study of primary outpatients and psychiatric outpatients (0.87). However, these did not indicate the time between each testing. Given the test-retest reliability scores achieved in the studies above, there is a strong indication the CD-RISC is reliable over time.

Validity of the CD-RISC

In terms of convergent validity, the CD-RISC scores (r = -0.76) demonstrated a significant negative correlation with the Perceived Stress Scale (PS-10), which indicates that higher levels of resilience are associated with lower levels of stress (Connor & Davidson, 2003; Kjellstrand & Harper, 2012). However, when compared with the Kobasa Hardiness scale among out patients, the CD-RISC displayed a positive correlation (r = 0.83; Connor & Davidson, 2003). This positive correlation indicates greater hardiness is closely associated with higher resilience (Connor & Davidson, 2003). In addition, Kjellstrand and Harper (2012) noted a positive correlation between the Sheehan Social Support Scale and the CD-RICS (r= 0.36), indicating higher resiliency is associated with greater social support.

In regards to convergent validity, the CD-RISC demonstrated a negative correlation with scores from the Sheehan Disability Scale in psychiatric patients (r= -0.62), which indicates that high levels of resilience are most associated with lower levels of functional impairments (Kjellstrand & Harper, 2012). Discriminant validity was determined in (Connor & Davidson, 2003) by correlating participant's scores from the CD-RISC with scores from the Arizona Sexual Experience Scale (ASEX). The results of this comparison indicated the CD-RISC was not significantly correlated with the ASEX. Mayu et al. (2013) used factors like hardiness, contentment and happiness to determine the structural validity of the CD-RISC. The CD-RISC displayed a significant relationship with depression (r= -.65, p <.001). The study revealed a disability acceptance of (r= .54 p <.001) and happiness (r=.69 p <.001). Mayu et al. determined all subscales of the CD-

RISC displayed significantly a negative relationship with depression and a significantly positive association with disability acceptance and happiness. These results support the convergent validity of the CD-RISC as a reliable instrument for measuring resilience.

The above correlations support convergent, discriminant and the overall construct validity of the English version of the CD-RISC used in American population (Connor & Davidson, 2003; Kjellstrand & Harper, 2012). Based upon these results, one can assume the CD-RISC is an acceptable instrument for measuring resilience.

The General Self-Efficacy Scale (GSE)

The GSE (Schwarzer & Jerusalem, 1995) is a 10 items, self-reporting scale designed to measure a person's confidence in his or her ability to complete a task or reach a desired goal (Brenlla, Aranguren, Rossaro, & Vázquez, 2010; Okada, 2013; Schwarzer & Jerusalem, 1995). The GSE measures perceived self-efficacy that enables goal-setting, amount of effort one is willing to invest, one's level of determination in the face of adversity and ability to bounce back from setbacks (Brenilla et al., 2010; Okada, 2013). The GSE uses a 4-point Likert scale ranging from 1 to 4. Participants may choose one of four responses to each question (1 = *Not at all true,* 2 = *Hardly true,* 3 = *Moderately true,* 4 = *Exactly true*). To score the GSE, the point value of 1-4 is added from each question to provide a full range score of 0 – 40. Higher scores represent a higher sense of self-efficacy (Bonsaksen, Kottorp, Gay, Fagermoen, & Lerdal, 2013; Okada, 2013; Schwarzer & Jerusalem, 1995). The GSE is designed for use with an adult population and should not be used on populations 12 and under (Love, Moore, & Hensing, 2012; Okada, 2013; Schwarzer & Jerusalem, 1995). The CGSE displayed an ability to make

comparisons crossing subpopulations like gender, country and different health conditions (Brenlla et al., 2010; Leganger, Kraf, & Roysamb, 2000; Love et al., 2012; Leung & Leung, 2011; Okada, 2013; Romppel et al., 2013).

Reliability of the General Self-Efficacy Scale (GSE)

The GSE has been used in research with college students (Al Khatib, 2012), international populations (Brenlla et al., 2010; Leganger, Kraf, & Roysamb, 2000; Love et al., 2012; Romppel et al., 2013), and clinical populations (Bonsaksen et al., 2013; Brenlla et al., 2010; Leganger, Kraf ,& Roysamb, 2000; Love, Moore, & Hensing, 2012; Okada, 2013; Romppel et al., 2013). In these studies, the GSE demonstrated an acceptable Cronbach's alpha coefficient of reliability (r =0.76 - .93) in sample populations from 23 Countries (Brenlla et al. 2010; Leganger, Kraf, & Roysamb, 2000; Love et al., 2012; Leung & Leung, 2011; Okada, 2013; Romppel et al., 2013).

Validity of the General Self-Efficacy Scale (GSE)

The GSE's criterion related validity is documented in numerous correlation studies that found positive coefficients with favorable emotions, dispositional optimism and job satisfaction (Al Khatib, 2012; Love et al., 2012; Leganger et al., 2000; Okada, 2013; Schwarzer & Jerusalem, 1995). Particularly, in a study of three cohorts for a total same population of 7835, Love et al. determined the convergent validity of the Swedish version of the GSE or (S-GSE) by calculating the correlations between the S-GSE and mental and physical work capacities. The result of this comparison yielded r = .38 for the G-GSE and r = .24. Mental health was separated into three subgroups: Random Sampling of the general population (RP), those reported sick by their employer (ER), and self-

reported sick (SR). These subgroups yielded scores of RP = .38, ER= .36 and SR= .35. The results of this correlation indicate physical work capacities and mental subscales were statically significant (Love et al., 2012). Leganger et al. (2000) used the GSE in a study with 421 Norwegian smokers aged 16-79 and 1576 Norwegian 18-year olds to determine the relationship between the GSE and various types of task specific self-efficacy (TSSE).

The results of the study indicated a positive relationship between the GSE and TSSE. Similarly, the study indicated that failing at a task appeared to influence both scales in a negative manner resulting in lower scores on each. Similar to the findings of Al Khatib, 2012; Love et al., 2012; Okada 2013; Schwarzer & Jerusalem 1995, Leganger et al., 2000) also concluded the GSE demonstrated good construct validity.

The Multidimensional Scale of Perceived Social Support (MSPSS)

The Multidimensional Scale of Perceived Social Support (MSPSS) is a 12 question, muli-dimensional scale designed to measure perceived social support in three categories (family, friends and significant others; Dahlem, Zimet, & Walker, 1991; Ekback, Benzein, Lindberg, & Arestedt, 2013; Zimet, Dahlem, Zimet, & Farley, 1988). For each item, the MSPSS uses a 7-point Likert scale ranging from 1 = *Very Strongly Disagree,* 2 = *Strongly Disagree,* 3 = *Mildly Disagree,* 4 = *Neutral,* 5 = *Mildly Agree,* 6 = *Strongly Agree,* and 7 = *Very Strongly Agree*). The MSPSS is scored by adding the number value of each question to determine the full range scores from 7 – 84. Higher scores were associated with greater perceived social support.

Reliability of the Multidimensional Scale of Perceived Social Support (MSPSS)

In the literature reviewed for this study, the MSPSS achieved a Cronbach's alpha ranging between (.77 to .93), which indicated an acceptable to high internal reliability (Bagherian-Sararoudi et al., 2013; Basol, 2008; Clara et al., 2003; Ekback et al., 2013; Ramaswamy et al., 2009; Skok, Harvey, & Reddihough, 2006; Zimet et al., 1988; Zimet et al., 1990). In addition, a review of literature revealed the MSPSS displays good internal consistency coefficient for its subscales (Clara et al. 2003; Ramaswamy et al. 2009). The MSPSS displayed results which indicated good internal consistency coefficient for the subscales of family (0.63), friends (0.75) and school personnel (0.72), (Ramaswamy et al. 2009).

Clara et al. (2003) indicated good internal consistency coefficient for the subscales of family (0.70), friends (0.95), and a global perceived social support of (0.88). However, the subscale for significant others did indicate a low score of (0.44). Likewise, the MSPSS demonstrated an acceptable test- retest reliability (r =0.74 to 89) in sample populations within the United States and other countries (Bagherian-Sararoudi et al., 2013; Ekback et al., 2013). In particular, Bagherian-Sararoudi et al. (2013) found that the MSPSS had a 0.84 test-retest reliability over a two month period of time. Ekback et al. noted a 0.85 test-retest reliability after a week. Skok et al. (2006) noted a 0.85 test-retest reliability over 2-3 months.

Validity of the Multidimensional Scale of Perceived Social Support (MSPSS)

The MSPSS has displayed sound validity in studies of both American and international population samples (Bagherian-Sararoudi et al., 2013; Basol, 2008; Clara et

al., 2003; Ekback et al., 2013; Ramaswamy et al., 2009; Skok, Harvey, & Reddihough, 2006; Zimet et al., 1988; Zimet et al., 1990). In order to determine the validity of the MSPSS, Bagherian-Sararoudi and Basol conducted an exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). In these studies, the EFA was conducted prior to the CFA to identify underlying relationships between those variables being measured. The EFA conducted in these studies confirmed that 12 items of the MSPSS accounted for 77% (Basol, 2008) and 77.9 (Bagherian-Sararoudi et al., 2013) of the variance. The CFA was performed to determine the goodness-of-fit between the hypnotized model and the sample data (Bagherian-Sararoudi et al., 2013; Basol, 2008; Ramaswamy et al., 2009). According to Hooper, Coughlan, and Mullen (2008) values of 0.90 or greater indicate well-fitting models and confirming model/data fit. The GFI for these studies ranged from .91 to .94, indicating the MSPSS is a valid means of measuring perceived support (Bagherian-Sararoudi et al. 2013; Basol, 2008; Ramaswamy et al. 2009).

In terms of convergent validity the literature indicates that increased perceived support from participant's family, friends and persons in the school setting or significant others are negatively related to self-reports of daily irritations and internalizing behavior literature (Clara et al., 2003; Ramaswamy et al., 2009). Likewise, these results indicate a positive relationship between increased perceived social support and seeking assistance as a means of coping with difficulties (Ramaswamy et al., 2009).

Research Procedures

The section below discusses topics such as limitations of the study. These limits will include factors such as available time to complete the study and maintaining

participants over time. The section below will discuss ethical concerns associated with protecting participant's right to privacy throughout the study process. Each of these factors will be discussed in detail in the section below.

Safeguarding Participants' Rights

The primary ethical concern of this study was to do no harm. This meant ensuring participants were free from physical and psychological harm. To ensure this study did not violate or harm participants, an informed consent was obtained prior to collecting data. This study relied on the American Psychological Association (APA) code of ethics (APA, 2010) and the expertise Walden committee members, Walden and Army IRB board members to ensure this study in no way was harmful to participants.

Another ethical concern of this study was ensuring potential participants entered well informed and understood their rights. To ensure potential participants were aware of their rights before and during the study, participants were provided details of their right to leave the study at any time, right to confidentiality and privacy, a clear explanation of how the data would be used and how their information would be safeguarded (See Appendix C).

Method of Soliciting Potential Participants and Data Collection

The following is the United States Army Institutional Review Board (IRB) approved method of soliciting participants, collecting and maintaining data for this study. First, Unit First Sergeant provided potential participants information about this study via an email with an information paper attached or by making the information paper available after formations. A copy of both the scripted email and information paper are

included in Appendix B. This e-mail went out to the First Sergeant's entire unit with the individual's names placed in the blind courtesy copy (bcc). This helped avoid participants feeling pressured to participate, any exchange of personal identifiable information (PII), and maintained participants' rights to privacy. The instruction form attached to the email sent by the First Sergeant provided a brief description of the study and included the hyperlink to the study's Survey Monkey page. The information paper contained my contact information in case potential participants wish to ask questions or desired to make personal contact outside of the online experience.

All data for this study were collected online through my Survey Monkey account. Interested individuals used the hyperlink provided in the information paper by the unit First Sergeant to access the Survey Monkey site. Once on the site, potential participants viewed an introductory screen which contained a brief description of the study, participant's rights to privacy, confidentiality, and right to leave the study by quitting at any time. Likewise, the introductory screen described how data would be used, stored and destroyed at the conclusion of the study and ask potential participants for consent. The information paper informed potential participants that moving forward in the study process (providing questionnaire and scale information) was an acknowledgment of consent. After individuals affirmed their willingness to participate in the study, they completed the demographic survey and provided AFPT and weapons qualifications scores to confirm eligibility. If a potential participant failed to meet the inclusion criteria, he or she was thanked for their willingness to participate and their participation in the study was concluded.

Eligible participants who met the criterion on the demographic survey, proceeded to the next screen and began completing the three psychometric scales measuring the resilience factors of hardiness, self-efficacy and perceived social support. After all data was provided and the necessary sample size was reached, the researcher used Statistical Package for the Social Sciences (SPSS) to analyze the collected data (SPSS Inc. 2009). Through collecting information in an online Survey Monkey account, participant's anonymity, and right to privacy was safeguarded. Survey Monkey is an online research site that offers researchers the ability to collect and download responses over secured, encrypted SSL/TLS connections (Survey Monkey, 2014). By doing so, the user data transitions in a safe and secure manner and is only available to intended recipients. Allowing participants the freedom to enter their own information assisted in safeguarding participant's information from passing through other's hands and jeopardizing confidentiality and possibly increase participant's willingness to participate in the study. By taking the approach described above, participation in this study was strictly voluntary and participants retained their right to privacy and right to leave the study at any time.

Once a sufficient sample size was reached, the information was downloaded and calculated through the use of SPSS (SPSS Inc. 2009). All downloaded information was stored on the researcher computer and maintained under password protection. In addition, any paper printed information was locked in my safe to ensure the security and safeguarding of participant's information. After the study was completed, all information/ raw data will be maintained and stored for a total of 5 years as stated in the Walden

University dissertation handbook (Walden University, 2010). After the required 5 years, all information will be erased or shredded.

Study Limitations

There were several limitations in this study. One possible limitation of this study was the use of a correlational approach rather than an experimental approach. A correlational approach examines possible relationships, while the experimental approach determines causation (Creswell, 2009; Horgen, 2008). However, given the variables being used in this study, the correlational approach offered the best approach for this study.

Another limitation in this study is time. Due to the constraint of time, this study studied participants after their deployment rather than a longitudinal approach which would provide a before, during, and after look at how resiliency influences performance (Creswell, 2009; Horgen, 2008). Although the longitudinal approach might have provided a more comprehensive view, time constraints associated with completing a dissertation and frequent military moves render maintaining the same participants for a prolonged period time impossible.

Likewise, another limitation of this study rested in its purposed sample population. The sample population of this study consisted of active duty Army. Findings from this study might not be consistent with other branches of service both Active, Reserve, or National Guard.

Another limitation is the possibility of participants from Combat Arms, CS, or CSS answering questions falsely to present their performance as more positive than it

actually was. Unit cohesion and groups within the military often exhibit a strong sense of esprit de corp or group pride (Dorschner, 2011). As a result, it is possible for members of each category to desire to represent his or her category in a positive sense. There was a possibility that participants may have desired to answer questions to best represent their respective category.

A final limitation in this study was the self-reporting method of obtaining participant's scores on the APFT and weapon qualifications. I promised the Army IRB to allow participants the opportunity to provide their own scores rather than collecting scorecards. This agreement helped to safeguard against PII being exchanged because scorecards also contain participant's name and social security numbers. One must hope participants provided their true scores and not inflated information to better represent their particular category. To help safe guard against false reporting, the researcher reinforced the importance of accurate information to potential participants.

Data Analysis

For the current study, a multiple linear regression (MLR) was used to analyze the data. Regression analysis is effective and useful for modeling relationships between variables and testing of hypotheses (Chatterjee & Simonoff, 2013, p. 4) and is an appropriate method when the desired outcome is to explain or predict the variability in the dependent variable (also called the criterion variable) using information from two or more independent variables (also called predictor variables). The current study fit two regression models using resilience, self-efficacy, and social support as the independent variables and AFPT score and weapons score as the dependent variables.

Once data were collected, it was loaded into SPSS v22.0 and frequencies were run in order to identify any missing or invalid data, outliers, or man-made errors. Data cleaning and any necessary data transformations, computations, and or recoding of variables were also performed at this time. Prior to running the analysis, regressions assumptions (linearity, independence, normality, and homogeneity) were checked for violation. All inferential tests used $\alpha = .05$ for significance.

Summary

The information discussed in this chapter was a justification for conducting a correlational study using a quantitative approach. Additionally, this chapter provided a justification for the statistical analysis necessary to determine the appropriate sample population, conduct data analysis and safe guard the privacy and confidentiality of research participants. This approach provided the best means of identifying possible relationships between resilience factors (hardiness, self-efficacy, and perceived social support) and performance of returning veterans. Given the limitation of time and accessibility to a constant population group due to military relocations, the correlational study provided the best means of measuring this sample population.

Chapter 4: Results

Introduction

This chapter is a description of the sample demographics, a description of the data that was used for analysis, and the study results and the results of performing a multiple linear regression to determine if resilience (Hardiness, Self-efficacy, and Perceived Social Support) influences performance outcomes (APFT and weapons qualification scores) among returning veterans of the wars in Afghanistan and Iraq.

Demographics

All participants in this study served at least one 12 Month tour in either Afghanistan or Iraq. All participants completed an APFT and M-16 Weapons Qualification test within a year of participating in this study. Participants consisted of n = 76 Active Duty Army veterans of the Wars in Afghanistan and Iraq. A total of 78 participants completed the study. However, there was missing information from 2 participants. As a result, n = 76 were used in the analysis. The population sampled was reached in a period of 13 weeks with an average of 6 responses a week all procedures for collecting data as described in Chapter 3 were followed. Table 1 presents additional demographic characteristics of the sample.

Table 1

Sample Demographics

Variable	*N*	%
Age		
22-26	4	5
27-31	16	21
32-36	14	18
37-41	14	18
42-46	20	26
47-51	8	11
Rank		
E4	1	1
E5	10	13
E6	18	24
E7	35	46
E8	12	16
Gender		
Male	52	68
Female	24	32
MOS		
Combat Arms	26	34
Combat Support	14	18
Combat Service Support	36	47

Results

Descriptive statistics were generated prior to running the regression analysis. Means and standard deviations for APFT score and weapons score by demographic can be seen in Table 2.

Table 2

Descriptive Statistics

Variable	APFT Score Mean (SD)	Weapons Score Mean (SD)
Age		
22-26	81.33 (7.89)	80.63 (12.31)
27-31	88.89 (9.54)	89.69 (8.46)
32-36	87.41 (8.54)	83.39 (12.15)
37-41	83.50 (8.39)	89.11 (9.54)
42-46	82.63 (6.60)	92.75 (6.93)
47-51	88.08 (6.22)	91.56 (6.81)
Rank		
E4	82.00 (N/A)	80.00 (N/A)
E5	87.77 (8.55)	89.25 (11.37)
E6	84.65 (8.87)	88.19 (10.42)
E7	85.67 (8.16)	88.79 (9.82)
E8	84.67 (8.25)	91.04 (6.69)
Gender		
Male	85.00 (8.17)	90.05 (9.92)
Female	86.56 (8.47)	86.56 (8.62)
MOS		
Combat Arms	85.10 (10.28)	90.57 (9.09)
Combat Support	83.64 (8.39)	92.50 (8.20)
Combat Service	86.50 (6.44)	86.39 (10.01)

Initial inspection of the relationships between the variables using Pearson correlation coefficients shows significant associations between resilience, self-efficacy, social support, APFT score and weapons qualification scores. The correlation between resilience and self-efficacy was expected because self-efficacy is a factor within the measure of resilience. The correlation matrix can be seen in Table 3.

Table 3

Pearson Correlations

	Resilience	Self-efficacy	Social Support
Resilience			
Self-efficacy	0.60***		
Social Support	0.66***	0.66***	
APFT score	-0.049	-0.14	0.007
Weapons score	0.37**	0.24*	0.14

* $p < .05$, ** $p < .01$, *** $p < .001$

Regarding RQ1, Is resilience, as measured by the CD-RISC (Conner & Davidson, 2003), related to soldier performance on the APFT? The bivariate correlation from the analysis indicated that there was not a significant relationship, $r = -.049$, $p = .674$. The null hypothesis was not rejected. There was no significant relationship between resilience and APFT scores.

Regarding RQ2, Is self-efficacy, as measured by the General Self-Efficacy Scale (GSE) related to soldier performance on the APFT? The bivariate correlation from the analysis indicated that there was not a significant relationship, $r = -.138$, $p = .236$. The null hypothesis was not rejected. There was no significant relationship between self-efficacy and APFT scores.

Regarding RQ3, Is social support, as measured by the Multidimensional Scale of Perceived Social Support (MSPSS) related to soldier's performance on the APFT? The bivariate correlation from the analysis indicated that there was not a significant relationship, $r = .006$, $p = .956$. The null hypothesis was not rejected. There was no significant relationship between social support and APFT scores.

Table 4

Descriptive Statistics

	Mean	*SD*	*N*
APFT	85.5	8.241	76
Conner	4.544	0.512	76
Self-Efficacy	3.979	0.579	76
Social Support	6.333	0.778	76

Regression analysis using Resilience (Conner), Self-efficacy, and Social Support as the predictor variables and APFT as the outcome was run. Descriptive statistics can be seen in Table 4. Result indicated that the overall model was not significant and these results are shown in Table 5 and their slope coefficients in Table 6.

Table 5

Regression Results for APFT

	SS	df	MS	*F*	*p*
Regression	182.65	3	60.88	0.89	0.449
Residual	4911.46	72	68.22		
Total	5094.11	75			

1. Dependent Variable: APFT_PCT

2. Predictors: (Constant), Social Support, Self-Efficacy, Conner

Table 6

Coefficients

	Beta	SE	*t*	*p*
Intercept	88.76	9.02	9.84	0
Resilience	-0.36	2.6	-0.14	0.89
Self-Efficacy	-3.47	2.291	-1.52	0.13
Social Support	1.93	1.82	1.06	0.29

Regarding RQ4, Is resilience, as measured by the CD-RISC, related to soldier's performance on weapons qualification? The bivariate correlation from the analysis indicated a significant relationship, $r = .369$, $p = .001$. The alternative hypothesis was not rejected. There was is a significant relationship between resilience and soldiers' weapons qualification scores.

Regarding RQ5, Is self-efficacy, as measured by the General Self-Efficacy Scale (GSE), related to soldier performance on weapons qualification? The bivariate correlation from the analysis indicated that there was a significant relationship, $r = .241$, $p = .036$. The alternative hypothesis was not rejected. There was is a significant relationship between self-efficacy and soldiers' weapons qualification scores.

Regarding RQ6, Is social support, as measured by the Multidimensional Scale of Perceived Social Support (MSPSS), related to soldier performance on weapon qualification? The bivariate correlation from the analysis indicated that there was not a significant relationship, $r = .138$, $p = .236$. The null hypothesis was not rejected. There was no significant relationship between social support and soldiers' weapons qualification scores.

Table 7

Descriptive Statistics

	Mean	*SD*	*N*
M-16 percent	88.94	9.611	76
Conner	4.54	0.511	76
Self-Efficacy	3.97	0.578	76
Social Support	6.33	0.777	76

Regression analysis using Resilience (Conner), Self-efficacy, and Social Support as the predictor variables and Weapons score as the outcome was run. Descriptive statistics can be seen in Table 7. Result indicated that the overall model was significant and these results are shown in Table 8 and their slope coefficients in Table 9.

Table 8

Regression Results for Weapons Score

	SS	*df*	*MS*	*F*	*p*
Regression	1145.38	3	381.79	4.754	0.0042
Residual	5782.91	72	80.32		
Total	6928.29	75			

1. Dependent Variable M-16 percent
2. Predictors (Constant), Social Support, Self-Efficacy. Conner

Table 9

Coefficients for Weapons Score

	Beta	*SE*	*t*	*p*
Intercept	60.95	9.79	6.22	0
Conner	8.546	2.82	3.03	0.003
Self-Efficacy	2.2	2.48	0.89	0.379
Social Support	-3.09	1.97	-1.57	0.121

The model (Tables 8 and 9) reported a resilience score of $p = 0.003$. The F-test reported $F\ (3,72) = 4.754$, $p = 0.0042$ suggesting the following regression equation with an $R^2 = 0.1361$ is significantly better than the mean at predicting weapons qualification scores and that 13.6% of the variation in weapons qualification scores can be explained by resilience. This model suggests for every 1-point increase in resilience score, the weapons qualification score will increase by 6.93 points.

Summary

This study included the responses of seventy-six enlisted soldier participants, all of whom had at least one combat deployment experience. The intent of the study was to examine the relationship between measures of resilience (Hardiness, Self-efficacy, and Perceived Social Support) and measures of soldier performance outcomes, namely APFT and weapons qualification scores. The results of this study indicated that four of the six hypotheses were rejected (RQ1, RQ2, RQ3, RQ6) and two hypotheses (RQ4, RQ5) were supported. The following chapter will summarize the study findings and compare them with reviewed literature. Chapter 5 will note if findings confirm or disconfirm current knowledge of resilience among veterans.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

This chapter will discuss how findings from the current study compare with previous studies. Likewise, it will address possible limitations and any additional findings revealed as a result of the current study. In addition, this chapter is a discussion of conclusions and implications of the study and an exploration of possible recommendations for future studies of this nature. Finally, the chapter will conclude by describing the current study's implications for social change and providing brief summary of the study along with any conclusions.

Overview of the Study

The purpose of this study was to determine if a relationship exists between resilience factors (resilience/hardiness, self-efficacy and perceived social support) and performance outcomes (APFT and weapons qualification scores) among Army Veterans of the wars in Afghanistan and Iraq. Challenges such as multiple deployments, separations from support networks and combat stress make remaining free from psychopathology and bouncing back from stressors difficult for soldiers (Gottman et al., 2011; Polusny et al., 2009; Shen et al., 2012; Voss et al. ,2011). This study was conducted in order to gain a better understanding of resilience among active duty Army Veterans.

Key Findings and Comparison With Peer-Reviewed Literature

This section includes the key findings from this study and how these findings compare with previous studies. The primary research question for this study asked: Does

resilience among returning veterans of the wars in Iraq and Afghanistan (in the ranks of E- 1 to E-8) influence their performance? Since resilience was measured by using three psychometric scales (CD-RISC, GSE, and MSPSS) and performance was measured by veteran's APFT and weapons qualifications scores, there were 6 related hypotheses. There were two significant correlations found in this study. First, increased levels of resilience shared a positive correlation with greater accuracy with the M16 rifle. Likewise, higher levels of self-efficacy has a positive correlation with greater accuracy with the M16 riffle. The results of this study indicated that soldiers possessing strong resilience traits, problem solving skills, and confidence in their ability to achieve goals, preform at a higher level. Although more research is needed, results of this study indicate that soldier's ability to perform can be influenced by increasing their level of resilience and self-efficacy.

Findings in the current study support the findings in previous studies (Telles et al., 2012; Yu-Fen, 2009). The current study and previous studies indicate that tasks requiring maintained focus and problem solving are influenced by participant's hardiness and self-efficacy. In the current study, the performance outcome of weapons qualification requires soldiers to maintain focus, make on the spot corrections in terms of target distance, wind and proper breathing techniques (United States, 2008). Telles et al. determined that anxiety or stress had a direct association with participants' ability to maintain focus and in particular, to perform task requiring maintained attention. Likewise, the current study indicated that resilience and self-efficacy share a significant relationship with soldier's ability to achieve higher scores on weapon qualification.

The current study determined that there was no significant relationship between Veteran's resilience, self-efficacy and social support and their ability to perform on the APFT. Likewise, the study determined that there was no significant relationship between social support and veteran's weapons qualification.

In regards to hardiness factors such as resilience, self-efficacy and social support and their relationship on participant's APFT score, findings from the current study do not support other studies (Hammermeister, Pickering, McGraw, & Ohlson, 2010; Johnsen et al., 2013). In previous studies, participates with a greater levels of hardiness (Johnsen et al. 2013) and psychological skills (concentration, self-confidence, and low levels of anxiety; Hammermeister et al., 2010) revealed a significant relationship with soldier's physical performance. However, the number of participants in these studies were much larger than the current. As a result, these studies have a greater ability of generalizability (Creswell, 2009). Studies with large sample populations are often statistically comparable across studies (Creswell, 2009). Johnsen et al. 2013 had *N*= 178 participants and Hammermester et al had N= 427 participants. Likewise, (Hammermester et al., 2010) conducted a 9 day longitudinal and physical fitness as a performance outcome consist of a 250 Km ski march rather than the 3-event APFT which was used in the current study.

Participants in Hammermester et al. (2010) had a mean age of 25.62 and (Johnsen et al. 2013) had age range of 19-23 and a mean age of 19.9. Participants in both previous studies were much younger in age than the current study. Participants in the current study ages ranged from 22-51. Likewise, the average rank of participants in the current study was E-7. These factors may have played a role in the difference in the current study's

findings and previous studies. Soldiers most affected by war and separation from support are in the junior enlisted ranks (Arincorayan et al., 2010; Gottman et al., 2011; McCarroll et al., 2010). Specifically, enlisted soldiers at in the ranks E-1-E-4 serving 9 or more consecutive months in combat theaters are at greatest risk for displaying pathology (Gottman et al. 2011).

Possible Limitations

The following section includes limitations associated with this study. These limitations are in accordance with those mentioned in Chapter 1 and those discovered after running the regression analyses. These limitations include time to conduct the study, the use of a sample of convenience, the use of a medium effect sample size and a final sample population that fell one participant short of the purposed n=77.

The lack of time influenced the current study. The need to complete the current study within a set amount influenced the researcher's decision to use a correlational approach rather than using a longitudinal approach. Several previous studies used a longitudinal approach (Hammermeister et al., 2010; Johnsen et al., 2013; Niks et al., 2013). As a result, researchers were able to observe over a period of time and measure variables before, during and afterward. Because participants in the current study could transfer or deploy in a short period of time, a correlational approach allowed the best opportunity to complete the study in a timely manner

I used a sample of convenience due to the availability of the sample population. As a result, the number of participants that met the inclusion criteria was limited. Participants from the current study were older and more senior in rank than the

demographic thought to be most affected by the trauma of war and deployments (Arincorayan et al., 2010; Gottman et al., 2011; McCarroll et al., 2010). Because the sample population in this study is small in number, older in age and more senior in rank, the results of this study may not accurately represent the general Army population. The statistical concept of generalizability is most successful with findings of large the sample populations (Creswell, 2009). However, even in cases where research studies have large sample populations, there is no absolute guarantee that it findings can be extended to the population as a whole (Creswell, 2009).

Because the current study sample population was limited in regards of participants meeting the inclusion criteria, a medium effect size was used requiring n=77. Despite receiving a total of 78 responses, when running the analyses, it was discovered that two participant's responses contained incomplete information. As a result, the final sample size for the current study was n=76. As a result, a Post-hoc power analysis was conducted using G*Power (Faul et al., 1996) to verify the power of the current study at n=76. The sample size, n=76, with three predictor variables, $\alpha = .05$, and medium effect size $f^2 = 0.15$ resulted in power= 0.795. This result is only slightly lower than the commonly accepted power= 0.80 for social science research. An insignificant power could result in a conclusion of non-equivalence or a Type II error (Rusticus & Lovato, 2014).

Implications for Social Change

This study is an attempt to better understand how resilience traits such as optimism, hope, self-efficacy, problem solving, and connectedness to a community influence soldier's performance. Implications for social change include societal and practitioner changes in providing preventive care to individuals experiencing trauma. Additional implications include nurturing individual's natural resilient and problem solving skills as a means of overcoming trauma and remain resilient. Because soldiers face multiple deployments and increased requirements despite decreasing resources, it is important that soldiers are able to remain resilient and perform at a high level. The current study is an attempt to help society, the military and other organizations to better understand how resiliency can increase work performance.

Recommendations for Future Research

As the military continues to fight the wars in Afghanistan and Iraq, service members face the possibilities of significantly higher mental health disorders (Gewirtz et al., 2011; Smith et al., 2011). The requirements for these men and women continue to increase despite a decrease in military personnel. Fortunately, the United States Army has turned to resilience programs to help nurture and develop resilience skills in soldiers (Cornum et al., 2011; Tedeschi, & McNally, 2011). The findings of this study support the use of such programs to nurture resilience and increase performance in soldiers. However, this researcher would recommend that additional research be conducted to better determine if needs differ by soldier's age and rank.

Although the current study included enlisted members ranging from E4 to E8, future research is needed that divides ranks into smaller groups (Example: E1 - E4, E5-E6 ,and E7 to E8). I would argue that these groups are closer in age and may share common experiences. This would allow researchers to better note differences within age and rank structures as well as those with possible common life experiences. Such research could prevent developing one size fits all approaches and programs.

Future researchers should host a larger unit that is equally comprised of all enlisted ranks and less senior in age and rank. It is possible that the current study findings might have been different with a more traditional Army unit. The current unit was readily available, its size made it difficult to secure a large sample population and a significant number of lower enlisted (E1-E4). E1-E4 was must at risk for lower resilience and development of pathology due to multiple deployments and separations from social support networks (Gottman et al., 2011, McCarroll et al., 2010, Yu-Fen, 2009). As a result, the current study was comprised of a population that research indicated might be less likely to be influenced by issue such as lack of social support, coping and problem solving skills (Gottman et al., 2011, McCarroll et al., 2010, Yu-Fen, 2009). As a result, the findings of the current study might be an underestimate of…

Conclusions and Implications

Major conclusions from this study are enlisted soldiers with higher resilience and self-efficacy perform better as marksmen. The current study supports previous studies that resilience factors such as optimism, self-efficacy, and problem solving skills influence a person's ability to perform attention-focused tasks (Aspinwall & Tedeschi,

2010; Avey et al., 2011; Crowder et al., 2013; Niks et al., 2013; Yu-Fen, 2009). These studies support that a positive psychology approach can lead to increases in some job performance elements. Although more research is needed in this area, results from previous and the current study suggests that skills needed to increase performance can be nurtured and taught (Cui et al., 2010; Seligman & Csikszentmihalyi, 2000; Kasler et al., 2008; Kobau et al., 2011; Linley et al., 2006; Mak et al., 2011; Neill & Dias, 2001; Osran et al., 2010; Notario-Pacheco et al., 2011; Yehuda et al., 2006). Marksmanship is a vital performance skill soldiers need to survive on the battlefield.

Although the concept of resilience is new in the field of psychology, research like the current study could be helpful in nurturing skills that help service members remain resilient. With the ongoing wars in Afghanistan and Iraq, service members have an increased likelihood of developing PTSD, depression and substance abuse disorders. These service members have endured over a decade of multiple deployments, separations from their families and friends and life operating in highly stressful environments. These constant stressors can affect veteran's ability to recover from the constant trauma and stress. As result, concepts such as resiliency could serve as a proactive means of empowering veterans and enhance their ability to grow and thrive despite their conditions and work environments.

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Appendix A: Agreement to Provide Anonymity

PROTOCOL TITLE: A Comparison of Resilience and Perform Among Returning Veterans of the Wars in Afghanistan and Iraq.

3

4 **PRINCIPAL INVESTIGATOR:** CH (LTC) Roy T. Walker

5

6. **SERVICE/DEPARTMENT:** I am an Active Duty Army Chaplain at Fort Sam Houston, TX. However, this study is a part of a PhD Clinical Psychology degree at Walden University

9 **ASSISTANCE REQUESTED:** This is a request for approval to use soldiers from Fort Sam Houston units (U.S. Army South) as participants in a dissertation research study. Complete details of how this process will be cared out are discussed in the submitted the Protocol/ Initial Application for Research Exempt from Institutional Review Board Oversight. Information will be collected by unit 1st Sergeants who will receive a scripted email with an information paper attached. This information paper will contain the clear instructions, intentions of the study, participant's rights, inclusion criterion and a hyperlink to access the survey monkey account (where scales and surveys can be completed). Unit 1st Sergeants will then email this information paper to all soldiers meeting the inclusion criterion (Outlined in detail in the Protocol) within their commands. The information paper will stress that the study is for educational purposes and confidential. All information will be completed online without means of identifying soldiers. Lastly, the researcher will not have contact with soldiers, collect or receive any PII. Therefore, this study will not negatively impact the

potential participants, their command (s) or the U. S. Army. Absolute privacy and confidence will be maintained throughout the study.

Total Number of Patients to be Studied: The required sample size for this study is N= 58. The purposed sample population of this study will consist of Active Duty Army veterans of the wars in Afghanistan and Iraq. Participants will range in rank from Private (E-1) to Staff Sergeant (E-6) and age from 18 to 60. Participants must have served at least one twelve month consecutive tour in Afghanistan or Iraq and completed a regular Army Physical Fitness Test (no alternate events) and M16 qualification in the last year. Based upon these inclusion criterions, a total of 67 soldiers which meet the inclusion criterion and an *a* score/acceptable margin of error of .05, the sample size was determined to be N= 58. (No patients will be used in this study.)

Number of Patients per Month: The collection of data should take 3 to 12 months. (No patients will be used in this study.)

Length of Study: The collection of data should take 3 to 12 months. However, it may take up to 24 months depending on actual study accrual rate. We anticipate that once the data collection is completed, the data analysis will take an additional 12 months.

Principal Investigator

I hereby request approval of the aforementioned activity to be conducted in accordance with a research proposal pending approval through the BAMC IRB. Any changes to the above described activities which might influence the

Approving Official

I have read the description of the above activity and have made the following determination:

r Approved - No Additional Comments

r Approved - See Additional Comments Below

r Disapproved - See Additional Comments

Signature block of Approving Dat _____ —

implementation, unless they are immediately required to ensure the safety of

Signa7&block of Principal Date 1:r

REPLY TO ATTENTION OF:
MCHE-CI

Septemb
er 2, 2014

MEMORANDUM FOR: Roy Walker, LTC, CH, USA
FROM: Brooke Army Medical Center (BAMC) Institutional Review Board

PROJECT TITLE: [405326-1] A Comparison of Resilience and Perform Among Returning Veterans of the wars in Afghanistan and Iraq
REFERENCE #: C.2014.164e
SUBMISSION TYPE: New Project

ACTION: DETERMINATION OF EXEMPT STATUS APPROVAL DATE:
REVIEW TYPE: Exempt Review

Congratulations! Your protocol was found to constitute human subjects research which meets the requirements of 32 CFR§219.101(b)(2) as exempt from the regulatory requirements of 32 CFR§219.

Your protocol will be reported as EXEMPT to the BAMC IRB on October 1, 2014. All documents labeled "*FINAL" within the Designer Page and Board Documents sections of IRBNet are to be utilized throughout the course of the study.

As Principal Investigator, it is your responsibility to identify, obtain, and maintain documentation of any other necessary institutional, university, or Command approvals prior to initiating your study.

Any changes to your protocol, including any changes in personnel, may not be made without prior IRB approval. Please forward a request for any changes, along with their rationale, to the BAMC IRB for review and approval.

At the completion of your study, you are required to submit a closure action with a final report explaining the outcome of the study and ensuring the proper disposition of all data and supplies. If you are scheduled to leave the institution (ETS/PCS/Deploy) please ensure that you either close the study prior to leaving or select a new Principal Investigator and request approval from the Office of the IRB **prior to your departure**. You are not authorized to take study data away from the institution unless approved by the Department of Clinical Investigation. Please cite C.2014.164e in the

closure report and any correspondence.

No funding was requested from DCI.

You are reminded that investigators must obtain publication clearance for all written materials (i.e. manuscripts, abstracts, presentations, posters or book chapters) being submitted outside your Command for publication/presentation.

If at any time you have questions regarding your responsibilities as a Principal Investigator, please contact Wendy Ching at 210-916-8227 or wendy.ching.civ@mail.mil. On behalf of the entire IRB, we wish you much success with your research protocol.

This document has been electronically signed in accordance with all applicable regulations, and a copy is retained within our records.

Appendix B: Scripted E-mail and Information Letter Approved by Army IRB

MY ORIGINAL EMAIL TO 1SGs

1SGs,

Please find the scripted email below and the attached information letter. Please use this script to create a completely separate email and forward to soldiers in your command. Likewise, attach the information letter to this separate email. Again, please create a new email containing the scripted information below and attach the information letter to that email. Please do NOT forward this email with my information to soldier. Thank you!

CH (LTC) Roy T. Walker

SCRIPTED EMAIL 1SGs WILL SEND TO SOLDIERS

(*Please email the below statement by creating a new email and attaching the information letter*)

ALL,

The following email is a request form one of our unit members that is completing a PhD in Clinical Psychology. This email is a request that you support his or her efforts. Please find attached an information letter with a detailed explanation of the study and what it details. Please note that this is a request and not an order. You involvement is strictly on a volunteer basis. Listed below are the required criteria to participate:

- Active Duty Army
- Served at least one twelve month consecutive tour in Afghanistan or Iraq
- Present rank of Private (E-1) to Master Sergeant (E-8)
- Completed a 3 Event APFT (Push-Ups, Sit-Ups and the 2 Mile Run) within the last year (No alternate events)
- Qualified with the M-16 within the last year

If you meet these criteria and choose to participate, please follow the directions given in the attachment and complete the study requirements. Thank you for your time and attention in this matter.

1SG JANE R. DOE

Appendix C: Informed Consent

Informed Consent Form

"A Comparison of Resilience and Perform Among Returning Veterans of the Wars in Afghanistan and Iraq".

Purpose of the Study:

The purpose of this study is to determine if a relationship exist between returning veteran's resilience and their performance at work. Specifically, this study will note if correlations exist in soldier resilience, APFT and weapon qualifications scores.

What will be Done:

You will complete a demographic survey; provide recent APFT and M16 scores and complete 3 short psychometric scales. This should take 30-40 minutes to complete. The demographic survey will collect non person identifiable information and help determine if you meet eligibility criteria for the study. The psychometric scales used in this study will measure Hardiness, Self-efficacy and Perceived Social Support.

Benefits of This Study:

By taking part in this study, you could contribute to helping soldiers and military leadership gain a better understanding of those factors most commonly associated with resilience. Likewise, such understanding could help nurture stronger and more adaptable soldier and members of society.

Risks or Discomforts:

There are no risks or discomfort associated with participating in this study. Should you feel If you feel uncomfortable at any time you retain the right to withdraw from the study altogether. Should you choose to before you have completed the survey and scales, your answered responses will NOT be recorded.

Confidentiality:

Your Responses will be Kept Completely Confidential.

I will NOT know or receive any personal identifiable information when you respond to the Internet study. Therefore, your involvement in this study will remain strictly confidential. Ultimately, there will be no information collected that can be traced back to a particular person. Lastly, only the researcher and will see your individual survey responses.

Decision to Quit the Study:

Please remember, your participation in this study is strictly voluntary. If you should so choose, you are free to withdraw from this study at any time.

How the Findings will be Used:

The results of the study will be used solely for scholarly purposes. The results from the study will be used to complete a PhD Clinical Psychology degree and presented in educational settings.

Contact Information:

If you have concerns or questions about this study, please feel free to contact CH (LTC) Roy T. Walker at: roy.walker@waldenu.edu or (210) 373-0696. By beginning this

survey, you are acknowledging that you have read this information and willing agree to participate in this study. You are also acknowledging that you are aware of your right to withdraw your participation at any time without penalty.

Appendix D: Email Permission to Use The CD – RISC

From: jonathan.davidson@duke.edu
To: rwalker37@hotmail.com; kathryn_connor@merck.com
CC: roy.walker@waldenu.edu
Subject: RE: CD-RISC Inquiry
Date: Sun, 1 Apr 2012 15:15:13 +0000

Dear Roy:

Thank you for your email. We can provide the scale at no cost for your dissertation project and I am enclosing a modified agreement for you to sign and return.

With kind regards,

Jonathan Davidson

Original E-mail

From : "Jonathan Davidson, M.D." [jonathan.davidson@duke.edu]

Date : 04/01/2012 02:23 PM

To : Roy Walker [rwalker37@hotmail.com], "kathryn_connor@merck.com"

[kathryn_connor@merck.com]

CC : "roy.walker@waldenu.edu" [roy.walker@waldenu.edu]

Subject : RE: CD-RISC Inquiry

Dear Roy:

Thank you for returning the agreement. A copy of the scale and manual are attached.

We appreciate your interest in the CD-RISC and wish you every success with your project.

Sincerely,

Jonathan Davidson

Appendix E: Copy of the CD-RISC

Connor-Davidson Resilience Scale 25 (CD-RISC-25)

initials ☐☐☐ ***ID#*** ☐☐☐☐☐☐☐ ***date*** ☐☐ ☐☐ / ☐☐ / ☐☐☐☐ ***visit*** ☐☐ ***age*** ☐☐

*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 at all (0)	rarely true (1)	sometimes true (2)	often true (3)	true nearly all the time
1.	I am able to adapt when changes occur.	☐	☐	☐	☐	☐
2.	I have at least one close and secure relationship that helps me when I am stressed.	☐	☐	☐	☐	☐
3.	When there are no clear solutions to my problems, sometimes fate or God can help.	☐	☐	☐	☐	☐
4.	I can deal with whatever comes my way.	☐	☐	☐	☐	☐
5.	Past successes give me confidence in dealing with new challenges and difficulties.	☐	☐	☐	☐	☐
6.	I try to see the humorous side of things when I am faced with problems.	☐	☐	☐	☐	☐
7.	Having to cope with stress can make me stronger.	☐	☐	☐	☐	☐
8.	I tend to bounce back after illness, injury, or other hardships.	☐	☐	☐	☐	☐
9.	Good or bad, I believe that most things happen for a reason.	☐	☐	☐	☐	☐
10.	I give my best effort no matter what the outcome may be.	☐	☐	☐	☐	☐
11.	I believe I can achieve my goals, even if there are obstacles.	☐	☐	☐	☐	☐
12.	Even when things look hopeless, I don't give up.	☐	☐	☐	☐	☐
13.	During times of stress/crisis, I know where to turn for help.	☐	☐	☐	☐	☐
14.	Under pressure, I stay focused and think clearly.	☐	☐	☐	☐	☐
15.	I prefer to take the lead in solving problems rather than letting others make all the decisions.	☐	☐	☐	☐	☐
16.	I am not easily discouraged by failure.	☐	☐	☐	☐	☐
17.	I think of myself as a strong person when dealing with life's challenges and difficulties.	☐	☐	☐	☐	☐
18.	I can make unpopular or difficult decisions that affect other people, if it is necessary.	☐	☐	☐	☐	☐
19.	I am able to handle unpleasant or painful feelings like	☐	☐	☐	☐	☐

	sadness, fear, and anger.					
20.	In dealing with life's problems, sometimes you have to act on a hunch without knowing why. I have a strong	☐	☐	☐	☐	☐
21.	sense of purpose in life.	☐	☐	☐	☐	☐
22.	I feel in control of my life.	☐	☐	☐	☐	☐
23.	I like challenges.	☐	☐	☐	☐	☐
24.	I work to attain my goals no matter what roadblocks I encounter along the way.	☐	☐	☐	☐	☐
25.	I take pride in my achievements.	☐	☐	☐	☐	☐

Appendix F: Copy of The GSE

The General Self-Efficacy Scale (GSE)

Please use the answers listed below to answer the 10 questions below. Thank you!

1 = Not at all true 2 = Hardly true 3 = Moderately true 4 = Exactly true

1. I can always manage to solve difficult problems if I try hard enough. Your Response: _____

2. If someone opposes me, I can find the means and ways to get what I want. Your Response: _____

3. It is easy for me to stick to my aims and accomplish my goals. Your Response: _____

4. I am confident that I could deal efficiently with unexpected events. Your Response: _____

5. Thanks to my resourcefulness, I know how to handle unforeseen situations. Your Response: _____

6. I can solve most problems if I invest the necessary effort. Your Response: _____

7. I can remain calm when facing difficulties because I can rely on my coping abilities. Your Response: _

8. When I am confronted with a problem, I can usually find several solutions. Your Response: _____

9. If I am in trouble, I can usually think of a solution. Your Response: ____

10. I can usually handle whatever comes my way. Your Response: _____

By: Ralf Schwarzer & Matthias Jerusalem (1995)

Appendix G: Copy of the MSPSS

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

The items tended to divide into factor groups relating to the source of the social support, namely family (Fam), friends (Fri) or significant other (SO).

Appendix H: Demographic Survey

Demographic Survey

Rank:_____ (You must be E-1 – E-8 to meet criteria needed for this study.)

What is your age? _____

What is your gender? Male: _____ Female: _____

What is your Primary MOS? _____

Have you served at least one 12 consecutive months deployment in either Afghanistan or Iraq? Yes:____ No:_____ (If no, you are do not meet criteria needed for this study.)

If yes, the mark your deployment location (s) and the number of months deployed to each:

Number of tours to Afghanistan:____ and months each tours: ____,___,___,___.
Number of tours to Iraq:____ and months each tours: ____,___,___,___.

Have you completed a 3 Event APFT (Push-Ups, Sit-Ups and 2 Mile Run) in the last year? (If no, you are do not meet criteria needed for this study.)

Date of last APFT:_____.

How many Push-Ups did you perform?____

How many Sit-Ups did you perform?____

What was your time on the 2 Mile Run? _____

Have you qualified with the M-16 in the last year? Yes:____ No:_____ (If no, you are do not meet criteria needed for this study.)

Date of last M-16 testing and qualification:_____.

What was your Table 1 total score? Number Targets Hit:____, Number Targets Missed_____.

What was your Table 2 total score? Number Targets Hit:____, Number Targets Missed_____.

What was your Table 3 total score? Number Targets Hit:____, Number Targets Missed_____.

Thank you for completing this survey.

Appendix I: Copy of the Army Physical Fitness Test Card

PUSH-UP STANDARDS

AGE GROUP	17-21		22-26		27-31		32-36		37-41		AGE GROUP	42-46		47-51		52-56		57-61		62+		AGE
Repetitions	M	F	M	F	M	F	M	F	M	F	Repetitions	M	F	M	F	M	F	M	F	M	F	Repetitions
77					100						77											77
76					99						76											76
75			100		98		100				75											75
74			99		97		99				74											74
73			98		96		98		100		73											73
72			97		95		97		99		72											72
71	10	0	96		94		96		98		71											71
70	99		94		93		95		97		70											70
69	97		93		92		94		96		69											69
68	96		92		91		93		95		68											68
67	94		91		89		92		94		67											67
66	93		90		88		91		93		66	100										66
65	92		89		87		90		92		65	99										65
64	90		87		86		89		91		64	98										64
63	89		86		85		88		90		63	97										63
62	88		85		84		87		89		62	96										62
61	88		84		83		86		88		61	94										61
60	85		83		82		85		87		60	93										60
59	83		82		81		84		86		59	92		100								59
58	82		81		80		83		85		58	91		99								58
57	81		79		79		82		84		57	90		98								57
56	79		78		78		81		83		56	89		96		100						56
55	78		77		77		79		82		55	88		95		99						55
54	77		76		76		78		81		54	87		94		98						54
53	75		75		75		77		79		53	86		93		97		100				53
52	74		74		74		76		78		52	84		92		96		99				52
51	72		73		73		75		77		51	83		91		94		98				51
50	71		71		72	100	74		76		50	82		89		93		97		10	0	50
49	70		70		71	99	73		75		49	81		88		92		95		99		49
48	68		69		69	98	72		74		48	80		87		91		94		98		48
47	67		68		68	96	71		73		47	79		86		90		93		96		47
46	66		67	100	67	95	70		72		46	78		85		89		92		95		46
45	64		66	99	66	94	69	100	71		45	77		84		88		91		94		45
44	63		65	97	65	93	68	99	70		44	76		82		87		90		93		44
43	61		63	96	64	92	67	97	69		43	74		81		86		89		92		43
42	60	100	62	94	63	90	66	96	68		42	73		80		84		87		91		42
41	59	98	61	93	62	89	65	95	67		41	72		79		83		86		89		41
40	57	97	60	92	61	88	64	93	66	100	40	71		78		82		85		88		40
39	56	95	59	90	60	87	63	92	65	99	39	70		76		81		84		87		39
38	54	93	58	89	59	85	62	91	64	97	38	69		75		80		83		86		38
37	53	91	57	88	58	84	61	89	63	96	37	68	100	74		79		82		85		37
36	52	90	55	86	57	83	60	88	62	94	36	67	98	73		78		81		84		36
35	50	88	54	85	56	82	59	87	61	93	35	66	97	72		77		79		82		35
34	49	86	53	83	55	81	58	85	60	91	34	64	95	71	100	76		78		81		34
33	48	84	52	82	54	79	57	84	59	90	33	63	94	69	98	74		77		80		33
32	46	83	51	81	53	78	56	83	58	88	32	62	92	68	97	73		76		79		32
31	45	81	50	79	52	77	55	81	57	87	31	61	90	67	95	72	100	75		78		31
30	43	79	49	78	50	76	54	80	56	85	30	60	89	66	93	71	98	74		76		30
29	42	77	47	77	49	75	53	79	55	84	29	59	87	65	92	70	96	73		75		29
28	41	76	46	75	48	73	52	77	54	82	28	58	86	64	90	69	95	71	100	74		28
27	39	74	45	74	47	72	51	76	53	81	27	57	84	62	88	68	93	70	98	73		27
26	38	72	44	72	46	71	50	75	52	79	26	56	82	61	87	67	91	69	96	72		26
25	37	70	43	71	45	70	49	73	51	78	25	54	81	60	85	66	89	68	94	71	100	25
24	35	69	42	70	44	68	48	72	50	76	24	53	79	59	83	64	87	67	92	69	98	24
23	34	67	41	68	43	67	47	71	49	75	23	52	78	58	82	63	85	66	90	68	96	23
22	32	65	39	67	42	66	46	69	48	73	22	51	76	56	80	62	84	65	88	67	93	22
21	31	63	38	66	41	65	45	68	47	72	21	50	74	55	78	61	82	63	86	66	91	21
20	30	62	37	64	40	64	44	67	46	70	20	49	73	54	77	60	80	62	84	65	89	20
19	28	60	36	63	39	62	43	65	45	69	19	48	71	53	75	59	78	61	82	64	87	19
18	27	58	35	61	38	61	42	64	44	67	18	47	70	52	73	58	76	60	80	62	84	18
17	26	57	34	60	37	60	41	63	43	66	17	46	68	51	72	57	75	59	78	61	82	17
16	24	55	33	59	36	59	39	61	42	64	16	44	66	49	70	56	73	58	76	60	80	16
15	23	53	31	57	35	58	38	60	41	63	15	43	65	48	68	54	71	57	74	59	78	15
14	21	51	30	56	34	56	37	59	39	61	14	42	63	47	67	53	69	55	72	58	76	14
13	20	50	29	54	33	55	36	58	38	60	13	41	62	46	65	52	67	54	70	56	73	13

12	19	48	28	52	32	54	35	56	37	59	12	40	60	45	63	51	65	53	68	55	71	12
11	17	46	27	50	31	52	34	54	36	57	11	39	58	44	62	50	64	52	66	54	69	11
10	16	44	26	49	29	50	33	52	35	56	10	38	57	42	60	49	62	51	64	53	67	10
9	14	43	25	49	28	49	32	50	34	54	9	37	55	41	58	48	60	50	62	52	64	9
8	13	41	23	48	27	49	31	49	33	53	8	36	54	40	57	47	58	49	60	51	62	8
7	12	39	22	46	26	48	30	49	32	51	7	34	52	39	55	46	56	47	58	49	60	7
6	10	37	21	45	25	47	29	48	31	50	6	33	50	38	53	44	55	46	56	48	58	6
5	9	36	20	43	24	45	28	47	30	48	5	32	49	36	52	43	53	45	54	47	56	5
4	8	34	19	42	23	44	27	45	29	47	4											4
3	6	32	18	41	22	43	26	44	28	45	3											3
2	5	30	17	39	21	42	25	43	27	44	2											2
1	3	29	15	38	20	41	24	41	26	42	1											1
Repetitions	M	F	M	F	M	F	M	F	M	F	Repetitions	M	F	M	F	M	F	M	F	M	F	Repetitions
AGE GROUP	17-21		22-26		27-31		32-36		37-41		AGE GROUP	42-46		47-51		52-56		57-61		62+		AGE

SIT-UP STA NDARDS

AGEGROUP	17-21	22-26	27-31	32-36	37-41	AGEGROUP	42-•6	H-61	52-66	57-61	62+	AGE
RepetlllHI	llf	llf	l.lf	llf	llf	Repetllk>1t	l.lF	llf	llf	llf	llf	Rep
82			100			82						82
81			33			81						81
80		100	S8			80						80
73		33	37			73						TS
78	100	37	36			*18*						78
11	38	36	35			77						*11*
76	37	35	34	100	100	76						76
75	35	33	32	33	33	75						*15*
74	34	32	31	38	38	74						74
73	32	31	30	36	37	73						73
72	30	83	SS	SS	36	72	100					72
71	83	88	88	S4	35	71	33					71
70	87	87	87	S3	34	70	38					70
63	86	85	86	32	33	63	37					63
68	84	84	85	31	S2	68	36					68
67	82	83	84	83	31	67	35					67
66	81	81	83	88	83	66	34	100	100			66
65	73	80	82	87	88	65	33	33	33			65
64	78	73	81	86	87	64	32	38	38	100		64
63	76	77	73	85	86	63	31	37	37	33	100	63
62	74	76	78	84	85	62	30	36	36	38	33	62
61	73	75	77	82	84	61	83	34	35	37	38	61
60	71	73	76	81	83	60	88	33	34	36	37	60
53	70	72	75	80	82	53	87	32	33	35	36	53
58	68	71	74	73	81	58	86	31	32	34	35	58
57	66	63	73	78	80	57	85	30	31	82	34	57
56	65	68	72	76	73	56	84	83	83	31	32	56
55	63	67	71	75	*18*	55	83	88	88	30	31	55
54	62	65	70	74	77	54	82	87	87	83	30	54
53	60	64	63	73	76	53	81	86	86	88	83	53
52	58	63	68	72	75	52	80	84	85	*81*	88	52
51	57	61	66	71	*14*	51	73	83	84	86	*81*	51
50	55	60	65	63	73	50	78	82	83	85	86	50
43	54	53	64	68	72	43	77	81	82	84	85	43
48	52	57	63	67	71	48	76	80	81	83	84	48
47	50	56	62	66	63	47	75	73	80	82	83	47
46	43	55	o1	65	68	46	74	78	7S	81	82	46
45	47	53	60	64	67	45	73	77	78	73	81	45
44	46	52	53	62	66	44	72	76	*11*	78	73	44
43	44	50	58	61	65	43	71	74	76	77	78	43
42	42	43	57	60	64	42	70	73	75	76	77	42
41	41	48	56	SS	63	41	63	72	74	75	76	41
40	3S	47	55	58	62	40	68	71	73	74	75	40
33	38	45	54	56	61	33	67	*10*	72	73	74	33
38	36	44	52	55	60	38	66	63	11	72	73	38
37	34	43	51	54	53	37	65	68	63	11	72	37
36	33	41	50	53	58	36	64	67	68	70	71	36
35	31	40	43	52	57	35	63	66	67	63	70	35
34	30	33	48	50	56	34	62	64	66	68	63	34
33	28	37	47	43	55	33	61	63	65	66	68	33
32	26	36	46	48	54	32	60	62	64	65	66	32
31	25	35	45	47	53	31	53	61	63	64	65	31
30	23	33	44	46	52	30	58	60	62	63	64	30

23	22	32	43	45	50	23	57	53	61	62	63	23
28	20	31	42	44	43	28	56	58	60	61	62	28
27	18	23	41	42	48	21	55	57	53	60	61	27
26	17	28	33	41	41	26	54	56	58	53	60	26
25	15	27	38	40	46	25	53	54	57	58	53	25
24	14	25	37	33	45	24	52	53	56	57	58	24
23	12	24	36	38	44	23	51	52	55	56	57	23
22	10	23	35	36	43	22	50	51	54	55	56	22
21	3	21	34	35	42	21	43	50	53	54	55	21
Repett11o1,	IIf	IIf	IIf	I.IF	IIf	Repettllou	I.If	I.IF	I.IF	IIF	I.IF	Re
AGEGROUI'	17-21	22-26	27-31	32-36	37-41	AGEGROUP	42-I6	U-61	52-66	57-61	62+	AGE

2-MILE RUN STANDAR DS

AGE GROUP	17-21		22-26		27-31		32-36		37-41		AGE GROUP	42-46		47-51		52-56		57-61		62+		AGE
Time	M	F	M	F	M	F	M	F	M	F	Time	M	F	M	F	M	F	M	F	M	F	Time
12:54											12:54											1
13:00	1	0	100								13:00											1
13:06	9		99								13:06											1
13:12	9		98								13:12											1
13:18	9		97		100		100				13:18											1
13:24	9		96		99		99				13:24											1
13:30	9		94		98		98				13:30											1
13:36	92		93		97		97		10		13:36											1
13:42	9		92		96		96		9		13:42											1
13:48	8		91		95		95		9		13:48											1
13:54	8		90		94		95		9		13:54											1
14:00	8		89		92		94		9		14:00											1
14:06	8		88		91		93		9		14:06	100										1
14:12	83		87		90		92		9		14:12	99										1
14:18	8		86		89		91		9		14:18	98										1
14:24	8		84		BB		90		9		14:24	97		100								1
14:30	7		83		87		89		9		14:30	97		99								1
14:36	7		82		86		88		91		14:36	96		98								1
14:42	7		81		85		87		91		14:42	95		98		100						1
14:48	7		80		84		86		9		14:48	94		97		99						1
14:54	7		79		83		85		8		14:54	93		96		98						1
15:00	7		78		82		85		8		15:00	92		95		98						1
15:06	7		77		81		84		8		15:06	91		95		97						1
15:12	7		76		79		83		8		15:12	90		94		96						1
15:18	6		74		78		82		8		15:18	90		93		95		10				1
15:24	6		73		77		81		8		15:24	89		92		95		99				1
15:30	6		72		76		80		8		15:30	88		91		94		98				1
15:36	6	100	71	100	75		79		8		15:36	87		91		93		97				1
15:42	6	99	70	99	74		78		8		15:42	86		90		92		97		100		1
15:48	6	98	69	98	73	100	77		81		15:48	85		89		91		96		99		1
15:54	6	96	68	97	72	99	76	100	8		15:54	84		88		91		95		98		1
16:00	5	95	67	96	71	98	75	99	8		16:00	83		87		90		94		97		1
16:06	5	94	66	95	70	97	75	99	7		16:06	83		87		89		93		96		1
16:12	5	93	64	94	69	97	74	98	7		16:12	82		86		88		92		95		1
16:18	5	92	63	93	68	96	73	97	7		16:18	81		85		87		91		94		1
16:24	5	90	62	92	66	95	72	97	7		16:24	80		84		87		91		93		1
16:30	5	89	61	91	65	94	71	96	7		16:30	79		84		86		90*		93		1
16:36	5	88	60	90	64	93	70	95	7		16:36	78		83		85		89		92		1
16:42	4	87	59	89	63	92	69	94	7		16:42	77		82		84		88		91		1
16:48	4	85	58	88	62	91	68	94	7		16:48	77		81		84		87		90		1
16:54	4	84	57	87	61	91	67	93	7		16:54	76		80		83		86		89		1
17:00	4	83	56	86	60	90	66	92	71	100	17:00	75		80		82		85		88		1
17:06	4	82	54	85	59	89	65	92	7	99	17:06	74		79		81		84		87		1
17:12	4	81	53	84	58	88	65	91	6	99	17:12	73		78		80		83		86		1
17:18	4	79	52	83	57	87	64	90	6	98	17:18	72		77		80		83		85		1
17:24	39	78	51	82	56	86	63	90	6	97	17:24	71	100	76		79		82		84		1
17:30	3	77	50	81	55	86	62	89	6	96	17:30	70	99	76		78		81		83		1
17:36	3	76	49	80	54	85	61	88	6	96	17:36	70	99	75	100	77		80		82		1
17:42	3	75	48	79	52	84	60	88	6	95	17:42	69	98	74	99	76		7		81		1
17:48	34	73	47	78	51	83	59	87	6	94	17:48	68	97	73	99	76		7		80		1
17:54	32	72	46	77	50	82	58	86	6	94	17:54	67	97	73	98	75		77		80		1
18:00	3	71	44	76	49	81	57	86	6	93	18:00	66	96	72	97	74		7		79		1
18:06	30	70	43	75	48	80	56	85	6	92	18:06	65	96	71	97	73		7		78		1
18:12	2	68	42	74	47	80	55	84	61	92	18:12	64	95	70	96	73		7		77		1
18:18	2	67	41	73	46	79	55	83	6	91	18:18	63	94	69	96	72		74		76		1
18:24	2	66	40	72	45	78	54	83	5	90	18:24	63	94	69	95	71		73		75		1

18:30	2	65	39	71	44	77	53	82	5	89	18:30	62	93	68	94	70		7		74		1
18:36	2	64	38	70	43	76	52	81	5	89	18:36	61	92	67	94	69		71		73		1
18:42	2	62	37	69	42	75	51	81	5	88	18:42	60	92	66	93	69		70		72		1
18:48	2	61	36	68	41	74	50	80	5	87	18:48	59	91	65	92	68		7		71		1
18:54	1	60	34	67	39	74	49	79	5	87	18:54	58	90	65	92	67		6		70		1
19:00	1	59	33	66	38	73	48	79	5	86	19:00	57	90	64	91	66	100	6		69		1
19:06	1	58	32	65	37	72	47	78	5	85	19:06	57	89	63	91	65	99	6		68		1
19:12	1	56	31	64	36	71	46	77	5	85	19:12	56	89	62	90	65	99	6		67		1
19:18	1	55	30	63	35	70	45	77	5	84	19:18	55	88	62	89	64	98	6		67		1
19:24	1	54	29	62	34	69	45	76	5	83	19:24	54	87	61	89	63	97	64		66		1
19:30	1	53	28	61	33	69	44	75	5	82	19:30	53	87	60	88	62	96	63		65		1
19:36	9	52	27	60	32	68	43	74	4	82	19:36	52	86	59	87	62	96	63		64		1
19:42	8	50	26	59	31	67	42	74	4	81	19:42	51	85	58	87	61	95	62	100	63		1
19:48	6	49	24	58	30	66	41	73	4	80	19:48	50	85	58	86	60	94	6	99	62		1
19:54	5	48	23	57	29	65	40	72	4	BO	19:54	50	84	57	86	59	93	60	98	61		1
20:00	3	47	22	56	28	64	39	72	4	79	20:00	49	83	56	85	58	93	5	98	60	100	2
20:06	2	45	2i	55	26	63	38	71	4	78	20:06	48	83	55	84	58	92	5	97	59	99	2
20:12	1	44	20	54	25	63	37	70	4	78	20:12	47	82	55	84	57	91	5	96	58	98	2
20:18	0	43	19	53	24	62	36	70	4	77	20:18	46	82	54	83	56	90	5	95	57	98	2
20:24		42	18	52	23	61	35	69	4	76	20:24	45	81	53	82	55	90	5	95	56	97	2
20:30		41	17	51	22	60	35	68	4	75	20:30	44	80	52	82	55	89	5	94	55	96	2
Time	M	F	M	F	M	F	M	F	M	F	Time	M	F	M	F	M	F	M	F	M	F	T
AGE GROUP	17-21		22-26		27-31		32-36		37-41		AGE GROUP	42-46		47-51		52-56		57-61		62+		AGE

AGE GROUP	17-21		22-26		27-31		32-36		37-41		AGE GROUP	42-46		47-51		52-56		57-61		62+		AGE
Time	M	F	M	F	M	F	M	F	M	F	Time	M	F	M	F	M	F	M	F	M	F	Time
20:18	0	43	19	53	2	62	36	70	43	77	20:18	46	82	54	83	56	90	57	95	57	98	20
20:24		42	18	52	23	61	35	69	42	76	20:24	45	81	53	82	55	90	56	95	56	97	20
20:30		41	17	51	2	60	35	68	41	75	20:30	44	80	52	82	55	89	55	94	55	96	20
20:36		39	16	50	21	59	34	68	40	75	20:36	43	80	51	81	54	88	54	93	54	95	20:
20:42		38	14	49	20	58	33	67	40	74	20:42	43	79	51	81	53	87	53	92	53	94	20:
20:48		37	13	48	19	57	32	66	39	73	20:48	42	78	50	80	52	87	52	91	53	94	20:
20:54		36	12	47	18	57	31	66	38	73	20:54	41	78	49	79	51	86	51	91	52	93	20:
21:00		35	11	46	1	56	30	65	37	72	21:00	40	77	48	79	51	85	50	90	51	92	21
21:06		33	10	45	16	55	29	64	36	71	21:06	39	77	47	78	50	84	50	89	50	91	21:06
21:12		32	9	44	15	54	28	63	35	71	21:12	38	76	47	77	49	84	49	88	49	90	21
21:18		31	8	43	14	53	27	63	34	70	21:18	37	75	46	77	48	83	48	87	48	90	21
21:24		30	7	42	12	52	26	62	34	69	21:24	37	75	45	76	47	82	47	87	47	89	21:24
21:30		28	6	41	11	51	25	61	33	68	21:30	36	74	44	76	47	81	46	86	46	88	21:30
21:36		27	4	40	10	51	25	61	32	68	21:36	35	73	44	75	46	81	45	85	45	87	21
21:42		26	3	39	9	50	24	60	31	67	21:42	34	73	43	74	45	80	44	84	44	86	21
21:48		25	2	38	8	49	23	59	30	66	21:48	33	72	42	74	44	79	43	84	43	86	21
21:54		24	1	37	7	48	22	59	29	66	21:54	32	71	41	73	44	79	43	83	42	85	21
22:00		22	0	36	6	47	21	58	29	65	22:00	31	71	40	72	43	78	42	82	41	84	22
22:06		21		35	5	46	20	57	28	64	22:06	30	70	40	72	42	77	41	81	40	83	22:
22:12		20		34	4	46	19	57	27	64	22:12	30	70	39	71	41	76	40	80	40	82	22
22:18		19		33	3	45	18	56	26	63	22:18	29	69	38	71	40	76	39	80	39	82	22:
22:24		18		32	2	44	17	55	25	62	22:24	28	68	37	70	40	75	38	79	38	81	22:
22:30		16		31	1	43	16	54	24	61	22:30	27	68	36	69	39	74	37	78	37	80	22
22:36		15		30	0	42	15	54	23	61	22:36	26	67	36	69	38	73	37	77	36	79	22:
22:42		14		29		41	15	53	23	60	22:42	25	66	35	68	37	73	36	76	35	78	22
22:48		13		28		40	14	52	22	59	22:48	24	66	34	67	36	72	35	76	34	78	22:
22:54		12		27		40	13	52	21	59	22:54	23	65	33	67	36	71	34	75	33	77	22:
23:00		10		26		39	12	51	20	58	23:00	23	64	33	66	35	70	33	74	32	76	23
23:06		9		25		38	11	50	19	57	23:06	22	64	32	66	34	70	32	73	31	75	23
23:12		8		24		37	10	49	18	56	23:12	21	63	31	65	33	69	31	73	30	74	23
23:18		7		23		36	9	49	17	56	23:18	20	63	30	64	33	68	30	72	29	74	23:
23:24		5		22		35	8	48	17	55	23:24	19	62	29	64	32	67	30	71	28	73	23:
23:30		4		21		34	7	48	16	54	23:30	18	61	29	63	31	67	29	70	27	72	23:
23:36		3		20		34	6	47	15	54	23:36	17	61	28	62	30	66	28	69	27	71	23
23:42		2		19		33	5	46	14	53	23:42	17	60	27	62	29	65	27	69	26	70	23:
23:48		1		18		32	5	46	13	52	23:48	16	59	26	61	29	64	26	68	25	70	23
23:54		0		17		31	4	45	12	52	23:54	15	59	25	61	28	64	25	67	24	69	23:
24:00				16		30	3	44	11	51	24:00	14	58	25	60	27	63	24	66	23	68	24:
24:06				15		29	2	43	11	50	24:06	13	57	24	59	26	62	23	65	22	67	24:
24:12				14		29	1	43	10	49	24:12	12	57	23	59	25	61	23	65	21	66	24:
24:18				13		28	0	42	9	49	24:18	11	56	22	58	25	61	22	64	20	66	24:
24:24				12		27		41	8	48	24:24	10	56	22	57	24	60	21	63	19	65	24:
24:30				11		26		41	7	47	24:30	10	55	21	57	23	59	20	62	18	64	24:
24:36				10		25		40	6	47	24:36	9	54	20	56	22	59	19	62	17	63	24:
24:42				9		24		39	6	46	24:42	8	54	19	56	22	58	18	61	16	62	24:
24:48				8		23		39	5	45	24:48	7	53	18	55	21	57	17	60	15	62	24:
24:54				7		23		38	4	45	24:54	6	52	18	54	20	56	17	59	14	61	24:

25:00			6		22		37	3	44	25:00	5	52	17	54	19	56	16	58	13	60	25
25:06			5		21		37	2	43	25:06	4	51	16	53	18	55	15	58	13	59	25:
25:12			4		20		36	1	42	25:12	3	50	15	52	18	54	14	57	12	58	25
25:18			3		19		35	0	42	25:18	3	50	15	52	17	53	13	56	11	58	25
25:24			2		18		34		41	25:24	2	49	14	51	16	53	12	55	10	57	25:
25:30			1		17		34		40	25:30	1	49	13	51	15	52	11	55	9	56	25
25:36			0		17		33		40	25:36	0	48	12	50	15	51	10	54	8	55	25
25:42					16		32		39	25:42		47	11	49	14	50	10	53	7	54	25:
25:48					15		32		38	25:48		47	11	49	13	50	9	52	6	54	25
25:54					14		31		38	25:54		46	10	48	12	49	8	51	5	53	25
26:00					13		30		37	26:00		45	9	47	11	48	7	51	4	52	26
26:06					12		30		36	26:06		45	8	47	11	47	6	50	3	51	26:
26:12					11		29		35	26:12		44	7	46	10	47	5	49	2	50	26
26:18					11		28		35	26:18		43	7	46	9	46	4	48	1	50	26
26:24					10		28		34	26:24		43	6	45	8	45	3	47	0	49	26
26:30					9		27		33	26:30		42	5	44	7	44	3	47	0	48	26:
Time	M	F	M	F	M	F	M	F	F	Time	M	F	M	F	M	F	M	F	M	F	Ti
AGE GROUP	17-21		22-26		27-31		32-36		37-41	AGE GROUP	42-46		47-51		52-56		57-61		62+		AGE

Appendix J: Copy of the Army M-16 Weapons Qualification

RECORD FIRE SCORECARD
For use of this form see FM 3-22.9; the proponent agency is TRADOC.

UNIT | DATE *(YYYYMMDD)* | EVALUATOR'S IDCODE

TABLE 1 PRONE SUPPORTED OR FOXHOLE SUPPORTED FIRING POSITION									TABLE 2 PRONE UNSUPPORTED FIRING POSITION						TABLE 3 KNEELING UNSUPPORTED FIRING POSITION				
HIT	MISS	NO FIRE	RD	RANGE (m)	TIME (sec)	HIT	MISS	NO FIRE	RD	RANGE (m)	TIME (sec)	HIT	MISS	NO FIRE	RD	RANGE (m)	TIME (sec)	HIT	MISS
D	D	D	11	100		D	D	D	1	200	6	D	D	D	1	150	8	D	D
D	D	D	12	200		D	D	D	2	250	8	D	D	D	2	50	4	D	D
D	D	D	13	150		D	D	D	3	150	6	D	D	D	3	100	5	D	D
D	D	D	14	300		D	D	D	4	300	10	D	D	D	4	150	6	D	D
D	D	D	15	100		D	D	D	5	200		D	D	D	5	100	5	D	D
D	D	D	16	250		D	D	D	6	150	12	D	D	D	6	50	4	D	D
D	D	D	17	200	6	D	D	D	7	200		D	D	D	7	100	5	D	D
D	D	D	18	150	5	D	D	D	8	250	9	D	D	D	8	150	6	D	D
D	D	D	19	50		D	D	D	9	150		D	D	D	9	50	4	D	D
D	D	D	20	100		D	D	D	10	150	6	D	D	D	1	100	5	D	D
			TOTAL						TOTAL						TOTAL				

ORE

MISS NO

QUALIFICATION SCORE RATINGS *(Check One)*

D 36-40--EXPERT D 23-29--MARKSMAN

Qualified with IBA? DYES

AIMING DEVICE USED *(Check*

2 3 FIRER'S QUALIFICATION SCORE	D 30-35 -- SHARPSHOOTER D 22AND BELOW -- UNQUALIFIED	*One)* D IRONSIGHT D D ACOG D AN/PEQ-2A/B

NIGHT FIRE EXERCISE					REMARKS
DATE	HIT	MISS	GO	NO GO	
			D	D	
CBRN FIRE EXERCISE					
DATE	HIT	MISS	GO	NO GO	
			D	D	
SCORER'S INITIALS					DATE INITIALED *(YYYYMMDD)*
OFFICER'S INITIALS					DATE INITIALED *(YYYYMMDD)*