Spring 2010

Effectiveness of the Combat Operational Stress Control Training Program: Expectations of the U.S. Marine Corps

Marek M. Sipko
Old Dominion University

EFFECTIVENESS OF THE COMBAT OPERATIONAL STRESS CONTROL TRAINING PROGRAM: EXPECTATIONS OF THE U.S. MARINE CORPS

by

Marek M. Sipko
B.B.A. January 1989, National University
M.B.A. June 1993, National University
M.S. September 2006, Naval Postgraduate School

A Dissertation Submitted to the Faculty of
Old Dominion University in Partial Fulfillment of the
Requirement for the Degree of

DOCTOR OF PHILOSOPHY IN EDUCATION

CONCENTRATION IN
OCCUPATIONAL AND TECHNICAL STUDIES

OLD DOMINION UNIVERSITY
May 2010

Approved by:

John Ritz (Director)

Philip Reed (Member)

Theodore Remley (Member)

Abstract

EFFECTIVENESS OF THE COMBAT OPERATIONAL STRESS CONTROL TRAINING PROGRAM:
EXPECTATIONS OF THE U.S. MARINE CORPS

Marek M. Sipko
Old Dominion University, May 2010
Director: Dr. John M. Ritz

This study evaluated the effectiveness of the U.S. Marine Corps combat operational stress preventive training program to determine whether the program meets the training effectiveness criteria of the Marine Corps. This evaluation entailed both qualitative and quantitative inquiries to answer the subject matter research questions.

The participants consisted of active duty and reserve Marines on active duty. For the purposes of the quantitative analysis, the researcher obtained a random sample of 480 Marines. Additionally, the researcher obtained a purposefully stratified qualitative sample of 12 active duty Marines consisting of four junior non-commissioned Marines, four staff non-commissioned officers, and four commissioned officers.

Since this study involved both quantitative and qualitative methodologies, there were three data collection instruments. Regarding the quantitative inquiry, an online based survey was utilized. This survey contained a number of Likert scale type questions built around Kirkpatrick's (2006) four-level training evaluation constructs: reaction, learning, changed behavior, and long-term results. Concerning the qualitative inquiry, the researcher conducted interviews using an interview protocol form, which consisted of a number of open-ended interview questions related to the effectiveness of the combat operational stress preventive training. Additionally, the researcher conducted four

qualitative observations of training sessions using an observation protocol instrument/checklist.

For the purposes of the quantitative analysis, both descriptive and inferential statistical methods were used. The descriptive statistics allowed the researcher to organize, summarize, and describe the associated data. The logistic regression models provided the researcher the opportunities to make predictions about the characteristics of the Marine Corps population.

The findings of the quantitative and qualitative analyses revealed the majority of the Marines, regardless of rank, did not reacted favorably to the currently formatted combat operational stress preventive training; some Marines learned the basics of the training; most of the Marines did not apply the learned preventive skills in their daily lives; and the current long-term combat operational stress preventive training program for both the enlisted Marines and the officers had not been a success as evidenced by a number of significant logistic regressions, further supported by descriptive statistics, and triangulated by qualitative interviews and training observations. Additionally, the respondents' self-reported experiences of effects from combat operational stress do affect their evaluation of the effectiveness of the combat operational stress preventive training as evidenced by several significant logistic regressions.

Dedication

I dedicate this dissertation to all the good wishers and sympathizers
who encouraged me to think critically
and ask hard questions.

My first teachers were my parents, Mieczyslaw Sipko and Cecylia Sipko.
They laid the foundations for my eventual successes
and stayed with me during growing pains of my boyhood.

My bastion of support, care, and love during this doctoral study
was my dearest and loving wife Dorota. She patiently endured the long
hours of early morning work, encouraged me to stay focused during arduous and
often confusing data collection efforts, and motivated me to finish the work.

My dearest children Teodor, Julia, and Natalia
reminded me daily what is really important in life.

To all of these anonymous contributors in my learning adventure,
as you have my everlasting gratitude.
Thank you so much.

Acknowledgments

My doctoral journey was long, difficult, but enormously rewarding. Along the way, a number of people provided me with a great deal of needed support, encouragement, and help. I would like to extend my most sincere gratitude and appreciation to a number of great individuals without whom this dissertation would not be possible.

Dr. John Ritz, my Dissertation Committee Chair, academic advisor, and a friend of active duty military students provided an extremely timely, common sense, and academically sound guidance from the very beginning of the program. His student and results oriented approach, easy going attitude, and timely concerns kept me going throughout the process. I am also most thankful for his recommendations and assistance in securing a generous graduate university fellowship, which eased the pain of financial hardship associated with obtaining this doctoral degree.

Dr. Philip Reed is a distinguished professor, committee member, and great supporter of active duty military students. His doctoral classes were outstanding and provided me with the academic subject matter knowledge requisite to successfully complete this dissertation. Additionally, his comments on draft versions of the dissertation were superior and allowed me to continue on with the dissertation process smoothly.

Dr. Theodore Remley has my deepest appreciation for taking the time and agreeing to serve on my dissertation committee. Dr. Remley's comments on draft versions of the dissertation were outstanding and also allowed me to proceed with the dissertation process all the way to its end. As a result of Dr. Remley's timely input, I

altered one of my research questions, thus truly reflecting the main focus of this dissertation.

I would like to also thank my early supporters, Chuck Coogan and the late Rob Zeisler, who motivated me to stay on track with my undergraduate work and complete my Baccalaureate degree. Having the Baccalaureate degree provided me with a multitude of opportunities without which achieving this doctoral degree would not be possible.

Last, but most meaningfully, I am grateful to my dearest wife Dorota and my children, Teodor, Julia, and Natalia. Their sacrifice of my time and attention provided me with the means to succeed.

Table of Contents

Page

Table of Contents (continued) **Page**

Table of Contents (continued) **Page**

Table of Contents (continued) **Page**

List of Tables

List of Tables (continued) **Page**

List of Tables (continued) **Page**

List of Tables (continued) **Page**

List of Tables (continued) **Page**

List of Figures

CHAPTER I

INTRODUCTION

Men and women who participate in combat or who deploy to military operations in support of combat could be affected by combat related experiences including combat operational stress (Nash, 2007). Current ongoing combat operations in Iraq and Afghanistan have caused tremendous amounts of grief, terror, courage, honor, and self-sacrifice to our Nation's troops. Additionally, the specific characteristics of the current American operations in Iraq and Afghanistan, such as unclear enemy lines and the use of improvised explosive devices (IEDs) and roadside bombs, can place great psychological strain on combatants (Hoge, Auchterlonie, & Milliken, 2006).

Currently, most American combat deployments involve counterinsurgency or unconventional warfare efforts. A central strategy of insurgency efforts is to exploit soft vulnerabilities within an opponent due to the prior conclusion that the enemy cannot be defeated in direct or sustained confrontations (Nagl, 2005). Insurgents do selectively target and engage military forces, but within the larger aim of defeating enemy decision makers and their political will (Hammes, 2004). The violent and unpredictable manner in which these unconventional attacks occur is designed to create fear, uncertainty, helplessness, and ultimately, demoralization (Everly & Castellano, 2004), establishing a battleground for the mind and will in which American service members must engage daily. When insurgent attacks originate from within populated areas and the enemy is able to quickly reconstitute back into these same surroundings, military personnel face the difficult task of having to discern appropriate engagement responses in real-time scenarios. Often, the split-second decision-making conundrum of conservative in

opposition to aggressive responsiveness is tempered by prior losses from an enemy seemingly operating without adherence to any rules of engagement. Further, the unconventional nature of these attacks, via improvised explosive devices (IEDs), distant rocket or mortar attacks, and planned ambushes within civilian settings, accentuates the frustration of not being able to strike back directly and decisively. In these situations, the service members must overcome the aggravations inherent in being both goodwill ambassador and a combat soldier or Marine, and the difficulty of separating combatants from civilians. In addition, service members must overcome constant environmental threats to their safety while jointly managing internal assaults to instinctive desires for control and predictability (Everly & Castellano, 2004). Both factors can significantly undermine individual stress-resilience efforts (Everly & Castellano, 2004).

Combat operational stress significantly contributes to the loss of fighting force and negatively affects military readiness leading to suicide, multiple psychosocial problems, and pre-normal end of military service (Nash, 2007). Post-traumatic stress disorder (PTSD) has been associated with combat operational stress (National Institute for Mental Health [NIMH], 2008). Post-traumatic stress disorder is defined as an anxiety disorder that can develop after exposure to a terrifying event or ordeal in which grave physical harm occurred (NIMH, 2008). According to Defense Medical Epidemiology Database (DMED), the number of new PTSD diagnosis cases for active duty Marines has been growing each year of Operations Iraqi Freedom and Enduring Freedom (Defense Medical Surveillance System [DMSS], 2009).

Exposures to stress can be compared to trees subjected to winds. Most of the trees subjected to prevailing winds adapt by bending away from the direction of such

winds. Some trees, however, will not adapt and will simply snap and break. Similar reactions occur in human beings. Some stronger individuals, when subjected by stress, will adapt and adjust. They will become stronger and will continue to exhibit courage, honor, and self-sacrifice. However, some individuals will not adapt and could even develop mental stress related injuries. Stress injuries are permanent although their effects can be decreased by care of mental health professionals. Normal stress reactions account for about 70 percent of all stress cases (Nash, 2007). The remaining 30 percent is divided between temporary stress injuries (20 percent) and stress illnesses (10 percent) (Nash, 2007). The goal is to prevent the temporary stress injuries by instituting strong stress prevention training activities and quickly identifying and treating stress illnesses.

Current ongoing combat operations brought attention to the need for combat operational stress control interventions. However, the evidence of negative stress reactions, like increases in post-traumatic stress disorder cases, has made the case for stronger and more vigorous efforts for prevention and restoration of combat operational stress casualties (NIMH, 2008). Although a comprehensive, multi-disciplinary preventive health approach is not a new concept, it has been minimally employed in respect to combat operational stress control and military mental health programs. Department of Defense directed all services to design and implement combat operational stress control programs. Such programs should include a preventive training to preserve the mission effectiveness and warfighting abilities and minimize the short and long-term adverse effects of combat on the physical, psychological, intellectual, and social health of service members (Department of Defense, 1999). According to the Defense Medical Epidemiology Database (2009), the current Marine Corps combat operational stress

preventive training has been ineffective as evidenced by rising combat operational stress casualties (DMSS, 2009). This study will evaluate this claim and make recommendations for improvements.

Statement of Problem

This study evaluated the effectiveness of the U.S. Marine Corps combat operational stress preventive training program to determine whether the program meets the training effectiveness criteria of the Marine Corps.

Research Questions

The following were research questions used to guide this study:

1. To what extent do the respondents' self-reported experiences of effects from combat operational stress affect their evaluation of the effectiveness of the Marine Corps combat operational stress preventive training?
2. To what extent does the combat operational stress preventive training program for *Marine officers* meet the training effectiveness criteria of the Marine Corps?
3. To what extent does the combat operational stress preventive training program for *enlisted Marines* meet the training effectiveness criteria of the Marine Corps?

Background and Significance

The Headquarters, U.S. Marine Corps Combat Operational Stress Control branch director suggested this study because of the need to evaluate the combat operational stress preventive training program. This study is also significant because it concerns our Nation's troops. The Combat Operational Stress Control branch office is relatively new,

and the combat operational stress preventive training program has never been formally evaluated (Gaskin, 2008). Additionally, it would be difficult to develop a more effective combat operational stress preventive training program without first understanding the sense and meaning of the individual experiences of Marines who perceived this preventive training as effective or ineffective. Using insights from this research, Combat Operational Stress Control branch officers may improve their prevention program methodology thus positively contribute to the preservation of the Marine Corps forces. This action could also directly benefit our Nation's combat Marines and soldiers. Theoretical significances for this study entailed investigating relationships between research variables and proposing research data collection instruments. These documents could also be used as templates for follow on investigations.

Practical significances of the study included creating training evaluation methodologies. Such methodologies could also be used by other military and civilian training and education entities. Since this study focused on individual experiences, it may provide other researchers with insights essential for constructing quantitative instruments that could aid in predicting those being affected by combat operational stress. Additionally, the study may provide other researchers with additional empirical knowledge which could be used in evaluating other training and education activities.

Theoretical Contributions

First, the study tested the theory which guided its design. The study investigated the relationship between reaction to training, learning, knowledge transfer, long-term results of training, and individual perceptions whether the training was effective or ineffective. These relationships were proposed by Kirkpatrick's (2006) Four Levels of

Training Evaluation model: (1) reaction, (2) learning, (3) knowledge transfer, and (4) long-term results. Information presented in this study could benefit future research to produce predictive models of training effectiveness.

Second, the study delved into the effectiveness of combat operational stress preventive training expanding on findings of other combat operational stress researchers (Hoge et al., 2002; Hoge, Castro, Messer, McGurk, Cotting, & Koffman, 2004; Hoge et al., 2006; Nash, 2006; Stevens, 2006; Iribarren, Prolo, Neagos, & Chiappelli, 2005; Smith, Ryan, Wingard, Slymen, Sallis, & Kritz-Silverstein, 2008; Iversen, Fear, & Ehlers, 2008). The other studies have focused more on determining whether service members are susceptible to combat operational stress when exposed to combat and high operational tempo. There is very little discussion of the existing preventive combat operational stress preventive training and education practices. On the other hand, this study evaluates the preventive aspect of combat operational stress, which when executed properly should keep the majority of Marines and soldiers mentally healthy and free of ill effects of combat operational stress.

Practical Significance

The most significant practical contribution of this study was the creation of the combat operational stress preventive training evaluation template which includes surveys and questionnaires built around Kirkpatrick's (2006) evaluation of training effectiveness constructs. Such materials are available for use by the U.S. Marine Corps Headquarters, and other major Marine Corps supported commands (I, II, and III Marine Expeditionary Forces) in evaluating their respective preventive combat operational stress preventive training and education programs. Each of the used data collection instruments was

evaluated by independent Ph.D. experts for training evaluation efficacy, and later resulted in statistically significant findings. Since the study's results are based on scientific principles, the study's methodology could be replicated in evaluating other training activities.

Limitations

This study presents several limitations relating to participants and the subject matter:

1. The study was focused exclusively on active duty U.S. Marines.
2. Preventive Combat Operational Stress Control consisted only of formal and informal training instituted and managed by the Headquarters, U.S. Marine Corps, Combat Operational Stress Control branch.
3. Full disclosure of the participants' perceptions toward effects of combat operational stress and the effectiveness of the combat operational stress preventive training might have been hindered by reluctance of the individuals to disclose their feelings and opinions completely.
4. This study included only volunteers as none of the Marine participants was forced or ordered to participate in the study.

Assumptions

There were several assumptions made in this study. These assumptions had to hold true for the study to answer its research questions. The following were the assumptions:

1. The instrumentation used in the study accurately measured effects of combat operational stress on Marines and the effectiveness of the combat operational stress preventive training.
2. Marines had equal opportunities to attend combat operational stress preventive formal and informal training sessions.
3. Kirkpatrick's (2006) Four Levels of Training Evaluation model effectively measures levels of training effectiveness.
4. Voluntary respondents truly represent the entire Marine Corps population.

Procedures

For the purposes of quantitative analysis, both descriptive and inferential statistical methods were used. The descriptive statistics allowed the researcher to organize, summarize, and describe the associated data. The inferential statistical methods provided predictions about the characteristics of the Marine Corps population. For Research Question 1, descriptive statistics were used consisting of frequencies and percentages in order to organize, summarize, and describe the data. Binary logistic regressions were used to assess the associations between the demographic characteristics, training effectiveness variables, and self-reported experiences of effects from combat operational stress. For Research Questions 2 and 3, binary logistic regressions were also used to assess the associations between biographic characteristics, training effectiveness variables, and individual perceptions, whether the training was effective or ineffective. The results of these statistical quantitative analyses provided insights to the effectiveness of combat operational stress preventive training.

Additionally, qualitative analysis of preventive training sessions and individual interviews was conducted by investigating individual experiences that gave meaning to the individual decision why the combat operational stress preventive training was effective or ineffective. Specifically, the collected data were analyzed by using interpretational analysis techniques. Interpretational analysis involves systematic procedures to code and classify qualitative data to ensure that important themes and patterns emerge (Gall, Gall, & Borg, 1999). This qualitative approach allowed Marines' individual experiences to speak for themselves providing intrinsic perceptions to the real effectiveness or ineffectiveness of the combat operational stress preventive training. The identification and description of the individual perception of the effectiveness or the ineffectiveness of the combat operational stress preventive training was one of the objectives of this study.

Definition of Terms

The following definitions are key terms used to design this study:

Combat Stress. Changes in physical or mental functioning or behavior due to the experience of lethal force or its aftermath. These changes can be positive and adaptive (e.g., increased confidence in self and peers), or they can be negative, including distress or loss of normal functioning (United States Marine Corps [USMC], 2008).

Combat Operational Stress Control (COSC). Leader-focused actions and responsibilities to promote resilience and psychological health in military units and individuals exposed to the stress of combat or other military operations (USMC, 2008).

Mental Health. The absence of significant distress or impairment due to mental illness.

Operational Stress Control (OSC). Leader-focused actions and responsibilities to promote resilience and psychological health in military units and individuals exposed to the stress of routine or wartime military operations in non-combat environments, whether at sea, in the air, or on the ground, including support and logistics operations of all kinds (USMC, 2008).

Operational Stress. Changes in mental functioning or behavior, especially distress or loss of function, due to the experience of military operations other than combat during peacetime or war, and on land, at sea, or in the air (USMC, 2008).

Post-traumatic Stress Disorder (PTSD). An anxiety disorder that can develop after exposure to a terrifying event or ordeal in which grave physical harm occurred or was threatened (NIMH, 2008).

Stressor. Any mental or physical challenge or set of challenges (USMC, 2008).

United States Marine Corps (USMC). Branch of the United States Armed Forces responsible for providing force projection from the sea, using the mobility of the U.S. Navy, rapidly delivering combined-arms task forces (Global Security, 2009).

Summary and Overview

Current ongoing worldwide combat operations underscored the need for preventive interventions in Combat Operational Stress Control. The combat operational stress preventive training program is an integral part of the U.S. Marine Corps Combat Operational Stress Control branch efforts to reduce combat operational stress related casualties. This study to evaluate the combat operational stress preventive training program originated from Director, Combat Operational Stress Control, U.S. Marine

Corps Headquarters and the need to conduct an evaluation of the U.S. Marine Corps combat operational stress preventive training program.

Specifically, the purpose of this study was to confirm the effectiveness of the Marine Corps combat operational stress preventive training and education program. By utilizing the researcher designed and independently validated survey instruments, the researcher obtained descriptive statistics and conducted binary logistic regressions to determine to what extent the Marines' self-reported experiences of effects from combat operational stress affected their evaluation of the effectiveness of the Marine Corps combat operational stress preventive training. Additionally, obtained descriptive statistics and binary logistic regressions enabled the researcher to determine the effectiveness of the combat operational stress preventive training program for both the enlisted Marines and the officers.

This research also qualitatively investigated and described the individual experiences of Marines in regards to the combat operational stress preventive training and education services. Particularly, the researcher identified those factors that caused Marines to think whether the current combat operational stress preventive training is effective or ineffective. These insights provided the program officers with new knowledge to improve and implement effective training and education methods. Improved combat operational stress preventive training and education practices could result in better prevention methodology thus positively influence combat readiness of the Marine Corps forces.

Chapter I presented the problem statement that delineated the need to evaluate the effectiveness of the combat operational stress preventive training program to determine

whether the program meets expectations of the Marine Corps. Chapter II contains a literature review. Specific reviewed topics included historical background, overview of the combat operational stress concepts, overview of the combat operational stress preventive training, overview of the training standards in the Marine Corps, and overview of the training effectiveness constructs for assessing knowledge and skills acquisition. Chapter III describes the population sample included in the quantitative and qualitative analyses, followed by design of the survey instruments. Chapter III also included data collection methodologies and described the employed statistical analyses. Chapter IV describes the actual findings of the study. Chapter V includes the study's summary followed by conclusions and recommendations.

CHAPTER II

LITERATURE REVIEW

The literature review was conducted by reviewing the subject matter literature in order to present the reader with the knowledge-base on combat operational stress and evaluation of the combat operational stress preventive training. The review utilized the most current issues of journals and other Department of Defense (DoD) sources that dealt with matters of combat operational stress and organizational training. The reviewed variables included concepts of combat operational stress control to include Post-traumatic Stress Disorder (PTSD) as a negative outcome of combat operational stress, the institutional efficacy of the U.S. Marine Corps training programs, and the training effectiveness evaluation constructs as recommended by Kirkpatrick (2006): reaction, learning, knowledge transfer, and results as the overall success of the training program. The intent was to provide a thorough synthesis and analysis of literature that concerns this study. This was done by reviewing the field, validating the research topic and methodology selection, and finally presenting a conceptual basis for the study.

Historical Background of Combat Operational Stress

Combat operational stress is not a new concept. Jones (1995) indicated that 18th century literature labeled combat stress reactions as "nostalgia". In this sense nostalgia means something much more than simple longing for one's home. It rather refers to an inability to cope in realities of a military service and thus losing all hopes of returning home sound and safe. Jones (1995) indicated that such individuals became extremely solitary, lethargic, often losing all internal motivation for honorable military service. The primary causes of nostalgia were psychological interwoven with some social

underpinnings, but the main causes of it were psychological damnations of being permanently taken away from home and loved ones (Jones, 1995).

During the American Civil War, nostalgia continued to be the most common name for combat stress (Dean, 1997). However, many other labels were also used, including insanity, sunstroke, and "irritable heart" or "trotting heart" (Dean, 1997). Additionally, both combatant armies suffered from frequent desertion cases by battle induced panic attacks (Marlowe, 2001). The heart related diagnoses concerned occurrences of rapid heart rate at rest which often accompanied these panic attacks (Dean, 1997).

In another study of 300 soldiers from the U.S. Civil War, Da Costa (1871) described a condition he called "irritable heart". This condition apparently affected soldiers exposed to combat and non-combatant civilians. It was characterized by shortness of breath, palpitations, and exertional chest pain, as well as headache and dizziness (Da Costa, 1871). Da Costa attributed these conditions to various causes, including infectious diseases and stress (Da Costa, 1871). This was a significant change in understanding the combat stress theory. Now, it was understood that combat stress related mental illnesses could be caused by physical damage to the brain, such as by heavy alcohol or drug use (Nash, 2006).

Toward the end of the 19th century, Sigmund Freud and Pierre Janet, two physicians who studied mental trauma in civilians, became the supporters of two different views of causes behind combat stress: one being the psychological and the second being the biological. Both Freud and Janet published the concept of dissociation, currently defined as a disruption in the usually integrated functions of consciousness, memory,

identity, or perception (American Psychiatric Association, 2000), after experiencing a traumatic event (Breuer & Freud, 1957/1895; Janet, 1920/1907). Both of these brilliant psychologists believed that dissociation was a key element in the development of psychopathology after a traumatic experience (Nemiah, 1998). But while Freud saw the fragmentation of consciousness in dissociation as a self-protective defense mechanism intended to keep overwhelmingly disturbing perceptions or feelings out of consciousness, Janet believed separation of emotion was due to an inborn failure to integrate information in the brain under the impact of a "violent emotion" (Van der Kolk, Weisaeth, & Van der Hart, 1996). In Freud's view, dissociation at the moment of trauma was a "purposeful and intentional" choice (Breuer & Freud, 1957/1895, p. 123), although occurred unconsciously. On the other hand, Janet thought of dissociation as a symptom of a breakdown of brain function, or in other words a loss of adjustment abilities (Van der Kolk & Van der Hart, 1989). This difference in theory of causation makes all the difference in handling and diagnosis (Nash, 2006). For Freud, conscious recall of repressed traumatic memories was therapeutic; for Janet, attempts to recall traumatic memories before they were somehow neutralized would only again overcome the brain's integrative capacity and cause further breakdown (Nemiah, 1998).

The series of names or labels describing combat stress in the 20th century is a result of ongoing debates between those who believed combat stress reactions were psychological in origin, and those who believed combat stress reactions had mainly biological derivations (Shephard, 2000). "Shell shock" in the First World War suggested the belief, at the time, that the varied negative mental health symptoms seen in the trenches of France and Belgium were caused by physical damage to the brain by being

close to the explosion of artillery shells. However, efforts to find evidence of physical damage to the brain in shell shock cases failed, which probably made people believe in the psychological causes of combat stress more so than the physical ones (Nash, 2006). Additionally during World War I, a syndrome similar to the one described by Da Costa (1871) became a major cause of medical evacuations back to England. It was given various names: Da Costa syndrome, soldier's heart, effort syndrome, as the symptoms were exacerbated by effort, and in the United States, it was called neurocirculatory asthenia (Hyams, Wignall, & Roswell, 1996).

Although the identification of "neurasthenia", which means an exhaustion of the nervous system, was used in both world wars, the purely psychological references to ill effects of combat stress as "traumatic neurosis" and "war neurosis" gained prominence in WW II (Shephard, 2000). "Neurosis" was a concept which grew out of the Freudian psychoanalytic movement in the early twentieth century, defined as symptoms produced by "emergency discharges" of psychic energy accumulated by unconscious conflict (Fenichel, 1945, p. 20). Shell shock and neurasthenia were considered "hardware" problems; war neurosis was thought to be a "software" problem (Nash, 2006). As WW II neared, the most commonly used labels were "battle fatigue" and "exhaustion," both reflecting a psychological rather than a biological etiology (Nash, 2006). Citing war psychiatry experience in both world wars, Kormos asserted in 1978, "fortunately, it is a relatively settled matter. All sources appear nowadays to be in agreement that we are dealing with a functional entity" (Kormos, 1978, p. 12).

After the Vietnam War, a plethora of research on persistent combat stress related disorders led to the official recognition in 1980 of post-traumatic stress disorder

(American Psychiatric Association, 1980). At the same time, American psychiatry predominately adopted the "Biopsychosocial Model," an integrative theory based on the principle that all mental and behavioral problems have concurrent causes in the biological, psychological, and social spheres (Engel, 1980). Since then, PTSD has become a paradigm of a true biopsychosocial disorder, with well-documented physical, mental, and interpersonal components (Litz, 2006).

During the Gulf War, there was an amazingly low rate of negative combat stress cases seen during both the air war phase and the ground combat phase (Garland, 1993). Some of the causes that attributed to the low rate of mental health problems included the lack of easy access to alcohol and drugs; the victorious and clear-cut outcome of the operation; the outstanding support from home; and the rapid redeployment of combat troops out of the area of operations (Garland, 1993). These factors are vital to remember as they constitute an important paradigm for the low incidences of negative combat stress reactions. Additionally, one of the legacies of the Gulf War was to place preventive teams consisting of psychologists, social workers, and other mental health professionals with the units deployed to combat zones. This best practice program undoubtedly helped preventing a number of mental health problems thus contributing to the reported low rate of mental health incidences during and after the Gulf War (Doyle, 2000).

Currently, there are preventive mental health assets deployed throughout Iraq and Afghanistan providing preventive and acute mental health services. However, both the U.S. Army and the Marine Corps have seen resurgence of mental health problems following combat deployments to Iraq and Afghanistan (Hoge et al., 2004; Hoge et al., 2006; Smith, Ryan, Wingard, Slymen, Sallis, & Kritz-Silverstein, 2008). Time will tell

the full significance of these conflicts in terms of combat stress and how combat stress affects individual service members.

Coping with Combat Operational Stress

Effectively coping with combat operational stress is the overarching outcome of the combat operational stress preventive training (Gaskin, 2008). Lazarus and Folkman (1984) defined coping as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). The actual goals of coping, in their view, are "managing emotions and maintaining self-esteem and a positive outlook, especially in the face of irremediable situations" (p. 139). The goal of coping is not merely to survive a severe stress, but to go beyond it through courage, resourcefulness, and personal growth. Successful coping not only manages distress and hardships (Lazarus, 1999), but finds meaning in it (Frankl, 1984).

Service members in a war zone can be unbelievably resourceful in their development and employment of coping strategies (Nash, 2006). For example, writing letters has long been a valuable tool for deployed service members to not only retain contact with loved ones back home, but to conceptualize their experiences into coherent narratives in order to find meanings in them. E-mail has raised the coping strategy of "letters from the front" to a new level of propinquity and impact. Digital cameras and video recorders have also permitted service members to create photo and video journals of their experiences, often set to purposefully selected music to provide personal connotation. However, giving support to fellow combatants and receiving support from them continue to reign as the ultimate of battlefield coping strategies (Nash, 2006).

Relationships made in combat zones may be the most reflective and honest of any that service members will ever have in their lives. Amazingly, humor and play continue to thrive in the war zone, even under the most terrible of circumstances. Additionally, many deployed service members experience an epiphany of religious faith that can do miracles to neutralize the toxic effects of combat operational stress (Elder & Clipp, 1988). One of the most humanizing experiences possible in a war zone is the mere conscious knowledge that, however much one may be pummeled by external factors outside of one's control, there are always choices to be made. And these choices may not only save lives, but give meaning to otherwise confused experiences (Nash, 2006).

The value of social support in adaptation to extreme stress cannot be underestimated. Just as families, under ideal conditions, provide shelter, love, compassion, and guidance for family members, relationships in cohesive military units are vital to the survival of each individual in them. Shared danger intensifies bonding, partly because each person's survival lies literally in the hands of his peers (Elder & Clipp, 1988). The resulting close social association neutralizes intense, depressing emotions, and makes each dangerous encounter seem less threatening (Cohen, Gottlieb, & Underwood, 2000).

Effective military leaders can also encourage adaptation in their junior Marines and sailors to extreme stress, under ideal conditions. For example, Grossman (1995) associated a successful military leader with a "well of fortitude" into which juniors could repeatedly tap in to restore their own deteriorating courage. Of course, relationships can also have a negative impact on adaptation (Lazarus, 1999). Service members who are newly joined to their units, such as replacements for combat losses, may have a

particularly hard time since they might be initially excluded from the sustaining network of attachments in the unit. And to the extent service members depend on attachments in their units for their emotional survival, they are susceptible to a disastrous failure of adaptation if those attachments are suddenly lost (Elder & Clipp, 1988).

Negative Effects of Combat Operational Stress

The effect of combat on the mental health of military personnel has been a cause for great concern among the public, military leaders, and policy-makers. Psychological disorders in military populations have had a menacing impact on the readiness and the accomplishment of military goals (Hoge et al., 2002; Hoge et al., 2006). Specific characteristics of the current American operations in Iraq and Afghanistan, such as unclear enemy lines, and the use of improvised explosive devices (IEDs) and roadside bombs, can place great psychological strain on combatants. It is extremely important to have effective preventive services in place such as training and education to minimize the number of actual cases of psychological disorders.

Operational and combat stress contributes significantly to the loss of fighting forces and negatively affects military readiness while leading to suicide, multiple psychosocial problems, and pre-normal end of military service (Nash, 2006). One of the key indicators of ill effects of combat operational stress is post-traumatic stress disorder (NIMH, 2008). Post-traumatic stress disorder is a mental health disorder which has been closely associated with negative effects of combat operational stress (Hoge et al., 2004). Consecutive annual increases in PTSD could also indicate negative effects of combat operational stress and ineffective prevention training and education services. According to the Defense Medical Epidemiology Database (DMED), the number of new PTSD

diagnosis cases for active duty Marines has been growing each year of Operations Iraqi and Enduring Freedom. Since 2003, the number of new Marine Corps PTSD cases grew by 1,995, a very significant 836 percent increase (DMSS, 2009). This unprecedented growth in PTSD has clearly made the case for stronger and more vigorous efforts for prevention and restoration of operational stress casualties. The combat operational stress prevention efforts necessitate evaluating the effectiveness of the existing combat operational stress training and education program to determine if such a program meets the training efficacy criteria of the Marine Corps, while providing Marines with the necessary resources to effectively manage combat operational stress.

The ongoing wars in Iraq and Afghanistan are the most sustained U.S. combat operations since the Vietnam war. These ongoing wars will produce a new generation of veterans at risk for mental health problems associated with sustained combat operations. Combat stress reactions have been identified throughout the history of war (Shay, 1994). However, the terms associated with combat operational stress, the attributions for its causes, the prevalence and manifestations, and how it can be prevented and managed will continue to evolve (Shay, 1994).

Concerning current American combat operations in support of Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF), approximately 20 percent of OIF and OEF veterans eligible to receive Veterans Administration (VA) benefits had received some health care at a VA facility, with possible mental health disorders being reported in 26 percent of these veterans seeking treatment (Kang & Hyams, 2004). The most diagnoses have been adjustment disorders, including about 10 percent with a possible diagnosis of PTSD (Kang & Hyams, 2004). In another study, about 17 percent

of soldiers and Marines returning from OIF screened positive for PTSD, depression, and other anxiety disorders (Hoge et al., 2004). This prevalence was approximately twice the pre-deployment reported rate. More recently it was found that approximately one third of OIF veterans accessed mental health services their first year after deployment, with 12 percent receiving a mental health diagnosis (Hoge et al., 2006). These findings confirm the results from the earlier studies. For example, two different studies indicated that lifetime prevalence of PTSD estimates have ranged from 7.8 percent to 12.3 percent in research with civilian populations (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). On the other hand, studies of military members who served in the Vietnam War, have shown much higher lifetime PTSD prevalence estimates of 30.9 percent for men and 26.0 percent for women (Weiss et al., 1992). These findings clearly show that military members who previously deployed to combat zones have a much higher chance of acquiring PTSD. These facts alone necessitate the need for strong preventive combat operational stress training and education services as early prevention is much less costly than health care treatments later on.

After people experience a particularly stressful event, they often feel they should be able to move on and "just handle it" or "get over it." Some experiences, however, are so traumatic that people have a difficult time coping and functioning in their daily lives (Stevens, 2006). The stress that results from traumatic events precipitates a spectrum of psycho-emotional and physiopathological outcomes. In its gravest form, this response is diagnosed as a psychiatric disorder consequential to the experience of traumatic events (Iribarren, Prolo, Neagos, & Chiappelli, 2005). People with PTSD often relive their

experiences through nightmares and flashbacks. They report difficulty in sleeping. Their behavior becomes increasingly detached or estranged and is frequently aggravated by related disorders such as depression, substance abuse, and problems of memory and cognition. The disorder soon leads to impairment of the ability to function in social or family life, which more often than not results in occupational instability, marital problems, family discord, and general difficulties in parenting (Iribarren et al., 2005). Moreover, the disorder can be severe enough and last long enough to impair the person's daily life and, in the extreme, and may even lead to suicidal tendencies (Iribarren et al., 2005).

A number of studies have found associations between combat exposure and PTSD rates or symptoms. Studies conducted with Vietnam veterans, for example, found substantial relationships between combat exposure and PTSD (Dohrenwend et al., 2007; Fontana & Rosenheck, 1999; Koenen, Stellman, & Sommer, 2003). Similar results have been observed for veterans of the Gulf War (Adler, Vaitkus, & Martin, 1996; Southwick, Morgan, Darnell, Bremner, Nicolaou, Nagy, & Charney, 1995; Wolfe, Brown, & Kelley, 1993). There is less evidence for this association for the current conflicts in Iraq and Afghanistan, although evidence is beginning to emerge, for the U.S. (Hoge, et al., 2004; Smith, et al., 2008) and British military service members (Iversen, Fear, & Ehlers, 2008). This fact alone necessitates a need for a thorough review of combat operational stress preventive services as such could play a role in decreasing PTSD rates in combat veterans.

Veterans with PTSD also often have more severe marital and family problems than veterans without PTSD (Jordan, 1992). Post-traumatic stress disorder manifests

itself by significant emotional numbing and interpersonal withdrawal (Nash, 2007). These symptoms impair veteran's family relationships causing further stress and deepening of PTSD's vicious cycle of self destruction (Jordan, 1992). The social costs of PTSD are tremendous with many disrupted veteran families, including neglected and abused wives and children. Properly instituted and effectively managed preventive combat operational stress training and education services could result in decreasing the number of combat stress casualties, thus easing the pain of the follow-on social costs associated with PTSD and other combat operational stress induced mental health disorders.

Although combat exposure is typically thought of as the paramount stressor of war, a number of investigators have emphasized the importance of other general military deployment stress factors, which have often been labeled as operational stress (Bartone, Vaitkus, & Adler, 1998; King, King, Gudanowski, & Vreven, 1995; Litz, King, King, Orsillo, & Friedman, 1997). Operational stressors have been labeled in various ways, including deployment-related stressors, low-magnitude stressors, general overseas stressors, malevolent environment, and contextual stressors (Engelhard & van den Hout, 2007; King, King, Gudanowski, & Vreven, 1995; Litz, Orsillo, Friedman, Ehlich, & Batres, 1997). Examples of these deployment-related operational stressors include excessive heat and cold, concerns or problems with family members back home, boredom, lack of sleep, lack of privacy, problems with supervisors, and inadequate availability of supplies or equipment.

The National Center for PTSD estimated the lifetime prevalence of PTSD in American general population was about 10 percent; however, about 30 percent of the

veterans who were deployed to recent combat zones might experience PTSD (Iribarren et al., 2005). In other words, about 1/3 of war veterans might be suffering from PTSD. For instance, currently about 180,000 American combat troops are deployed to Iraq and Afghanistan (Global Security, 2009). Based on the above logic, potentially over 60,000 of them could acquire PTSD as a direct consequence of participating in combat operations overseas. This is a striking statistic which must be taken seriously and definitely underscores the need for an effective combat operational stress preventive training and education program and an evaluation of the existing one.

Risk Factors in Combat Operational Stress

Studies have found exposure to severe combat stressors relate to the subsequent development of a range of physiological disorders (Boscarino, 1997). Other studies have documented the association between exposure to deployment related stressors and the development of psychiatric disorders (Hoge et al., 2004; Jordan et al., 1991; King et al., 1999). Deployment is also associated with increased symptoms of post-traumatic stress disorder (Hoge et al., 2004), depression (Hoge et al., 2004; Jordan et al., 1991), and anger problems (Adler, Dolan, & Castro, 2000; McCarroll, Ursano, Liu, Thayer, Newby, Norwood, & Fullerton, 2000). Furthermore, while symptom reports may be low during the immediate post-deployment period, studies with soldiers have found that these symptoms increase three to six months later (Hoge, Auchterlonie, & Milliken, 2006; Bliese, Wright, Adler, & Thomas, 2006). In all, it is estimated that between 20-30 percent of the U.S. military personnel returning from combat operations report significant psychological symptoms (Cox, 1995). For these reasons alone, U.S. military services need to institute broad combat operational stress preventive training and education

services to teach service members how to effectively deal with negative aspects of combat operational stress.

Research conducted after military conflicts has shown that length of deployment, multiple deployments, and exposure to combat are positively associated with combat operational stress reactions (Dohrenwend et al., 2007; Fontana & Rosenheck, 1999; Koenen, Stellman, Stellman, & Sommer, 2003; Hoge et al., 2004; Jordan et al., 1991; King et al., 1999). These might include increased risk of acquiring PTSD, depression, anxiety disorders, substance abuse, impaired functioning in social and employment settings, and increased utilization of health care services (Hoge, Auchterlonie, & Milliken, 2006; Toomey, Kang, Karlinsky, Baker, Vasterling, Alpern, Reda, Henderson, Murphy, & Eisen, 2007). The current American led wars in Afghanistan and Iraq confirm that characteristics of military participation in these wars, which includes combat exposure, are associated with mental disorders since the proportion of service members reported to have PTSD was 3.7 times higher among those who served in ground units of the Army or Marines (11 percent) as compared to deployed members of the Navy or Air Force (3 percent) (U.S. Army Surgeon General, 2006). Additionally, deployed military reservists are susceptible to combat stress as much and often more than their active duty counterparts (Perconte, Wilson, Pontius, Dietrick, & Spiro, 1993). This fact further necessitates the need for more effective training and education preventive services to counter these very negative, damaging, and potentially costly trends.

The high operational tempo within the U.S. Marine Corps required to meet the demands of wars in Iraq and Afghanistan have resulted in extended and multiple deployments for many Marines. There are reasonable concerns about a possible dramatic

increase in the prevalence of combat stress reactions over the next several years given that multiple and extended deployments are positively associated with mental health problems (Toomey et al., 2007). The rates of utilization of mental health services for the Army and Marine Corps have already increased over time since 2000, suggesting the current military operations are causing an increase in mental health problems and are burdening the health care system (Hoge, Auchterlonie, & Milliken, 2006; Kang & Hyams, 2004). The prevention training and education services, and then the identification and early treatment of mental health problems are essential in reducing chronic mental health impairment rates and thus overburdening the military and civilian health care systems.

The war in Iraq is the largest sustained ground combat operation undertaken by the U.S. military since the Vietnam War. Shortly after the end of the Vietnam War, a study done by Horowitz and Solomon (1975) predicted that in subsequent years mental health professionals would see the development of PTSD among many Vietnam-era combatants. Extensive research conducted with Vietnam veterans over the past 20 years has largely validated these earlier concerns (Kaylor, King, & King, 1987; King, King, Foy, Keane, & Fairbank, 1999). A recent report by Hoge et al. (2004) offered some preliminary evidence that present-day combat duty in Iraq carries a similar risk for long-term mental health problems.

A number of recent publications have highlighted the potential psychiatric impact of combat exposure on military members serving in Iraq and Afghanistan (Friedman, 2004; Jones, 2004; Lamberg, 2004). In another study Hoge et al. (2004) screened four combat units for emotional disorders before deployment to Iraq or Afghanistan (n =

2,530), and four other units, three to four months after their return (n = 3,671). The percentage of participants whose responses met the screening criteria for major depression, generalized anxiety disorder, or PTSD was significantly higher for the groups returning from Iraq or Afghanistan compared to the groups assessed before deployment. This was particularly true for PTSD and deployments to Iraq. The percentage of respondents who met the strict screening criteria for PTSD after combat duty in Iraq was more than double the rate found in the pre-deployment group (12.2 percent to 12.9 percent against 5.0 percent). This is indicative that preventive training and education services are especially needed for military members prior to deployment, with the notion that such prevention training would make them more resilient to ill effects of combat operational stress.

The Hoge et al. (2004) study also found that only a minority (20-40 percent) of service members who met the screening criteria for a mental disorder reported having sought professional assistance. This finding is probably at least partially attributable to stigma associated with seeking help and service members' concerns for how their help-seeking will be perceived by peers and leadership. Ideally, methods of early intervention would be identified for use with service members exposed to combat that could effectively reduce the risk of developing PTSD, thereby lessening the need for help-seeking in the long term. Training and education aimed both at leadership and rank and file could also be used to lessen the ill effects of inherent stigma, thus allowing more Marines to get the mental health care when they really need it.

Intimate Partner Violence

Another serious problem associated with combat operational stress and military veterans is intimate partner violence. Intimate partner violence is also a serious national public health problem. Approximately 12 percent of couples in the United States report male-to-female violence each year (Straus & Gelles, 1990), and recent national surveys indicate that 1.3 million women are physically assaulted by an intimate male partner annually, with nearly half of these victims reporting injury (Centers for Disease Control and Prevention, 2003; Tjaden & Thoennes, 1998). Intimate partner violence is related to an increased frequency of physician and emergency room visits (Bergman & Brismar, 1991; McLeer & Anwar, 1989; Plichta, 1992), as well as a wide variety of negative health consequences, including death (Campbell, 2002; Campbell et al., 2002; Coker et al., 2002; Coker, Smith, Bethea, King, & McKeown, 2000; Eisenstat & Bancroft, 1999; Greenfeld et al., 1998; Sutherland, Sullivan, & Bybee, 2001). Furthermore, the yearly cost of direct medical and mental health care to victims of intimate partner violence has been estimated at $4.1 billion (Centers for Disease Control and Prevention, 2009), irrespective of indirect costs such as loss of work and decreased productivity.

Interest in the difficulties faced by military families has increased in recent years due in part to the well-publicized 2002 domestic homicides at Fort Bragg, North Carolina, among Special Forces units who served in Afghanistan. There are about 26.4 million veterans residing in the United States (United States Census Bureau, 2009), and the total United States military force is currently comprised of over 1.4 million active duty personnel, of which 52 percent are married and 85 percent are male (Global Security, 2009). The reported rates of intimate partner violence among military veterans

and active duty servicemen range from 13.5 percent to 58 percent respectively, which translate somewhere between 189,000 to 812,000 of intimate partner violence cases among the active duty population (Marshall, Panuzio, & Casey, 2005). Intimate partner violence is then a significant problem, with combat stress most likely contributing and exacerbating the problem (Marshall, Panuzio, & Casey, 2005). Preventive combat operational stress services to include training and education are then needed to help the service members refrain from such a negative outcome as intimate partner violence.

Barriers to Mental Health Care

The prevention services, and the identification and early treatment of mental health problems, might be difficult to achieve within the military culture due to the existing barriers to care, either real or perceived, which prevents seeking help. A number of barriers to formal help-seeking for mental health problems in the U.S. military have been identified or suggested. Some of these include: lack of awareness of resources for help, ignorance of combat stress symptoms, fear of harming one's career, perceived lack of access to or effectiveness of treatment, fear of being placed on medications, and belief that problems will improve on their own (Hoge et al., 2004; Litz et al., 2002). Properly instituted and conducted combat operational stress preventive training and education services could alleviate some of the ignorance and fear of the unknown still undoubtedly present amongst the rank and file of the U.S. military.

The Department of Defense and Veterans Affairs have collaborated to screen for mental health problems early in the post-deployment phase. This is done by examining all returning soldiers and Marines by administering the Post-Deployment Health Assessment survey. However, this one-time administered snapshot of mental health evaluation may

prove insensitive to the complexities inherent in adaptation of war trauma. Evidence from longitudinal studies of trauma survivors suggests that early distress and associated symptoms are not highly predictive of long-term adaptation (Litz, Gray, Bryant, & Adler, 2002). This implies that there are some who may not be identified as needing help soon after deployment, but subsequently develop symptoms attributable to combat stress. Preventive combat operational stress training and education and early identification and treatment are particularly important because there is evidence that once chronic post-traumatic adaptation difficulties develop, they tend to persist across the lifespan (Prigerson, Maciejewski, & Rosenheck, 2001; Schnurr, Friedman, Foy, Shea, Hsieh, Lavori, et al., 2003).

The early identification and treatment of mental health problems is a particular challenge within the military for several reasons. First, it is reasonable to assume the prevalence of mental health problems may be under-diagnosed and under-reported because patients often seek their primary care for reasons other than mental health (Regier, Narrow, Rae, Manderscheid, Locke, & Godwin, 1993). Other factors which may cause mental health cases to go either undetected or unreported include symptoms not being recognized as being combat stress-related (Hoge, Auchterlonie, & Milliken, 2006; Kang & Hyams, 2004). The reasons behind this situation lie in lack of education and allowing the mental health stigma to persist in military units (Hoge et al., 2004). One of the primary goals of preventive combat operational stress education is to train Marines and Marine leaders to eradicate the combat stress related stigma and encourage all Marines to seek help from mental health providers when such help is needed. For these

specific reasons, there is a need for effective combat operational stress training and education program services and an evaluation of the existing ones.

Mental disorders are the second leading illness category and often co-exist with other medical conditions in the U.S. military (Armed Forces Health Surveillance Center, 2009). However, stigma is a particular barrier to care when it comes to the treatment of mental health problems (Hoge et al., 2004). Hoge et al. (2004) found that only half of the recent war veterans who had a serious mental disorder were even interested in receiving help and only 26 percent received formal mental health care. It is also plausible that mental health specialty clinics contribute to the stigma just by being special clinics, having special entrances, and having special mental health medical records. This problem may be compounded by a military environment in which Marines live and work together and therefore often lack the privacy of using a mental health clinic on base or post (Hoge, Terhakopian, Castro, Messer, & Engel, 2007). Active duty members can also seek mental health help from providers located off military bases and posts. However, many members do not realize this benefit is available to them (Hoge et al., 2007). Formally instituted preventive combat operational stress training and education could help in alleviating this problem too, resulting in more service members seeking help for mental health disorders.

The Department of Defense has taken several measures to overcome barriers to mental health care. One of the measures is including provisions of mental health services in primary care clinics as opposed to specialty care services specifically for mental health. Providing mental health services in primary care settings offers several advantages. First, it increases awareness and treatment of mental health issues (Hoge et al., 2004; Engel & Aquilino, 2004). Second, it establishes standardized mental health

services as routine, which should result in increased screening (Engel & Aquilino, 2004). Third, it improves accessibility through walk-in treatments, increases patient trust, and reduces stigma associated with mental health care (Hoge et al., 2004; Engel & Aquilino, 2004). The Marine Corps combat operational stress preventive training and education could play a significant role in spreading these messages too, contributing to more service members seeking help without fears of being stigmatized by their own peers and leaders.

Given the expected influx of recent war veterans with possible mental disorders and the difficulties with identification and treatment, there is a pressing need to plan for increased mental health care (Kang & Hyams, 2004). In spite of indicators that veterans of wars in Iraq and Afghanistan may be at a significant risk for mental health problems (Litz, 2006), there is much that is unknown about the prevalence of these barriers to care, how these factors affect help-seeking behavior, the level of satisfaction with any care that is received, and the level of satisfaction with the received combat operational stress preventive training. The main purpose of this study was to assess the current level of the Marine Corps preventive combat operational stress training and education efforts. The data obtained from this study could also serve as a baseline to track the effects of the Marine Corps educational training and treatment efforts related to combat operational stress control, thus directly benefiting future evaluations.

Dealing with Death and Injury Grief

As of January 2010, more than 6,285 coalition troops have been killed in Iraq and Afghanistan (iCasualites.org, 2010). An estimated 80 percent of soldiers and Marines deployed to Iraq and Afghanistan knew someone seriously injured or killed during their deployment (Hoge et al., 2004). There is widespread recognition of the strong attachment

bonds that develop between service members during war (Davidovitz, Mikulincer, Shaver, Izsak, & Popper, 2007). Because of these extremely strong attachment bonds, grief associated with the death of a friend in combat could be enormously traumatic (Pivar & Field, 2004). Service members need to know how to deal with combat related death and injury grief. Timely and effective preventive combat operational stress education could teach individual soldiers and Marines how to deal with combat related trauma. This fact further validates the need for evaluation of the current state of the Marine Corps preventive combat operational stress training and education services to determine their effectiveness for dealing with traumatically stressful events.

It is extremely important to know how to deal with combat related trauma (Papa, Neria, & Litz, 2008). The concepts of "complicated grief", "traumatic grief", or "prolonged grief", has in recent years been advanced to highlight reactions to grief that are pathological and beyond what is considered normal bereavement reactions (Horowitz, Siegel, Holen, Bonanno, Milbrath, & Stonson, 1997). These reactions are particularly unremitting and chronic and become impairing as the individual is unable to work through the grief, integrate the loss, and continue on with his or her life. Individuals may experience intense emotional pain and sorrow, constantly long for the deceased person, and have intrusive thoughts about the deceased (Boelen & Prigerson, 2007). Complicated grief reactions are more likely in the event of a sudden, traumatic loss, consequently, combat loss is particularly insidious (Ott, Lueger, Kelber, & Prigerson, 2007). Education and training on how to deal with combat loss has proven helpful with some individuals showing signs of returning to normal lives following traumatic losses of close friends or

family members (Boelen, de Keijser, Van den Hout, & Van den Bout, 2007; Shear, Frank, Houck, & Reynolds, 2005).

Guilt and Shame in Combat Veterans

Feeling of guilt and shame is one aspect of combat stress worth special mentioning. Combat veterans often experience guilt and shame related to various acts of omission (Kubany, 1994; Wong & Cook, 1992), and this has been argued to be an essential feature of combat PTSD (Shay, 1994). These experiences arguably cause "moral injury" (Shay, 1994). Guilt and shame related to moral injury are one of the most damaging psychological legacies of war (Nash, Silva, & Litz, 2009). Severity of guilt symptoms correlates positively with overall PTSD severity, particularly re-experiencing and avoidance symptoms (Henning & Freuh, 1997), and factor analytic studies show that guilt emerges as a factor in PTSD symptoms in combat veterans (Watson, Kucala, Juba, Manifold, Anderson, & Anderson, 1991). Some of these negative outcomes could be alleviated by preventive education and training services. Military members who understand how to deal with trauma could have a better chance of not experiencing the feelings of guilt and shame following traumatic losses of close military friends, thus decreasing chances of acquiring PTSD (Nash, Silva, & Litz, 2009).

Improvised Explosive Devices

Improvised Explosive Devices (IEDs) have had menacing effects upon our troops morale and psychological health. One of the most common, potentially traumatizing events for service members in Iraq and Afghanistan are IED attacks on convoys (Global Security.org, 2009). Enemy forces hide mortar rounds, artillery projectiles, and other explosive-filled ordnance alongside roads and highways and then remotely detonate them

to cause maximum blast injuries to passing vehicles and their occupants. IEDs are cleverly disguised by burying them under roads, in piles of garbage, in abandoned vehicles, and dead animal carcasses. Often a series of munitions are wired together in a "daisy chain," so that a single signal will detonate all of them at the same time. Attacks on convoys by suicide bombers driving explosive-filled vehicles ("vehicle-borne explosive devices," or "VBEDs") are also common (Global Security.org, 2009). When protective armor on the vehicle does not adequately guard the occupants, physical injuries from the blast tend to be the most severe in areas not covered by body armor, i.e., face, neck, arms, lower abdomen/back, and legs (Gawande, 2004). In the immediate aftermath of an IED attack, survivors are at risk for further attacks by enemy forces in the form of small arms fire and rocket propelled grenades. Any injured or dead are cared for by their fellow service members until medical responders arrive on the scene (Gawande, 2004).

Service members who spend a significant amount of time on the road in Iraq and Afghanistan, whether providing security to supply convoys or patrolling in search of enemy forces, may experience multiple separate IED attacks on their convoys during their deployment time. The risk is omnipresent when outside the secured perimeter of American military bases (Gawande, 2004). Unless service members are seriously injured in an IED attack, they are returned to normal duties quickly, oftentimes within a day or two (Cigrang et al., 2005). One can imagine how stressful such experiences can be. This is another reason behind preventive education and training services to teach soldiers and Marines how to effectively deal with such traumatic events ubiquitous in Iraq and Afghanistan.

Injured Service Members

Injured soldiers and those with higher levels of combat exposure have generally had higher rates of PTSD following previous wars (Kang, Natelson, Mahan, Lee, & Murphy, 2003; Kulka, Schlenger, Fairban, Hough, Jordan, Marmar, & Weiss, 1990; Ikin, Sim, Creamer, Forbes, McKenzie, Kelsall, Glass, McFarlane, Abramson, Ittak, Dwyer, Blizzard, Delaney, Horsley, Harrex, & Schwarz, 2004). However, rarely have these soldiers been studied shortly following injury (Ikin et al., 2004; Koren, Norman, Cohen, Berman, & Klein, 2005). A small study of Israeli soldiers found that 16.7 percent of injured soldiers had PTSD approximately 15 months following injury, compared to 2.5 percent of non-injured soldiers with similar combat experiences (Koren et al., 2005). It is important to work with the injured members to prevent them from lapsing into PTSD symptoms with preventive training and education being important pieces of that work.

Training Effectiveness

One of the keys to keeping troops free of mental health problems is emphasis on proactive and preemptive training and education (Hoyt, 2006). The Marine Corps has been embedding mental health professionals such as chaplains, psychologists, and psychiatrists in combat units themselves. Having such professionals in-place enables the commanding officers to conduct preventive training and education actions continuously as preparatory and resilience-enhancing efforts (Hoyt, 2006). Such approaches result in the integrated delivery of psychological care to Marine infantry units throughout their deployment cycle. These include providing training, assessment, and support before and after a deployment while in garrison, and of course ongoing into their deployment within the theater of operations. One particular advantage of this longitudinal involvement is an

understanding of recent events, experienced systemically or individually, that might influence current psychological reactions or dispositions, and additionally, future actions or vulnerabilities to future events (Litz et al., 2002).

There are numerous advantages to utilizing an embedded model of care with these operational Marine units. The advantages include (1) significantly enhanced understanding of contextualization issues necessary for accurate assessment, intervention, and mission enhancement; (2) increased prevention, early intervention, and systemic implementation emphasis; and (3) greater accuracy of dispositional recommendations, with resultant increases in their utilization due to perceived credible and knowledgeable performance. These advantages enable the embedded mental health professionals to effectively influence the prevention efforts which include training and education (Hoyt, 2006). The one particular advantage of this long-term involvement is an understanding of recent events, experienced systemically or individually, that might influence current psychological reactions or dispositions, and additionally, future actions or vulnerabilities to future events (Hoyt, 2006). Having mental health professionals in the units available for prevention work is definitely positive and most likely results in preventing some of the mental health problems within the unit itself (Everly & Lating, 2004; Litz, et al., 2002; Sammons, 2005).

Recent literature indicates that embedding mental health professionals in combat units results in enhanced addressing of combat stress reactions and disorders such as PTSD as part of preparatory and resilience-inducing efforts (Everly & Lating, 2004; Litz, et al., 2002; Sammons, 2005; Ursano, Grieger, & McCarroll, 1996). The chief advantage of having mental health professionals working inside of the operating unit are expanded

opportunities for training and equipping leadership with mental health resiliency prevention tools (Hoyt, 2006). The chief emphasis is to work with young leadership consisting of the non-commissioned officers (NCOs), staff non-commissioned officers (SNCOs), and junior officers. These small unit leadership groups are critical to the mental health strength-enhancing resiliency actions (Hoyt, 2006).

Another advantage of such preventive training efforts is multiplication of the effectiveness by mitigating stressors and difficulties among troops before they become more entrenched. Ursano et al. (1996) characterized these efforts as assisting in the "metabolism" of early stress symptoms and diminishing future problematic psychological functioning and behavior. Ursano et al. (1996) also indicated such preventive stress interventions should include educational components, preventive and early-intervention efforts, and appropriate referral resources as appropriate. Educational and intervention components include: (1) identification, prevention, and mitigation of acute or cumulative combat and operational stressors, (2) the continuum of normative to non-normative responses to these stressors, (3) awareness of the effects of acute or cumulative stressors such as longstanding sleep deprivation or sustained hyper-arousal, (4) the powerful moderating effects of leadership and unit cohesion as buffering forces for troops, (5) the means to minimize the "fog and friction" of war for subordinates, (6) addressing the fears, losses, and uncertainties of combat deployments, and finally, (7) emphasizing the confidence enhancement resulting from sustained and realistic training experiences (Ursano et al., 1996). Overarching goals of these normalizing and education processes include the development of structure or meaning in difficult experiences, greater mastery

over symptoms and triggers, and a proper focus on coping mechanisms (Ursano et al., 1996).

Central to a preemptive training approach is the importance of collaborating with existing supportive personnel (small-unit leadership, medical officers, or chaplains) and training structures integral to the military training pipeline. Shephard (2000) astutely noted, "Military psychiatry is often done best, not by psychiatrists, but by doctors, officers, and soldiers who understand the principles of group psychology and use the defenses in the culture to help people through traumatic situations" (p. 398). Through such preventive training interventions, integrated leaders at varying levels can provide interventions for troops within their own spheres of influence and often do provide normalizing and preventive psychological first-aid interventions to those who would not traditionally come to the attention of mental health until the magnitude of their difficulties increased (Shephard, 2002).

Another benefit of combat operational stress preventive training efforts is reduction in stigma attached to mental health services among operational units (Hoge et al., 2004). Corrigan, Markowitz, and Watson (2004) discussed the concept of institutional stigma and restricted access to mental health care, a particularly significant issue within the traditions of infantry unit functioning, Special Forces, and various other unique or elite military groups. There can exist a strong ethos against acknowledgment of individual or group vulnerability, with these admissions potentially influencing external appraisals of individuals' operational functioning (Corrigan, Markowitz, & Watson, 2004). Accordingly, there exists a subtle distrust of outsider influence that may disrupt group intactness or operational performance and lead to underutilization of mental health

resources. For this reason, extremely effective preventive mental health training efforts are those which originate from within the infantry unit, utilize existing infantry structure and leadership, and are performed by integrated providers who are contextually knowledgeable. Systemic intervention refers to the importance of leveraging one's impact on a group, thereby affecting a greater number of individuals in the process. A key principle of systemic interaction is facilitating a military group's ability to care for its own needs. One of the primary vehicles to multiply one's effectiveness in this manner is to assist leadership in training subordinates (Hoyt, 2006).

One central task of leadership in the military is the development of individual and organizational resilience in response to mission threats. Intimately linked to the concept of individual resilience, of turning hurdles or adversity into opportunity and even enhancement, is the construct of personality hardiness. A significant body of research has focused on mental constructs of commitment, control, and challenge as indicators of hardiness and psychological stability amid highly stressful conditions (Bartone, 1999; Bartone, Ursano, Saczynski, & Ingraham, 1989; Kobasa, 1979; Maddi, 1999). Maddi and Khoshaba (2003) suggested that during adverse or stressful events, those high in commitment tend to experience vitality through involvement in the situation around them and their sense of being a part of something bigger than themselves. Those strong in control tend to inject themselves into difficult situations, perceiving their effort to be worthwhile as means of influencing the outcome. Finally, those strongly oriented to the challenge construct receive significant fulfillment in learning from their experiences, that is, benefiting from both good and bad experiences without quickly dismissing negative experiences as unprofitable (Bartone, 1999). This hardiness construct has been shown to

be a significant stress-resilient moderator among Gulf War veterans, with high-hardy individuals experiencing significantly fewer combat stress symptoms than low-hardy individuals under high-stress conditions (Bartone, 1999).

The mental constructs of commitment, control, and challenge ultimately involve the meaning or interpretations that individuals attach to the events they experience, with these appraisals then impacting future personal actions. This evaluative meaning-making process of one's experiences is highly amenable to leadership influences (Bartone, 1999), particularly notable in groups with direct and frequent contact and under high-stress conditions. In these contexts, Bartone (1999) suggests leaders who are high in hardiness have a unique and powerful format to communicate their appraisals of events and thereby shape how group challenges are constructed or interpreted by subordinates. He further highlights the powerful mediums of group orientation in military training, the interdependent nature of small-unit work, and the authoritative counsel, experiences, and example leaders set as powerful media on how individual experiences get interpreted (Bartone, 1999). Using these constructs as a basis for leadership training, embedded mental health professionals can have a significant institutional impact on the shaping and preparation of the combatants they serve (Hoyt, 2006).

Although service members certainly experience the necessary aspects of tough, realistic, and approximated training physically, leaders may not be appreciably modeling or integrating the mental principles of resilience. Additionally, leadership consultation can include emphases on modeling of hardy approaches to problem solving and sense making of experiences; the psychological need for control, predictability, and situational coherence amid the "fog of war" challenges; mission clarity and conviction against loss

and uncertainty; and providing the necessary confidences gained through state-dependent learning and contingency-laden training fostering mastery (Ursano et al., 1996). Properly instituted training and education services could teach leaders the principles of mental resilience in addition to physical ones, further necessitating the need for quality and holistic combat operational stress preventive training and education services.

Department of Defense and Combat Stress

Combat stress includes all the physiological and emotional stresses encountered as a direct result of dangers and mission demands of combat. However, the Department of Defense and the military services define combat stress differently. The Department of Defense and the U.S. Army identify Combat Operational Stress Control as programs developed and actions taken by military leadership to prevent, identify, and manage adverse effects of combat and operational stress in units; optimize mission performance; conserve fighting strength; prevent or minimize adverse effects of combat stress on service members' physical, psychological, intellectual and social health; and return the unit or service member to duty expeditiously (Department of Defense, 1999; Department of the Army, 2006). On the other hand, the U.S. Marine Corps defines Combat Operational Stress Control as specific actions encompassing all policies and programs to prevent, identify, and holistically treat mental injuries caused by combat or other operations (USMC, 2008). Specifically, the Marine Corps wants to treat mental health injuries caused by stress by a holistic approach encompassing mind, body, and Marines' families (Nash, 2007). This approach is reflected by the Marine Corps initiating development of a very robust preventive measures training and education program (Gaskin, 2008). However, since the program has only been recently started due to

combat deployments to Iraq and Afghanistan, it needs to have a thorough evaluation to establish whether it is effective and meets the training efficacy criteria of the U.S. Marine Corps.

Combat Operational Stress Control Preventive Training

Training is a vital part of the Marine Corps preparation to go anywhere, take on any adversary, and win our Nation's wars (USMC, 1996). As such, Marine Corps units train as they expect to fight, which entails pragmatically using the learned skills in the field (USMC, 1996). This training philosophy provides the Marine Corps with the unifying goal for individual and collective training. This is a common thread woven throughout the Marine Corps, and with the American public requiring greater accountability of personnel utilization, public funds, effective and efficient training must focus on attaining and maintaining the state of operational readiness to support Marine air-ground task force (MAGTF) war fighting operations (USMC, 1996).

The Marine Corps trains constantly to develop and maintain combat-ready Marines and units that can perform assigned tasks to specific standards. The Marine Corps training is standards-based, performance-oriented, and prioritized in accordance with mission requirements. The Marine Corps overarching training program aim is to build self-confidence, promote teamwork and esprit de corps, and develop professionalism in leaders (USMC, 1994).

The Marine Corps uses the systems approach to training to maximize training results and focus the training principles of the unit in preparation for the conduct of the Marine Corps wartime missions. Depending on the unit and type of training, individual mission essential training may occur daily, weekly, monthly, or annually (USMC, 2004).

Combat operational stress preventive training is considered mission essential training (USMC, 2008). Marines are introduced to Combat Operational Stress Control basic knowledge and principles while undergoing the accession training at Boot Camp or the Basic Officer School. After graduating from the accession schooling and while at their units, Marines have opportunities to attend Combat Operational Stress Control formal training on an annual basis taught by qualified combat operational stress preventive training instructors (USMC, 2008). This formal training should consist of a series of lectures and small role play simulation exercises lasting about 6-8 hours depending on the audience and the instructor (USMC, 2008). Additionally, Marines are exposed to informal instruction conducted by their unit leaders almost daily. The emphasis of such informal pieces is on ensuring that Marines incorporate the learned combat operational stress preventive skills into their daily lives, thus maximizing the preventive goals of the training (USMC, 2008).

Training as a unit builds teamwork, transmits skills and knowledge, and sustains proficiency in individual and collective tasks (USMC, 1996; USMC, 2004). Commanders should incorporate the best mix of individual and collective training to ensure that Marines learn and sustain proficiency in mission-essential skills. Marines learn best through performance-oriented training. This method requires them to perform tasks according to specified behaviors and standards, but not necessarily to occupy a specified time. The times shown on training schedules are only a guide; training is conducted until standards are met. The emphasis of training must be on the actual performance of the tasks. Combat operational stress preventive training is an integral part of mission

essential unit and individual training and needs to be continuously conducted to preserve the Marine Corps most precious resource - individual Marines (USMC, 2009).

Many Navy and Marine Corps officers view appropriate training and education as the key to prevention from negative effects of combat operational stress. In order to facilitate this approach, the Marine Corps has recently introduced a continuum model (Swan, 2008). Training and education based on this continuum model needs to be rank and grade focused and standardized across the Marine Corps to include all formal schools, pre-deployment training programs, and sustainment training. In order to facilitate the current world-wide operations, the Marine Corps recommends development of alternative training means, such as interactive internet resources, situational vignettes, videos, and other best practice methods to enhance and expand training quality, accessibility, and consistency (Gaskin, 2008).

The Marine Corps combat operational stress preventive training and education policy should be consistent with the current Marine Corps systems approach to training (USMC, 2004). The systems approach to training process ensures that training and education are conducted in an environment of awareness and continuous feedback (USMC, 2004). There are three specific combat operational stress preventive training phases: Phase I - Pre-deployment, Phase II - Redeployment, and Phase III - Post-deployment. During each phase, Marine Corps leaders, enlisted Marines, and families have specific training roles to fulfill. The officers are to work with the enlisted Marines on reducing stigma associated with mental health issues, and thus create a unit climate that encourages seeking help from mental health professionals. Additionally, officers, enlisted Marines, and their families have opportunities to conduct phase specific training

sessions. In order to facilitate this process, the Marine Corps Combat Operational Stress Control branch has developed and provided a series of training modules which aim to train and educate officers, enlisted Marines, and their families on topics concerning combat operational stress (Gaskin, 2008).

Systems Approach to Training

The Marine Corps uses the systems approach to training (USMC, 2004). The systems approach to training helps in managing the instructional process for analyzing, designing, developing, implementing, and evaluating instruction. The systems approach to training serves as a blueprint for organizing or structuring the instructional process. The systems approach to training is a set of comprehensive guidelines, tools, and techniques needed to close the gap between the current and the desired job performance through instructional interventions (USMC, 2004). The Marine Corps originally targeted the systems approach to training for use in its formal military occupational training schools, but the comprehensive system applies to unit and field training in addition to formal education, which makes it applicable to combat operational stress preventive training and education services (Gaskin, 2008).

The systems approach to training is a dynamic, flexible system for developing and implementing effective and efficient instruction to meet the current and the projected needs. The systems approach to training process is flexible in that it accounts for individual differences in ability, rate of learning, motivation, and achievement to capitalize on the opportunity for increasing the effectiveness and efficiency of instruction (USMC, 2004). The systems approach to training process reduces the number of school management decisions that have to be made subjectively and, instead, allows decisions to

be made based on reasonable conclusions which are based on carefully collected and analyzed data. More than one solution to an instructional problem may be identified through the systems approach to training, however, the selection of the best solution is a goal of the systems approach to training (USMC, 2004).

The Marine Corps system approach of training reflects the ADDIE (Analyze, Design, Develop, Implement, and Evaluate) instructional design model (Leshin, Pollock, & Reigeluth, 1992; Dick & Carey, 1996). The systems approach to training is a continuous, cyclical process allowing any one of these five phases, and their associated functions, to occur at any time (USMC, 2004). In addition, each phase within the systems approach to training further builds upon the previous phase, providing a system of checks and balances to insure all instructional data are accounted for and that revisions to instructional materials are identified and made. The combat operational stress preventive training has been built around the systems approach to training reflecting the ADDIE instructional design model (Gaskin, 2008; Leshin, Pollock, & Reigeluth, 1992; Dick & Carey, 1996). As a result, combat operational stress preventive training is flexible in terms of its design and implementation structure allowing for continuous improvement thus directly benefiting the Marines (Gaskin, 2008).

Marine Corps Learning Comprehension Principles

The preventive combat operational stress preventive training needs to follow the Marine Corps recommended steps for learning comprehension. The first step is that the combat operational stress preventive training needs to be relevant. In order for the training to be relevant, it needs to address the significance of the lesson to the Marine.

The Marine needs to understand how he or she will benefit from the training (USMC, 2004).

The second step is the conceptual framework. The conceptual framework provides two important things for Marine learners. First, it constitutes a roadmap of where the instructor will take the learner during the training. Second, it creates gaps in the learner's mind that must be filled (USMC, 2004). For example, if the instructor tells a learner that he is going to talk about three things and then names them, the instructor creates conceptual gaps in the learner's mind that can be powerful tools in the learning process. By filling these gaps, the instructor provides the student with closure and understanding. The combat operational stress preventive training is certainly no exception and needs to contain a conceptual framework consisting of a roadmap along with learning gaps which will need to be filled during the training process.

The third step involves the learning outcomes. By stating the learning outcomes, the program's lesson plans identify specific learning tasks that Marines must be able to perform at the end of each training session. Specifically, the proposed learning outcomes identify what Marines will be able to do, under what conditions they will perform these tasks, and the required proficiency (USMC, 2004). Knowing the learning outcomes can definitely reduce the Marine's anxiety so he or she can concentrate on learning. Parlaying this paradigm, each session of the combat operational stress preventive training needs to have specific learning outcomes which need to be clearly understood by all participants.

The fourth step contains the actual method of instruction. The method of instruction will identify how Marines will learn. Will it be a practical application, lecture, or a demonstration? Knowing the method ahead of time can reduce Marines' anxieties so

they can concentrate on learning. Combat operational stress preventive training consists of a mix of lectures, simulations, practical applications, and demonstrations. Marines should know ahead of time what will be the actual method of instruction so they can focus on actual learning tasks as appropriate (USMC, 2004).

Evaluation is the fifth step in the process. The primary purpose of identifying how a Marine will be evaluated is to decrease anxiety. Leaders and instructors should identify the method of evaluation and when the evaluation will occur. Evaluation information is passed to Marines so they know what to expect for feedback. Additionally, evaluation information should directly relate to learning outcomes (USMC, 2004).

The Marine Corps combat operational stress preventive training is conducted using four instructional delivery methods: demonstrations, conferences which are also referred as guided discussions, lectures, and practical applications. These can be used alone or in combination (Rogers, 1986). A demonstration shows Marines the correct way to perform operations and tactics. It helps Marines see their individual role in a collective task. Demonstrations can be done several ways. Live demonstrations are often best because they hold a Marine's interest. Demonstrations must be performed unhurriedly. This allows Marines to see all the steps as they are performed. Demonstrations emphasize key points and create pauses for discussion. If the task contains many actions, the trainer performs the entire task first, then demonstrates each step of the task separately.

Demonstrations that integrate practice times are similar to live demonstrations, but with an added practice session. They are sometimes referred to as talk-through, walk-through demonstrations. After procedures are demonstrated and understood, Marines are given a chance to practice and simulate the steps under increasingly realistic conditions

until they can perform to desired standards. This type of training is especially valuable because it is engaging and experiential with a great probability of Marines actually acquiring new knowledge (Rogers, 1986).

During conferences or guided discussions, Marines discuss the information presented. Trainers initiate and direct discussions by giving information and asking questions. Conferences work best when there is more than one correct procedure, when Marines have some knowledge of the tasks, or when time is not critical (USMC, 2004). Conferences are effective when the group is familiar with the subject. Even though the discussion is guided, experienced Marines will make many good training points, increasing interest among others (Rogers, 1986). The subjects are interesting and open to discussion. Conferences allow Marines to state options that trainers and other Marines can then discuss. To encourage participation, trainers must guide the discussions. Conferences do not require Marines to perform tasks. They encourage a free exchange of information. Trainers must know their subject well, and they must also have developed the ability to guide a discussion among Marines. The combat operational stress preventive training utilizes the conference training format during International Combat Operational Stress Control Conferences (Gaskin, 2008), resulting in a plethora of quality training opportunities.

Lecturing presents information with little discussion. Typically, it is a one-way form of instruction - from the instructor to the instructed. As the least preferred method of instruction, lectures should be used only when there is a large group and no performance activities are required. Lectures are used in the Marine Corps when the training time is very limited and no other method allows the trainer to present information as quickly.

Also lecturing is appropriate when Marines know very little about the subject matter and lectures prepare them for demonstration and practice. Finally, lectures are used when trainers want to emphasize technical material with one correct or preferred method (Rogers, 1986).

When using practical applications or simulations, the trainer seeks to provide as realistic training scenario as possible. Practical applications and simulations can be time-consuming and involved, but they provide students with the best training environment for learning a task. The Marine Corps training, which focuses on performance-oriented training, requires the trainer to provide practical applications whenever feasible (USMC, 2004). Factors that can affect the use of practical applications are availability of facilities and associated audio-visual equipment. Practical applications, more often than any other presentation method, need to be fully planned in advance. However, practical applications are worth the effort because they normally result in Marines actually learning the topic (Rogers, 1986).

Kirkpatrick Model of Training Evaluation

The Kirkpatrick (2006) model for training evaluation was selected as a framework to answer some of this study's research questions because it is one of the most recognizable available training evaluation models (Wang & Shuai, 2008). According to Kirkpatrick's (2006) methodology, there are four levels to training evaluation. The first one is concerned with the reaction of how training participants felt about the training. The second level considers learning. Assessing at this level moves the evaluation beyond the sheer learner satisfaction and attempts to assess the extent participants advanced in skill and actually gained knowledge. The third level measures knowledge transfer that has

occurred in participants' behavior due to partaking in the training program. Basically, evaluating at this level considers assessing whether the newly acquired skills are actually being used in the daily lives of the participants. The fourth level measures the success of the training program in terms of increasing or decreasing identifiable long-term indicators. These could include increases in sales and production of units or decreases in number of accidents or mental health disorder cases.

There are three reasons training programs are evaluated. The first one concerns justifying the sheer existence and budget of the training department by showing how it contributes to the organization's objectives and goals. The second reason is to have a firm basis for determining whether to continue or discontinue a training program. The third reason is to gather the information on how to improve existing and future training programs (Kirkpatrick, 2006). This study is concerned with the evaluation of the preventive combat operational stress preventive training. Based on the information gathered in this study, the Combat Operational Stress Control branch officers will be able to improve their training program, and thus directly contribute to the preservation of Marines and sailors serving with the Marine Corps.

Reaction Level

Just as the word implies, evaluation at this level measures how participants in a training program react to it. It attempts to answer questions regarding the participants' perceptions: Did the learners like it? Was the material relevant to their work? According to Kirkpatrick (2006), every program should at least be evaluated at this level to provide for the improvement of a training program. In addition, the participants' reactions have important consequences for learning. Although a positive reaction does not guarantee

learning, a negative reaction almost certainly reduces its possibility (Kirkpatrick, 2006). Learners are often keenly aware of what they need to know to accomplish a task. If the training program fails to satisfy their needs, a determination should be made as to whether it is the fault of the program's design or instructional delivery.

Evaluating and measuring reaction is important for several reasons. First, and perhaps most importantly, reaction provides feedback and views helping the decision makers to evaluate their training programs, which includes information needed to improve them. Second, reaction provides trainers with information which could be used by management and the trainers themselves to determine the training effectiveness skills baseline and self-improvement of the trainers. Third, reaction level information provides means for quantitative and qualitative analysis. This is especially important to the managers who can then use the statistical analysis information for decision making purposes. Finally, reaction level evaluation can provide quantitative information to the trainers themselves to establish their standards of performance for future programs (Kirkpatrick, 2006).

Reaction level evaluation is not indicative of the training's performance potential as it does not measure what new skills the learners have acquired or what they have learned which will transfer back to the working environment. This might cause some to downplay the real value of reaction level evaluation (Markus & Ruvulo, 1990). However, the interest, attention, and motivation of the participants are often critical to the success of any training process as people often learn better when they react positively to the learning environment by seeing the importance of the presented training. When learning material is first presented, learners normally make a decision as to whether they will pay

attention to it. When the training is thought of as important and achievable, then learners are normally motivated to engage in it (Markus & Ruvulo, 1990). However, when training is considered as non-relevant and there is a low probability of success, then a negative effect is generated and motivation for task engagement is low (Markus & Ruvulo, 1990).

This differs somewhat from Kirkpatrick (2006) as he indicated, "If training is going to be effective, it is important that learners react favorably to it. Otherwise, they will not be motivated to learn" (p. 27). However, the less relevant the learning package is to learners, then the more effort that has to be put into the design and presentation of the learning package. In other words, if the training package is not relevant to the learner, then the learning material has to spark the learner's interest through a secondary means which might include, for example, an attractive media design.

A well designed training package is important; however, use of it should be to promote or aid the learning process rather than the learning package itself. And if a learning package is built of sound purpose and design, then it should support the learners in bridging a performance gap (Kirkpatrick, 2006). This bridging action should be the actual motivation to learn. Nevertheless, reaction level evaluation should measure whether the training participants liked, disliked, or were neutral to the conducted training. It is because being positive about the training does normally result in learners actually learning the material. If they were negative about the training, then in most likelihood the learners were not motivated to learn the material. This study employed a self-assessment quantitative satisfaction survey and qualitative interviews/training session observations through which reaction level evaluation of training participants was determined as

recommended by Kirkpatrick (2006). As a result, the researcher determined whether the Marine learners actually liked, disliked, or were neutral about the combat operational stress preventive training material.

Learning Level

Assessing at this level moves the evaluation beyond the learner satisfaction and attempts to assess the extent students have advanced in skills, knowledge, or attitude. Measurement at this level is more difficult and laborious than level one. Methods range from formal to informal testing to team assessment and self-assessment. If possible, participants need to take the test or assessment before the training (pre-test) and after training (post-test) to determine the amount of learning that has occurred. Another option is to employ self-assessment surveys and interviews with the training event learners and their supervisors. Such quantitative and qualitative data can then be used to determine whether in fact new knowledge has been gained (Kirkpatrick, 2006). This study employed self-assessment satisfaction surveys and qualitative interviews through which the learning level of combat operational stress preventive training participants was determined as recommended by Kirkpatrick (2006). As a result, the researcher determined whether the Marine learners actually learned the subject matter training material.

Measuring the learning that takes place in a training program is important in order to validate the learning objectives. Evaluating the learning typically focuses on such questions as: (1) What knowledge was acquired? (2) What skills were developed or at least enhanced? (3) What attitudes were changed? Learner assessments are created to allow a judgment to be made about the learner's capability for performance (Kirkpatrick,

2006). There are two parts to this process: gathering of information or evidence and interpreting the information. The gathering of information part might include testing the learner by administering a test or orally interviewing the learner. The judging of the information concerns determining what does the data represent? This assessment should not be confused with evaluation. Assessment is about the progress and achievements of individual learners, while evaluation is about the learning program as a whole (Tovey, 1997).

Knowledge Transfer Level

This level measures the transfer that has occurred in learners' behavior due to the training program. Evaluating at this level attempts to answer the question: Are the newly acquired skills, knowledge, or attitude being used in the everyday environment of the learner (Kirkpatrick, 2006)? For many trainers this level represents the truest assessment of a training program's effectiveness. However, measuring at this level is difficult as it is often impossible to predict when the change in behavior will occur, and thus requires important decisions as when to evaluate, how often to evaluate, and how to evaluate (Kirkpatrick, 2006).

This evaluation involves testing the learners capabilities to perform learned skills while on the job, rather than in the classroom. Do learners actually employ the learned skills in their daily lives? Knowledge transfer level evaluations can be performed formally by live testing or informally by means of observation (Kirkpatrick, 2006). Concerning the combat operational stress preventive training, Marine learners should have incorporated the gained skills required for coping with combat operational stress, thus providing themselves with preventive skills related to combat operational stress.

This has also been the training program's overarching learning goal and objective. This study also determined the program's state of knowledge transfer level by means of a self-assessment survey and qualitative interviews through which the effectiveness of the knowledge transfer level of the training participants was assessed.

In Kirkpatrick's (2006) original four-levels of evaluation, he names the level three as "behavior." However, behavior is the action that is performed, while the final result of the behavior is the performance. Gilbert (1998) said that performance has two aspects: behavior being the means and its consequence being the end. If this was only the behavioral aspect, then this behavioral characteristic could have been done in the training environment. However, the consequence of the behavior, the actual performance, is what the training is really after (Gilbert,1998). The results are the learners now can fully perform and produce the needed results in the working environment.

It is important to measure performance because the primary purpose of training is to improve results by having learners acquire new skills and knowledge and then actually apply them to the job. Learning new skills and knowledge is not beneficial to an organization unless the participants actually use new skills and knowledge in their work activities. Since knowledge transfer level measurements must take place after the learners have returned to their jobs, these measurements will typically involve someone closely involved with the learner, such as a supervisor or a subject matter expert familiar with the work settings (Kirkpatrick, 2006). Although it takes a greater effort to collect knowledge transfer level data than it does to collect data during training, its value is important to the organization as the data provides insight into the transfer of learning from the classroom to the actual work environment. The knowledge transfer level data also provides

information on the barriers encountered when attempting to implement the new techniques learned in the program, which then could be used to improve the program.

Results Level

Frequently thought of as the bottom line, this level measures the success of the program in terms which managers and executives can understand: increased production, improved quality, decreased costs, reduced frequency of accidents, increased sales, higher profits, higher return on investment, and in the case of the combat operational stress preventive training, decreased number of mental health cases. From a business and organizational perspective, results level evaluation should be the overall reason for a training program, yet results level evaluation is not typically addressed or even researched (Kirkpatrick, 2006).

Results level evaluation measures the effectiveness of the training program. It determines what impact, if any, the training has achieved. Examples of impacts can include such items as money, efficiency, moral, teamwork, better utilization rates, decreased rates of absences from work, just to name a few. As one moves from level one to level four of the Kirkpatrick (2006) model, the evaluation process becomes more difficult and time-consuming. However, the higher levels provide information which is of increasingly significant value, providing the real assessment of the conducted training (Kirkpatrick, 2006). Perhaps the most frequent type of measurement is the reaction level because it is the easiest to measure, yet it provides the least valuable data. Measuring results which affect the organization is considerably more difficult, thus it is conducted less frequently although it yields the most valuable information (Kirkpatrick, 2006).

The first three-levels of evaluation, reaction, learning, and knowledge transfer, are largely "soft" measurements; however, decision-makers who approve such training programs prefer hard results (returns or impacts). This does not mean the first three are insignificant, indeed, their use is in tracking problems within the learning package. Reaction level evaluation informs the decision maker how relevant the training is to the work the learners perform. It essentially measures how well the training requirement analysis processes worked. Learning level evaluation informs about the degree of relevance that the training package worked to transfer the learning objectives from the training material to the learners as it actually measures how well the design and development processes worked. Knowledge transfer level evaluation provides information about the degree to which the learning has actually been applied to the learner's job. It measures how well the performance analysis process worked. Finally, results level evaluation provides information about the return on the conducted training investment. Decision-makers prefer this harder "result," although not necessarily in dollars and cents (Hayes, 2003).

Phillips (1996) also writes that the value of information becomes greater as it goes up these levels of evaluation (from reaction to results). For example, the evaluation of results has the highest value of information to the organization, while reaction provides the least information. And like most levels of information, the ones that provide the best value are often more difficult to obtain. Thus, there is a tendency to do the easier levels, one and two, and obtain a little information about training efforts, while bypassing the more difficult levels three and four which would provide the most valuable information to the organization (Philips, 1996).

The main goal of the combat operational stress preventive training is to decrease the number of mental health cases (Gaskin, 2008). Based on this goal, Combat Operational Stress Control branch officers should look at the results level perspective. Did the conducted preventive training result in decreasing the number of mental health cases? If not, the training might be considered as ineffective. If yes, then the training probably was effective with other factors being equal. However, this study took a close look at all four levels, producing a thorough combat operational stress preventive training review. Only then, the study was able to help determine the full causes of the combat operational stress preventive training successes or failures.

Summary

There have been several significant national studies that investigated the issues of combat operational stress. Some of these studies focused on negative effects of combat operational stress (Kang & Hyams, 2004; Hoge et al., 2002, Hoge et al., 2004; Hoge et al., 2006). Other studies looked at associations of combat exposure and ill effects of combat operational stress (Dohrenwend et al., 2007; Fontana & Rosenheck, 1999; Koenen, Stellman, Stellman, & Sommer, 2003; Adler, Vaitkus, & Martin, 1996; Southwick et al., 1995; Wolfe, Brown, & Kelley, 1993; Smith, et al., 2008; Iversen, Fear, & Ehlers, 2008). Still other studies explored the correlations of general military deployment stress factors such as deployment-related stressors, low-magnitude stressors, general overseas stressors, malevolent environment, and contextual stressors (Bartone, Vaitkus, & Adler, 1998; King, King, Gudanowski, & Vreven, 1995; Litz, King, King, Orsillo, & Friedman, 1997; Engelhard & van den Hout, 2007; Litz, Orsillo, Friedman, Ehlich, & Batres, 1997). However, none of these studies explored the effectiveness of the

combat operational stress preventive training activities as a way to prevent mental health problems.

This study sought to fill this important gap and determine the effectiveness of the currently offered Marine Corps combat operational stress preventive training services. First, the study gathered quantitative data to determine whether the respondents' self-reported experiences of effects from combat operational stress affect their evaluation of the effectiveness of the combat operational stress preventive training. Second, the study collected quantitative and qualitative data to determine the actual efficacy of the Marine Corps combat operational stress preventive training and education services for both the enlisted Marines and officers. These understandings could benefit Combat Operational Stress Control officers from all the Services on how to improve combat operational stress preventive training and education activities, thus contribute to the preservation of our Nation's military combat troops.

The next chapter describes how the study's design sought to accomplish these end states. It describes in detail the methods and procedures used in the study.

CHAPTER III

METHODOLOGY

The purpose of this study was to evaluate the effectiveness of the Combat Operational Stress Control training program. This evaluation entailed both qualitative and quantitative inquiries of the combat operational stress preventive training to determine whether the program meets the training effectiveness criteria of the Marine Corps. The researcher used reaction to training, learning through training, knowledge transfer, and long-term training results as the key training effectiveness constructs (Kirkpatrick, 2006). Specifically, a quantitative investigation took place to explore the individual experiences of Marines who were subjected to combat operational stress. The results of this statistical quantitative analysis provided insights to the effectiveness of combat operational stress preventive training.

Additionally, a qualitative analysis of preventive training sessions was conducted by investigating individual experiences that gave meaning to decisions why the combat operational stress preventive training was effective or ineffective. A qualitative approach allowed the individual experiences to speak for themselves providing intrinsic perceptions to the real effectiveness of the combat operational stress preventive training (Creswell, 2007). Together, the qualitative and the quantitative inquiries added immensely to the validity of this study, thus directly benefitting our Nation's combat troops.

Population

The study took place at Marine Corps Bases, Quantico, Virginia; Camp Lejune, North Carolina; and Camp Pendleton, California. The participants consisted of active

duty and reserve Marines on active duty. For the purposes of quantitative analysis, the researcher sought to obtain a random sample greater than 384 Marines. The current Marine Corps active duty population consists of about 202,000 Marines (Global Security, 2009). Based on Cochran's (1977) formula, a random sample consisting of at least 384 Marines is required for making generalizations about the entire active Marine Corps population.

The sample size for qualitative inquiry was based on qualitative data saturation as recommended by Creswell (2007). The researcher planned to reach the point of sample data saturation after performing qualitative interviews using a purposefully stratified sample of Marines. Specifically, this qualitative sample consisted of four junior non-commissioned Marines, four staff non-commissioned officers, and four commissioned officers. Additionally, the researcher hoped to reach the point of qualitative sample data saturation after observing four combat operational stress preventive training classes.

Research Variables

The study's data were to determine how the respondents' self-reported experiences of effects from combat operational stress affect their evaluation of the effectiveness of the Marine Corps combat operational stress preventive training. The variables from this data set included suffering from effects of combat operational stress, training effectiveness and evaluation constructs, and general military background biographical data. Suffering from effects of combat operational stress constituted the dependent variable, with the other three variable groups constituted the independent variables.

This study also investigated the individual experiences of Marines who completed the combat operational stress preventive training. The independent variables consisted of Kirkpatrick's (2006) training evaluation constructs, biographical information of the participants, possessing combat operational stress preventive coping skills, the effectiveness of the trainers, the effectiveness of the training materials, and overall feelings toward the combat operational stress preventive training. Training evaluation constructs included reaction, learning, changed behavior, and long-term results. The dependent variable consisted of individual perceptions of whether the combat operational stress preventive training was effective or ineffective.

Research Design

This was a mixed method research design consisting of quantitative and qualitative inquiries. Since this study involved both quantitative and qualitative inquiries, there were three data collection instruments. For the purposes of quantitative inquiries, an online based survey was utilized. This survey contained a number of Likert scale type questions built around Kirkpatrick's (2006) four-level training evaluation constructs: reaction, learning, changed behavior, and long-term results (see Appendices A and D). Concerning the qualitative inquiry, the researcher conducted interviews using an interview protocol form, which contained a number of open-ended interview questions related to the effectiveness of the combat operational stress preventive training (see Appendix B). These questions were also built around Kirkpatrick four-level training evaluation constructs (see Appendix E). Additionally, the researcher conducted four qualitative observations of training sessions using an observation protocol instrument.

The observation protocol instrument contained checklist items that are relevant to training and conducting productive observation sessions (see Appendix C).

The researcher established validity and reliability of the above instruments by means of expert review and pilot testing. Specifically, following approval of the proposed research process, the researcher submitted an initial draft of the instruments for review by a panel of experts to evaluate the appropriateness of content and ensure validity. The panel of experts consisted of three external Ph.D. subject matter experts who possessed requisite prior experience working with data collection instrumentations. After review and feedback from the experts, the researcher conducted a pilot test of the survey to ensure reliability for contextual relevance to Marines with a variety of backgrounds. The researcher accomplished this by means of a convenience sampling method. This method involved testing the quantitative survey with 10 Quantico, Virginia, based Marines who were not part of the actual quantitative study sample. The qualitative instrument was also tested with three Quantico, Virginia, based Marines who also were not part of the actual qualitative study sample.

Method of Data Collection

The researcher sent an e-mail to Commanding Officers of randomly selected five Marine Corps units each consisting of about 1,000 Marines and located at Marine Corps Bases, Quantico, Virginia; Camp Lejune, North Carolina; and Camp Pendleton, California. The units were selected using the Microsoft® Excel™ random number generator. The sent e-mail contained a link to the web-based survey and requested each respective unit Commanding Officer to forward that e-mail to all members of his or her

unit in order to allow the members to voluntarily and anonymously access and complete the survey.

For the purposes of qualitative analysis, the researcher performed individual interviews with Marines using a purposefully stratified sample. This qualitative sample consisted of four enlisted Marines, four staff non-commissioned officers, and four commissioned officers. Additionally, the researcher planned to observe and reach the point of qualitative data saturation after witnessing four combat operational stress preventive training sessions in order to collect qualitative data related to the effectiveness of the combat operational stress preventive training.

Statistical Analysis

For the purposes of quantitative analysis, the researcher utilized the statistical analysis software, Statistical Package for the Social Sciences, Version 17.0: SPSS Base (SPSS), to analyze the datasets. SPSS was also used to create tables and figures to display comparisons of information. Explicitly, both descriptive and inferential statistical methods were used. The descriptive statistics allowed the researcher to organize, summarize, and describe the associated data. The inferential statistical methods provided the researcher the opportunities to make predictions about the characteristics of the Marine Corps population.

For the purposes of qualitative analysis, the researcher analyzed data by using interpretational analysis techniques. Interpretational analysis involves systematic procedures to code and classify qualitative data to ensure that important themes and patterns emerge (Gall, Gall, & Borg, 1999). Interpretational analysis offers several specific steps: preparing a database containing all the data, numbering each line of text

sequentially and then dividing the text into meaningful segments, developing meaningful categories to code the data; coding each segment by any and all categories that apply to it; and then generating specific themes and constructs that emerge from the categories.

Logistic regression can be used to predict a dependent variable on the basis of categorical independent variables and determine the percent of variance in the dependent variable explained by the independents; rank the relative importance of independents; assess interaction effects; and understand the impact of covariate control variables (Hosmer & Lemeshow, 2000). The impact of predictor variables can also be explained in terms of odds ratios (Hosmer & Lemeshow, 2000).

Research Question 1 focused on whether the respondents' self-reported experiences of effects from combat operational stress affect their evaluation of the effectiveness of the Marine Corps combat operational stress preventive training. It was answered by means of a dataset collected by the researcher. First, descriptive statistics were used consisting of frequencies and percentages in order to organize, summarize, and describe the data. Then, the researcher followed the analysis with binary logistic regressions in order to assess the associations between the demographic variables, training evaluation constructs, and self-reported experiences of effects from combat operational stress. The researcher performed a series of binary logistic regressions to determine the odds ratios (ORs) and 95.0 percent confidence intervals (CIs) for each variable of interest.

Research Question 2 focused on whether the Combat Operational Stress Control training program for *Marine officers* meets the training effectiveness criteria of the Marine Corps. Research Question 3 focused on whether the Combat Operational Stress

Control training program for *enlisted Marines* meets the training effectiveness criteria of the Marine Corps? The study answered these questions by using both quantitative and qualitative methodologies. For the quantitative analysis, descriptive statistics consisting of frequencies and percentages were used in order to organize, summarize, and describe the data. The researcher followed the above with binary logistic regressions in order to assess the associations between the demographic characteristics, impressions of the received combat operational stress preventive training, learning specific facts/techniques, actually using the learned skills/techniques, and individual perceptions whether the training was effective or ineffective. The researcher performed a series of binary logistic regressions to determine the odds ratios (ORs) and 95.0 percent confidence intervals (CIs) for each variable of interest.

Qualitative analysis of data collected to answer Research Questions 2 and 3 were also performed. Specifically, the researcher transcribed all interview data from a recording device into a typed text. Each line of typed text was then divided into meaningful segments. The researcher accomplished this by having each interview question and the participant's response as a separate segment as recommended by Creswell (2007). By having separate segments, the researcher was able to code the data according to the specific themes related to training effectiveness constructs, such as reaction, learning, changed behavior, and long-term results. A similar data analysis methodology was applied to the observation based dataset. Conclusions were first drawn from the data obtained individually from interviews and observations, and then from the data as a whole, having the two categories combined as one set of qualitative data as recommended by Creswell (2007).

Summary

This chapter opened with a purpose of the study and the study inquiry procedures. It described the study's population, samples, and research variables. The fourth section reviewed instrument design, while the fifth section explained the methods of data collection. Finally, the last section identified the statistical analyses used in the study.

The study's population consists of about 202,000 active duty Marines (Global Security, 2009). According to Cochran's (1977) formula, a quantitative sample of at least 384 Marines is needed to allow the researcher to generalize the study's findings to the entire Marine Corps population. Consequently, the researcher hoped to obtain a sample greater than 384 Marines to generalize the study's findings to the entire Marine Corps population. Additionally, the researcher hoped to reach the point of qualitative data saturation after conducting 12 individual interviews and observing four training sessions. As a result, the researcher planned to obtain sufficient data to perform thorough analyses and subsequently reach conclusions.

Chapter IV reports the findings from these analyses. Biographical information from the study's surveys is used to describe the participants. The data analyses are then presented in the order of the research questions.

CHAPTER IV

FINDINGS

This study was conducted from September through November 2009 at the Marine Corps Bases, Quantico, Virginia; Camp Lejune, North Carolina; and Camp Pendleton, California. The primary purpose of this study was to evaluate the effectiveness of the United States Marine Corps combat operational stress preventive training program. This evaluation entailed both qualitative and quantitative inquiries of the combat operational stress preventive training to determine whether the program meets the training effectiveness criteria of the Marine Corps. Specifically, a quantitative investigation took place to explore the individual experiences of Marines who were subjected to combat operational stress. The results of this statistical quantitative analysis provided insights to the effectiveness of the combat operational stress preventive training.

Additionally, a qualitative case study analysis of preventive training sessions was conducted by investigating individual experiences that gave meaning to decisions why the combat operational stress preventive training was effective or ineffective. A qualitative approach allowed the individual experiences to speak for themselves providing intrinsic perceptions to the real effectiveness of the combat operational stress preventive training (Creswell, 2007). Together, the qualitative and quantitative inquiries added immensely to the validity of this study, thus directly benefitting our Nation's combat troops.

Following this introduction is an overview of participants, including their demographic characteristics. Next, the findings section appears ordered by the two

research methodologies used in this study. Each analysis section reviews procedures used and analyses outcomes.

Overview

The participants consisted of active duty and reserve Marines on active duty. For the purposes of quantitative analysis, the researcher obtained a random sample of 480 Marines. The current Marine Corps active duty population consists of about 202,000 Marines (Global Security, 2009). Based on Cochran's (1977) formula, a random sample consisting of at least 384 Marines was required for making generalizations about the entire Marine Corps population. This study's quantitative random sample of 480 Marines exceeded the minimum threshold of 384 Marines, thus allowing the researcher to make generalizations about the entire Marine Corps population. The study's respondents completed an online based survey. This survey contained a number of Likert scale type questions built around Kirkpatrick's (2006) four-level training effectiveness constructs: reaction, learning, changed behavior, and training effectiveness/long-term results (see Appendices A and D).

Concerning the qualitative inquiry, the researcher reached the point of qualitative data saturation after interviewing 12 Marines selected by means of a purposefully stratified sample. This qualitative sample consisted of four junior enlisted Marines, four senior enlisted Marines, and four commissioned officers. Additionally, the researcher reached the point of qualitative data saturation after observing four combat operational stress preventive training sessions. Specifically, the four observed training sessions consisted of 924 observed Marines. Out of the observed 924 Marines, 693 were enlisted

Marines and 231 were officers. This observed sample of 924 Marines was also sufficient to reach the point of qualitative sample data saturation (Creswell, 2007).

Demographic Characteristics

The demographic section of the quantitative survey contained a forced-choice format to gather information about the respondents' Military Occupational Specialty (MOS), age, years served on active duty, gender, rank, current component status (active duty, active duty reserve, selected reserve [mobilized], selected reserve [drilling], and individual ready reserve [IRR]). Respondents representing combat arms, combat support, and aviation military occupational specialties comprised over half of the sample (51.30 percent). Almost one-third of the sample (32.70 percent) reported ages between 20 and 25 years old. Likewise, over one-third of the respondents (33.89 percent) had been on active duty between one and five years. A great majority of the respondents were males (90.60 percent), which approximately corresponds to gender composition of the Marine Corps active duty population (USMC, 2009). Nearly half of the respondents were enlisted Marines with ranks of private, private first class, lance corporal, corporal, and sergeant (43.80 percent). Finally, most of the participants were active duty Marines (92.90 percent). Demographic characteristics of the participants are shown in Table 1.

Table 1

Demographic Characteristics of the Participants (n = 480)

Demographic Characteristics	Frequency	Percentage
	Military Occupational Specialty	
Combat Arms	90	18.80%
Combat Support	84	17.50%

Table 1 (continued)

Demographic Characteristics of the Participants (n = 480)

Demographic Characteristics	Frequency	Percentage
	Military Occupational Specialty	
Aviation	72	15.00%
Support Ground Aviation	29	6.00%
Administration	61	12.70%
Logistics	73	15.20%
Communications	55	11.50%
Intelligence	16	3.30%
	Age	
18-19	11	2.30%
20-25	157	32.70%
26-30	115	24.00%
31-35	87	18.10%
36-40	67	14.00%
41-45	31	6.50%
46-50	11	2.30%
51 or more	1	0.20%
	Years in the Military	
1-5	165	34.40%
6-10	138	28.80%
11-15	83	17.30%

Table 1 (continued)

Demographic Characteristics of the Participants (n = 480)

Demographic Characteristics	Frequency	Percentage
	Years in the Military	
16-20	60	12.50%
21-25	25	5.20%
25 and more	9	1.90%
	Gender	
Males	435	90.60%
Females	45	9.40%
	Rank	
Enlisted (E-1 through E-3)	39	8.10%
Non-commissioned Officer	210	43.80%
Staff Non-commissioned Officer	77	16.00%
Warrant Officer	2	0.40%
Commissioned Officer	152	31.70%
	Component Status	
Active Duty (AD)	446	92.90%
Active Duty Reserve (AR)	10	2.10%
Selected Reserve (Mobilized)	18	3.80%
Selected Reserve (Drilling)	2	0.40%
Individual Ready Reserve (IRR)	4	0.80%

Reliability Analyses

The researcher evaluated each logistic regression model for reliability. First the researcher evaluated each model's χ^2 goodness-of-fit test verifying significant χ^2 of the model ($p < .05$). Significant χ^2 allowed the researcher to conclude the set of independent variables improves prediction of outcomes (Meyers, Gamst, & Guarino, 2006). Next, the researcher confirmed the insignificant Hosmer and Lemeshow goodness-of-fit ($p > .05$) tests in order to accept the null hypothesis. The null hypothesis constitutes differences between the observed and predicted values of the dependent variable (Meyers, Gamst, & Guarino, 2006). Finally, the researcher verified both the Cox and Snell and the Nagelkerke tests in order to confirm pseudo R^2 of the models. Pseudo R^2 provide the percentage of variance in the dependent variable explained by the independent variables (Meyers, Gamst, & Guarino, 2006). Only after verifying the validity of the models through the above indicated tests, the researcher determined the models are suitable for making predictions and inferences related to this study.

Research Questions

Research Question 1 focused on whether the respondents' self-reported experiences of effects from combat operational stress affect their evaluation of the effectiveness of the Marine Corps combat operational stress preventive training. Research Question 2 focused on whether the Marine Corps combat operational stress preventive training program for *Marine officers* meets the training effectiveness criteria of the Marine Corps. Research Question 3 focused on whether the Marine Corps combat operational stress preventive training program for *enlisted Marines* meets the training effectiveness criteria of the Marine Corps. The researcher answered these questions using

the quantitative and qualitative mixed methodology. For the quantitative methodology, the researcher used a series of binary logistic regression models to assess the associations between the biographic characteristics, Kirkpatrick's (2006) training evaluation constructs, self-reported experiences of effects from combat operational stress which included suffering from combat operational stress, the effectiveness of the combat operational stress preventive training, combat operational stress coping skills, and using the learned skills in the respondents' daily lives. For the qualitative methodology, the researcher performed 12 interviews with four junior enlisted Marines, four senior enlisted Marines, and four commissioned Marine officers. Additionally, the researcher observed four combat operational stress control training sessions consisting of 924 observed Marines. These observation sessions provided qualitative insights to the training quality, interest level of the learners, and the effectiveness of the observed trainers.

Quantitative Methodology

The training evaluation section of the quantitative survey contained a forced-choice format to gather information about the respondents' opinion regarding evaluation and the effectiveness of the combat operational stress preventive training. Table 2 depicts results of the descriptive statistics of the training evaluation section of the quantitative survey.

Concerning the inferential statistics, the researcher conducted evaluations of a number of simultaneous binary logistic regressions models designed and run to answer the subject matter research questions. Dependent variables consisted of (1) suffering from effects of combat operational stress; (2) the effectiveness of the combat operational stress preventive training; (3) overall feelings toward the combat operational stress preventive

training; (4) changed behavior as a result of using the learned combat operational stress preventive skills in Marines' daily lives; (5) learning the combat operational stress preventive skills and techniques; and (6) reacting to the presented combat operational stress preventive training. The following are the findings ordered by the dependent variables.

Table 2

Evaluation of Training Effectiveness Descriptive Statistics (n = 480)

Training Evaluation Characteristics	Frequency	Percentage
Have you ever attended combat operational stress preventive formal training classes?		
No	196	40.80%
Yes	284	59.20%
What were your impressions of the received training?		
Poor	11	2.30%
Barely Acceptable	20	4.20%
Neutral	354	73.80%
Good	84	17.50%
Outstanding	11	2.30%
Did you learn specific principles, facts, and techniques during the training?		
No	171	35.60%
Yes	309	64.40%
Did you actually use any of the learned skills and techniques?		
No	321	66.90%
Yes	159	33.10%

Table 2 (continued)

Evaluation of Training Effectiveness Descriptive Statistics (n = 480)

Training Evaluation Characteristics	Frequency	Percentage
How would you rate the effectiveness of the training?		
Poor	16	3.30%
Barely Acceptable	29	6.00%
Neutral	339	70.60%
Good	87	18.10%
Outstanding	9	1.90%
Have you ever suffered from effects of combat operational stress?		
No	311	64.80%
Yes	169	35.20%
Was the received combat operational stress preventive training effective in helping you cope with effects of combat operational stress?		
No	47	9.80%
Barely	28	5.80%
Neutral	334	69.6%
Some	59	12.30%
Yes	12	2.5%
How would you rate the effectiveness of the currently used combat operational stress training materials?		
Poor	17	3.50%
Barely Acceptable	33	6.90%

Table 2 (continued)

Evaluation of Training Effectiveness Descriptive Statistics (n = 480)

Training Evaluation Characteristics	Frequency	Percentage
Neutral	346	72.10%
Good	77	16.00%
Outstanding	7	1.50%
How would you rate the effectiveness of the trainers who actually presented the combat operational stress preventive training material?		
Poor	14	2.90%
Barely Acceptable	33	6.90%
Neutral	316	65.80%
Good	91	19.00%
Outstanding	26	5.40%
What are your overall feelings about the combat operational stress preventive training program?		
Poor	22	4.60%
Barely Acceptable	31	6.50%
Neutral	310	64.60%
Good	100	20.80%
Outstanding	17	3.50%

Suffering as the Dependent Variable

The first significant logistic regression model in this series considered associations between the respondents' changed behavior (coded as Change_Behavior) and rank (predictor variables) and suffering from effects of combat operational stress

(coded as Suffering). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 10.383, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 64.8 percent. Table 3 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported using the preventive skills in Marines' daily lives was a statistically significant predictor of suffering from effects of combat operational stress.

Table 3

Logistic Regression Results for Predicting Suffering from Combat Stress with Changed Behavior and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Change_Behavior	.618	9.457	.002	1.855	1.251	2.750
	Rank	-.227	1.224	.269	.797	.533	1.192
	Constant	-.490	5.025	.025	.613		

The odds ratio for rank was .797. This implied the enlisted Marines were .797 times more likely than the officers to report suffering from combat operational stress, controlling for the respondents' changed behavior (coded as Change_Behavior). The odds ratio for the respondents' changed behavior was 1.855 ($p < .01$). This implied when Marines used the learned combat operational stress preventive skills in their daily lives,

they were 1.855 times more likely to report suffering from effects of combat operational stress, controlling for rank.

The next significant logistic regression model considered associations between the respondents' combat operational stress preventive coping skills (coded as Coping) and rank (predictor variables) and suffering from effects of combat operational stress (coded as Suffering). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 14.079, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 66.3 percent. Table 4 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported coping was a statistically significant predictor of suffering from effects combat operational stress.

Table 4

Logistic Regression Results for Predicting Suffering from Combat Stress with Coping and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Coping	.948	13.098	.000	2.580	1.544	4.310
	Rank	-.144	.483	.487	.866	.578	1.299
	Constant	-.665	14.134	.000	.514		

The odds ratio for rank was .866. This implied the enlisted Marines were .866 times more likely than the officers to report suffering from effects of combat operational

stress, controlling for the coping skills (coded as Coping). The odds ratio for coping was 2.580 ($p < .01$). This implied when Marines reported possessing combat operational stress preventive coping skills, they were 2.580 times more likely to report suffering from effects of combat operational stress, controlling for rank.

The next significant logistic regression model considered associations between participating in the combat operational stress preventive training (coded as COSC_Training) and rank (predictor variables) and suffering from effects of combat operational stress. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 $(2, n = 480) = 12.748, p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 64.8 percent. Table 5 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported participating in the training was a statistically significant predictor of suffering from effects of combat operational stress.

Table 5

Logistic Regression Results for Predicting Suffering from Combat Stress with Participating in the Training and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	COSC_Training	.686	11.407	.001	1.986	1.334	2.957
	Rank	-.263	1.622	.203	.769	.513	1.152
	Constant	-.856	17.499	.000	.425		

The odds ratio for rank was .769. This implied the enlisted Marines were .769 times more likely than the officers to report suffering from effects of combat operational stress, controlling for participating in the training (coded as COSC_Training). The odds ratio for participating in the training was 1.986 ($p < .01$). This implied when Marines reported participating in the combat operational stress preventive training, they were 1.986 times more likely to suffer from effects of combat operational stress, controlling for rank.

The next significant logistic regression model considered associations between the effectiveness of the training (coded as Training_Effect) and rank (predictor variables) and suffering from effects of combat operational stress. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 2.365, $p < .05$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 64.8 percent. Table 6 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the effectiveness of the training was a statistically significant predictor of suffering from effects of combat operational stress.

The odds ratio for rank was .829. This implied the enlisted Marines were .829 times more likely than the officers to report suffering from effects of combat operational stress, controlling for the effectiveness of the training. The odds ratio for the effectiveness of the training was 1.324. This implied when Marines reported the training as being effective, they were 1.324 times more likely to suffer from effects of combat

operational stress, controlling for rank. Figure 1 depicts significant odds ratios for each of the independent variables described in Tables 3 through 6.

Table 6

Logistic Regression Results for Predicting Suffering from Combat Stress with the Effectiveness of Training and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Training_Effect	.281	1.430	.232	1.324	.836	2.096
	Rank	-.188	.850	.357	.829	.556	1.235
	Constant	-.542	9.565	.002	.582		

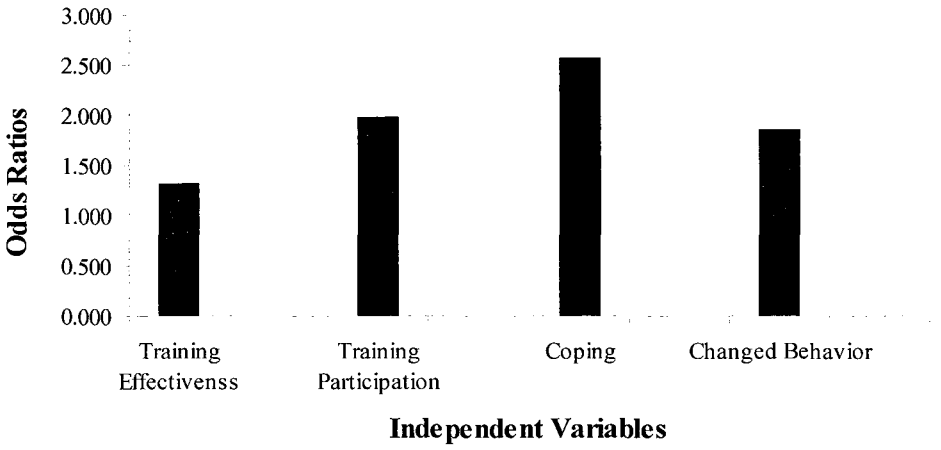

Figure 1. Significant Odds Ratios with Suffering as the Dependent Variable.

Effectiveness of Training as the Dependent Variable

The first significant logistic regression model in this series considered associations between the respondents' changed behavior (coded as Change_Behavior) and rank (predictor variables) and the reported effectiveness of the training. Results of the logistic regression analysis indicated the two-predictor model provided a statistically

significant improvement over the constant-only model, χ^2 (2, n = 480) = 108.009, p < .01. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 81.0 percent. Table 7 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the respondents' changed behavior was a statistically significant predictor of the effectiveness of training activities.

Table 7

Logistic Regression Results for Predicting the Effectiveness of the Combat Stress Preventive Training with Changed Behavior and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Change_Behavior	2.583	85.656	.000	13.238	7.660	22.876
	Rank	-.454	2.672	.102	.635	.368	1.095
	Constant	-2.377	73.749	.000	.093		

The odds ratio for rank was .635. This implied the enlisted Marines were .635 times more likely than the officers to report the effectiveness of the combat operational stress preventive training, controlling for the respondents' changed behavior (coded as Change_Behavior). The odds ratio for the respondents' changed behavior was 13.238 (p < .01). This implied when Marines reported using the learned combat operational stress preventive skills in their daily lives, they were 13.238 times more likely to indicate the training was effective, controlling for rank.

The next logistic regression model considered associations between the respondents' coping skills acquired by participating in the combat preventive stress training (coded as Coping) and rank (predictor variables) and the reported effectiveness of the training. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 $(2, n = 480) = 112.484, p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 86.9 percent. Table 8 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported coping was a statistically significant predictor of effective combat operational stress preventive training services.

Table 8

Logistic Regression Results for Predicting the Effectiveness of the Combat Stress Preventive Training with Coping Skills and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Coping	3.023	95.898	.000	20.557	11.225	37.647
	Rank	-.035	.014	.904	.966	.549	1.699
	Constant	-2.067	66.387	.000	.127		

The odds ratio for rank was .966. This implied the enlisted Marines were .966 times more likely than the officers to report the effectiveness of the combat operational stress preventive training, controlling for coping skills. The odds ratio for coping was 20.557 ($p < .01$). This implied possessing the combat operational stress preventive coping

skills increased the odds by 20.557 times of indicating the training was effective, controlling for rank.

The next logistic regression model considered associations between the respondents' participating in the combat operational stress preventive training (coded as COSC_Training) and rank (predictor variables) and the reported effectiveness of the training. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 80.944, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 80.0 percent. Table 9 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported participating in the combat operational stress training was a statistically significant predictor of effective training services.

Table 9

Logistic Regression Results for Predicting the Effectiveness of Training with Participating in the Combat Stress Training and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	COSC_Training	2.947	38.855	.000	19.058	7.544	48.147
	Rank	-.483	3.399	.065	.617	.369	1.031
	Constant	-3.364	50.454	.000	.035		

The odds ratio for rank was .617. This implied the enlisted Marines were .617 times more likely than the officers to report the effectiveness of the combat operational

stress preventive training, controlling for participating in the combat operational stress preventive training. The odds ratio for participating in the combat operational stress preventive training was 19.058 ($p < .01$). This implied participating in the combat operational stress preventive training increased 19.058 times the odds of indicating the training was effective, controlling for rank.

The next logistic regression model considered associations between the respondents' learning the combat operational stress preventive skills and techniques (coded as Learning) and rank (predictor variables) and the reported effectiveness of the training. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 72.794, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 80.0 percent. Table 10 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported learning the combat operational stress related knowledge was a statistically significant predictor of effective training services.

The odds ratio for rank was .816. This implied the enlisted Marines were .816 times more likely than the officers to report the effectiveness of the combat operational stress preventive training, controlling for learning. The odds ratio for learning was 23.999 ($p < .01$). This implied Marines were 23.999 times more likely to consider the combat operational stress preventive training as being effective when they indicated actually learning the subject matter skills and techniques, controlling for rank.

Table 10

Logistic Regression Results for Predicting the Effectiveness of the Combat Stress Preventive Training with Learning and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Learning	3.178	28.469	.000	23.999	7.468	77.123
	Rank	-.203	.639	.424	.816	.495	1.344
	Constant	-3.887	41.111	.000	.021		

The next logistic regression model considered associations between the efficacy of the training materials (coded as Material_Effect) and rank (predictor variables) and the effectiveness of training. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 184.007, p < .01. Prediction success for the cases used in the development of the model was high, with an overall prediction success rate of 90.0 percent. Table 11 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the efficacy of training materials was a statistically significant predictor of effective training services.

The odds ratio for rank was .546. This implied the enlisted Marines were .546 times more likely than the officers to report the effectiveness of the combat operational stress preventive training, controlling for the efficacy of training materials (coded as Material_Effect). The odds ratio for the efficacy of the training materials was 48.182 (p < .01). This implied Marines were 48.182 times more likely to consider the training as

being effective when they indicated the training materials were also effective, controlling for rank.

Table 11

Logistic Regression Results for Predicting the Effectiveness of the Combat Stress Preventive Training with the Efficacy of Training Materials and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Material_Effect	3.875	132.927	.000	48.182	24.935	93.105
	Rank	-.605	3.386	.066	.546	.287	1.040
	Constant	-2.129	65.115	.000	.119		

The next logistic regression model considered associations between the respondents' overall feelings toward the combat operational stress preventive training (coded as Overall_Feel) and rank (predictor variables) and the reported effectiveness of the training. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, N = 480) = 174.738, $p < .01$. Prediction success for the cases used in the development of the model was high, with an overall prediction success rate of 87.3 percent. Table 12 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the respondents' overall feelings toward the preventive combat operational stress training was a statistically significant predictor of effective training services.

Table 12

Logistic Regression Results for Predicting the Effectiveness of the Combat Stress Preventive Training with Overall Feelings and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Overall_Feel	3.461	131.883	.000	31.859	17.647	57.516
	Rank	-.270	.742	.389	.546	.413	1.411
	Constant	-2.264	76.970	.000	.070		

The odds ratio for rank was .546. This implied the enlisted Marines were .546 times more likely than the officers to report the effectiveness of the training, controlling for the respondents' feelings toward the combat operational stress preventive training (coded as Overall_Feel). The odds ratio for the respondents' feelings toward the combat operational stress preventive training was 31.859 ($p < .01$). This implied Marines were 31.859 times more likely to consider the training as being effective when they felt positively about the combat operational stress preventive training, controlling for rank.

The next logistic regression model considered associations between the respondents' reaction toward the preventive combat operational stress training (coded as Reaction) and rank (predictor variables) and the reported effectiveness of the training. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 211.472, $p < .01$. Prediction success for the cases used in the development of the model was high, with an overall prediction success rate of 91.0 percent. Table 13 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)],

and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the respondents' reaction toward the presented combat operational stress preventive training was a statistically significant predictor of effective training services.

Table 13

Logistic Regression Results for Predicting the Effectiveness of the Combat Stress Preventive Training with Reaction and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Reaction	4.058	150.483	.000	57.873	30.261	110.680
	Rank	-.605	3.386	.066	.546	.453	1.761
	Constant	-2.276	72.892	.000	.065		

The odds ratio for rank was .546. This implied the enlisted Marines were .546 times more likely than the officers to report the effectiveness of the training, controlling for the respondents' reaction toward the training (coded as Reaction). The odds ratio for reaction was 57.873 ($p < .01$). This implied Marines were 57.873 times more likely to consider the training as being effective when they reacted positively toward the received training, controlling for rank.

The next logistic regression model considered associations between the respondents' reported effectiveness of the trainers (coded as Trainer_Effect) and rank (predictor variables) and the efficacy of the combat operational stress preventive training. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 130.208, $p < .01$. Prediction success for the cases used in the development of the model

was relatively high, with an overall prediction success rate of 84.4 percent. Table 14 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the efficacy of the trainers was a statistically significant predictor of effective combat operational stress preventive training services.

Table 14

Logistic Regression Results for Predicting the Effectiveness of the Combat Stress Preventive Training with the Efficacy of the Trainers and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Trainer_Effect	2.881	110.006	.000	17.831	10.408	30.548
	Rank	-.203	.494	.482	.817	.464	1.437
	Constant	-2.386	75.621	.000	.092		

The odds ratio for rank was .817. This implied the enlisted Marines were .817 times more likely than the officers to report the effectiveness of the combat operational stress preventive training, controlling for the efficacy of the trainers (coded as Trainer_Effect). The odds ratio for the efficacy of the trainers was 17.831. This implied Marines were 17.831 times more likely to consider the combat operational stress preventive training as being effective when they indicated the trainers who conducted the training were proficient, controlling for rank. Figure 2 depicts significant odds ratios for each of the independent variables described in Tables 7 through 14.

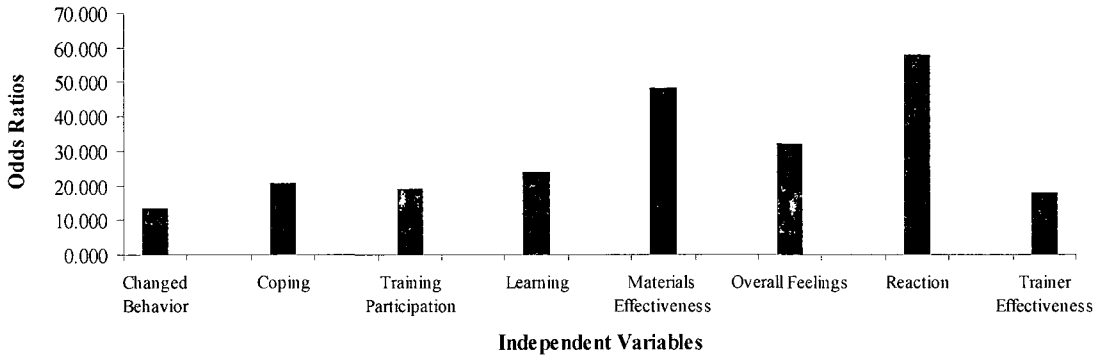

Figure 2. Significant Odds Ratios with Training Effectiveness as the Dependent Variable.

Coping as the Dependent Variable

The first logistic regression model in this series considered associations between the respondents' changed behavior as a result of using combat operational stress preventive skills in their daily lives (coded as Changed_Behavior) and rank (predictor variables) and the reported possession of coping skills. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 84.859, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 85.2 percent. Table 15 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported changed behavior and rank were statistically significant predictors for possession of the preventive combat operational stress coping skills.

The odds ratio for rank was .506 ($p < .05$). This implied the enlisted Marines were .506 times more likely than the officers to acquire the combat operational stress preventive coping skills by participating in the training, controlling for changed behavior

(coded as Change_Behavior). The odds ratio for changed behavior was 13.052 ($p < .01$). This implied Marines were 13.052 times more likely to indicate possessing the combat operational stress preventive coping skills when they pragmatically used the learned skills in their daily lives, controlling for rank.

Table 15

Logistic Regression Results for Predicting Possession of the Preventive Combat Stress Coping Skills with Changed Behavior and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Change_Behavior	2.569	62.767	.000	13.052	6.913	24.643
	Rank	-.681	.299	.023	.506	.282	.910
	Constant	-2.683	72.638	.000	.068		

The next logistic regression model considered associations between participating in the combat operational stress preventive training (coded as COSC_Training) and rank (predictor variables) and the reported possession of the combat operational stress preventive coping skills. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 58.577, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 85.2 percent. Table 16 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported participating in the combat

operational stress preventive training and rank were statistically significant predictors of possessing effective coping skills.

Table 16

Logistic Regression Results for Predicting Possession of the Preventive Combat Stress Coping Skills with Participation in the Training and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	COSC_Training	2.778	27.767	.000	16.086	5.724	45.207
	Rank	-.677	5.748	.017	.508	.292	.884
	Constant	-3.496	44.652	.000	.030		

The odds ratio for rank was .508. This implied the enlisted Marines were .508 times more likely than the officers to acquire the combat operational stress preventive coping skills, controlling for participation in the training (coded as COSC_Training). The odds ratio for participation in the training was 16.086. This implied Marines were 16.086 times more likely to possess the combat operational stress preventive coping skills when they participated in the training, controlling for rank.

The next logistic regression model considered associations between learning the combat operational stress preventive training material (coded as Learning) and rank (predictor variables) and the reported possession of coping skills. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 43.579, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 85.2 percent. Table 17 presents the regression

coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported learning the combat operational stress preventive skills and techniques was a statistically significant predictor of having effective coping skills.

Table 17

Logistic Regression Results for Predicting Possession of the Preventive Combat Stress Coping Skills with Learning and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Learning	2.440	21.616	.000	11.474	4.102	32.095
	Rank	-.424	2.382	.123	.655	.382	1.121
	Constant	-3.453	41.930	.000	.032		

The odds ratio for rank was .655. This implied the enlisted Marines were .655 times more likely than the officers to acquire the combat operational stress preventive coping skills, controlling for learning (coded as Learning). The odds ratio for learning was 11.474. This implied Marines were 11.474 times more likely to consider possessing the combat operational stress preventive coping skills when they reported learning the training material, controlling for rank.

The next logistic regression model considered associations between the respondents' overall feelings toward the combat operational stress preventive training (coded as Overall_Feel) and rank (predictor variables) and the reported possession of coping skills. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n =

480) = 107.425, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 84.6 percent. Table 18 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the respondents' overall feelings toward the combat operational stress preventive training was a statistically significant predictor of possessing effective coping skills.

Table 18

Logistic Regression Results for Predicting Possession of the Preventive Combat Stress Coping Skills with Overall Feelings and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Overall_Feel	2.158	71.951	.000	8.650	5.254	14.241
	Rank	-.398	1.626	.672	.655	.364	1.238
	Constant	-8.908	88.792	.000	.000		

The odds ratio for rank was .655. This implied the enlisted Marines were .655 times more likely than the officers to acquire the combat operational stress preventive coping skills, controlling for the overall feelings toward the training (coded as Overall_Feel). The odds ratio for the overall feelings toward the training was 8.650 ($p < .01$). This implied Marines were 8.650 times more likely to possess the combat operational stress preventive coping skills when they indicated having positive feelings toward the training, controlling for rank.

The next logistic regression model considered associations between the respondents' reaction toward the presented combat operational stress preventive training (coded as Reaction) and rank (predictor variables) and the reported possession of coping skills. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 87.400, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 86.3 percent. Table 19 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported positive reaction was a statistically significant predictor of possessing effective coping skills.

Table 19

Logistic Regression Results for Predicting Possession of the Preventive Combat Stress Coping Skills with Reaction and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Reaction	2.595	78.832	.000	13.402	7.557	23.769
	Rank	-.401	1.768	.184	.670	.371	1.209
	Constant	-2.406	75.171	.000	.090		

The odds ratio for rank was .670. This implied the enlisted Marines were .670 times more likely than the officers to acquire the combat operational stress preventive coping skills, controlling for reaction toward the training (coded as Reaction). The odds ratio for reaction was 13.402 ($p < .01$). This implied Marines were 13.402 times more

likely to possess the combat operational stress preventive coping skills when they had a positive reaction toward the training, controlling for rank.

The next logistic regression model considered associations between the respondents' suffering as a result of the combat operational stress (coded as Suffering) and rank (predictor variables) and the reported possession of coping skills. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 15.968, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 85.2 percent. Table 20 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported suffering was a statistically significant predictor of possessing effective coping skills.

Table 20

Logistic Regression Results for Predicting Possession of the Preventive Combat Stress Coping Skills with Suffering and Rank as Independent Variables

						95.0 % CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Suffering	.948	13.098	.000	2.580	1.544	4.310
	Rank	-.417	2.417	.120	.659	.389	1.115
	Constant	-1.891	56.917	.000	.151		

The odds ratio for rank was .659. This implied the enlisted Marines were .659 times more likely than the officers to acquire the combat operational stress preventive

coping skills, controlling for suffering as a result of combat operational stress (coded as Suffering). The odds ratio for suffering was 2.580 ($p < .01$). This implied Marines were 2.580 times more likely to possess the combat operational stress preventive coping skills when they reported having suffered from effects of combat operational stress, controlling for rank.

The next logistic regression model considered associations between the effectiveness of the trainers (coded as Trainer_Effect) and rank (predictor variables) and the reported possession of the combat operational stress preventive coping skills. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 94.705, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 86.3 percent. Table 21 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the effectiveness of the trainers was a statistically significant predictor of possessing the combat operational stress preventive coping skills.

The odds ratio for rank was .635. This implied the enlisted Marines were .635 times more likely than the officers to acquire the combat operational stress preventive coping skills, controlling for the effectiveness of the trainers (coded as Trainer_Effect). The odds ratio for the effectiveness of the trainers was 14.495 ($p < .01$). This implied Marines were 14.495 times more likely to possess the combat operational stress preventive coping skills when they indicated having effective trainers, controlling for rank.

Table 21

Logistic Regression Results for Predicting Possession of the Preventive Combat Stress Coping Skills with the Effectiveness of the Trainers and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Trainer_Effect	2.674	78.660	.000	14.495	8.028	26.171
	Rank	-.454	2.248	.134	.635	.351	1.150
	Constant	-2.604	76.748	.000	.074		

The next logistic regression model considered associations between the effectiveness of the combat operational stress preventive training (coded as Training_Effect) and rank (predictor variables) and the reported possession of coping skills. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 114.287, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 86.7 percent. Table 22 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the effectiveness of the combat operational stress preventive training was a statistically significant predictor of possessing effective coping skills.

The odds ratio for rank was .651. This implied the enlisted Marines were .651 times more likely than the officers to acquire the combat operational stress preventive coping skills, controlling for the effectiveness of the training (coded as Training_Effect).

The odds ratio for the effectiveness of the training was 20.557 ($p < .01$). This implied Marines were 20.557 times more likely to possess the combat operational stress preventive coping skills when they considered the training as being effective, controlling for rank.

Table 22

Logistic Regression Results for Predicting Possession of the Preventive Combat Stress Coping Skills with the Effectiveness of Training and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Training_Effect	3.023	95.898	.000	20.557	11.225	37.647
	Rank	-.429	1.833	.176	.651	.350	1.212
	Constant	-2.624	76.947	.000	.073		

The next logistic regression model considered associations between the combat operational stress training materials (coded as Training_Material) and rank (predictor variables) and the reported possession of the combat operational stress preventive coping skills. Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 167.489, $p < .01$. Prediction success for the cases used in the development of the model was high, with an overall prediction success rate of 90.6 percent. Table 23 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the combat operational stress preventive training materials and rank were statistically significant predictors of possessing effective coping skills.

Table 23

Logistic Regression Results for Predicting Possession of the Preventive Combat Stress Coping Skills with the Efficacy of the Training Materials and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Training_Material	3.986	116.299	.000	53.857	26.098	111.145
	Rank	-1.017	7.166	.008	.362	.171	.763
	Constant	-2.593	70.547	.000	.075		

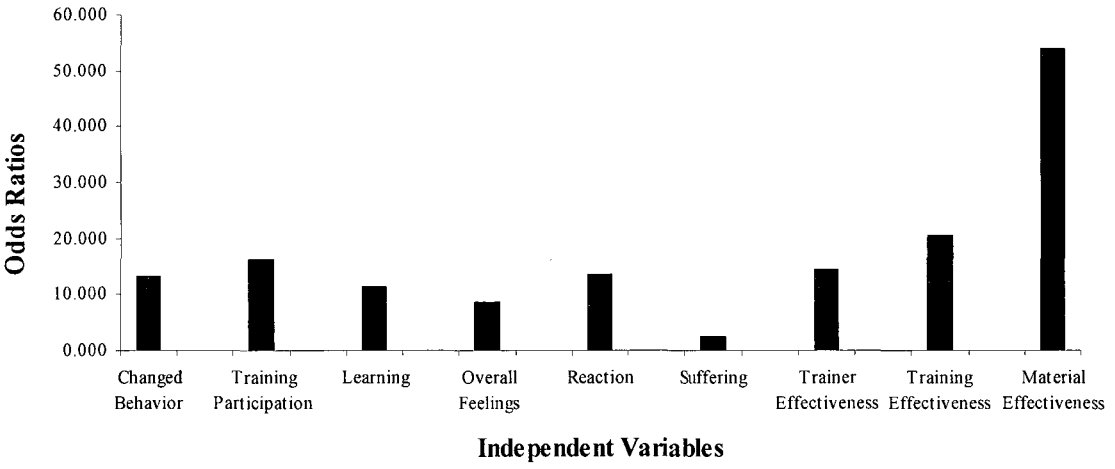

Figure 3. Significant Odds Ratios with Coping Skills as the Dependent Variable.

The odds ratio for rank was .362. This implied the enlisted Marines were .362 times more likely than the officers to acquire combat operational stress coping skills, controlling for the efficacy of the training materials (coded as Training_Material). The odds ratio for the efficacy of the training materials was 53.857 ($p < .01$). This implied Marines were 53.857 times more likely to possess the combat operational stress

preventive coping skills when they considered the preventive training materials as being effective, controlling for rank. Figure 3 depicts significant odds ratios for each of the independent variables described in Tables 15 through 23.

Overall Feelings as the Dependent Variable

The first logistic regression model in this series considered associations between the respondents' changed behavior (coded as Change_Behavior) and rank (predictor variables) and the reported feelings toward the combat operational stress preventive training (coded as Overall_Feel). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 76.283, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 76.7 percent. Table 24 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the respondents' changed behavior was a statistically significant predictor of feeling positive about the training.

Table 24

Logistic Regression Results for Predicting Feeling Positive about the Combat Stress Preventive Training with Changed Behavior and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Change_Behavior	3.986	69.653	.000	7.064	26.098	111.145
	Rank	-.245	.976	.323	.783	.481	1.273
	Constant	-1.820	62.237	.000	.162		

The odds ratio for rank was .783. This implied the enlisted Marines were .783 times more likely than the officers to feel positive about the combat operational stress preventive training, controlling for changed behavior as a result of using the learned skills in Marines' daily lives (coded as Change_Behavior). The odds ratio for changed behavior was 7.064 ($p < .01$). This implied Marines were 7.064 times more likely to feel positive about the combat operational stress preventive training when they indicated using the learned preventive skills in their daily lives, controlling for rank.

The next logistic regression model considered associations between the respondents' possession of the combat operational stress preventive coping skills (coded as Coping) and rank (predictor variables) and the reported feelings toward the preventive training (coded as Overall_Feel). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 141.906, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 85.5 percent. Table 25 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported possessing the coping skills was a statistically significant predictor of feeling positive about the training.

The odds ratio for rank was 1.168. This implied the enlisted Marines were 1.168 times more likely than the officers to feel positive about the combat operational stress preventive training, controlling for possessing the combat operational stress preventive coping skills (coded as Coping). The odds ratio for coping was 34.356 ($p < .01$). This implied Marines were 34.356 times more likely to feel positive about the combat

operational stress preventive training when they reported possessing the coping skills, controlling for rank.

Table 25

Logistic Regression Results for Predicting Feeling Positive about the Combat Stress Preventive Training with Coping and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Coping	3.537	96.258	.000	34.356	16.950	69.640
	Rank	.155	.286	.588	1.168	.666	2.046
	Constant	-1.930	59.519	.000	.145		

The next logistic regression model considered associations between the respondents' attendance of the combat operational stress preventive training (coded as COSC_Training) and rank (predictor variables) and the reported feelings toward the training (coded as Overall_Feel). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 57.869, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 75.6 percent. Table 26 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported participating in the combat operational stress preventive training was a statistically significant predictor of feeling positive about the training.

Table 26

Logistic Regression Results for Predicting Feeling Positive about the Combat Stress Preventive Training with Participating in the Training and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	COSC_Training	1.941	42.559	.000	6.967	3.889	12.484
	Rank	-.298	1.520	.218	.743	.463	1.192
	Constant	-2.311	58.427	.000	.099		

The odds ratio for rank was .743. This implied the enlisted Marines were .743 times more likely than the officers to feel positive about the combat operational stress preventive training, controlling for participating in the training (coded as COSC_Training). The odds ratio for participating in the training was 6.967 ($p < .01$). This implied Marines were 6.967 times more likely to feel positive about the combat operational stress preventive training when they reported participating in the training, controlling for rank.

The next logistic regression model considered associations between the respondents' learning the combat operational stress preventive training material (coded as Learning) and rank (predictor variables) and the reported feelings toward the training (coded as Overall_Feel). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 54.224, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 75.6

percent. Table 27 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported learning the combat operational stress skills and techniques was a statistically significant predictor of feeling positive about the training.

Table 27

Logistic Regression Results for Predicting Feeling Positive about the Combat Stress Preventive Training with Learning and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Learning	2.025	36.758	.000	7.577	3.937	14.582
	Rank	-.078	.109	.741	.925	.581	1.471
	Constant	-2.623	55.617	.000	.073		

The odds ratio for rank was .925. This implied the enlisted Marines were .925 times more likely than the officers to feel positive about the combat operational stress preventive training, controlling for learning the training material (coded as Learning). The odds ratio for learning was 7.577 ($p < .01$). This implied Marines were 7.577 times more likely to feel positive about the combat operational stress preventive training when they reported learning the subject matter skills and techniques, controlling for rank.

The next logistic regression model considered associations between the respondents' reaction toward the combat operational stress preventive training (coded as Reaction) and rank (predictor variables) and the reported feelings about the training (coded as Overall_Feel). Results of the logistic regression analysis indicated the two-

predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 156.701, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 86.3 percent. Table 28 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported positively reacting to the combat operational stress preventive training was a statistically significant predictor of feeling optimistic about the training.

Table 28

Logistic Regression Results for Predicting Feeling Positive about the Combat Stress Preventive Training with Reaction and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Reaction	3.250	123.907	.000	25.784	14.549	45.693
	Rank	.040	.020	.888	1.041	.594	1.826
	Constant	-2.076	65.666	.000	.125		

The odds ratio for rank was 1.041. This implied the enlisted Marines were 1.041 times more likely than the officers to feel positive about the preventive combat operational stress training, controlling for reaction toward the presented training (coded as Reaction). The odds ratio for reaction was 25.784 ($p < .01$). This implied Marines were 25.784 times more likely to feel optimistic about the combat operational stress preventive training when they positively reacted toward the training, controlling for rank.

The next logistic regression model considered associations between the reported effectiveness of the trainers (coded as Trainer_Effect) and rank (predictor variables) and the reported feelings toward the combat operational stress preventive training (coded as Overall_Feel). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 179.337, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 86.7 percent. Table 29 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported having effective trainers was a statistically significant predictor of feeling positively about the training.

Table 29

Logistic Regression Results for Predicting of Positive Feelings toward the Combat Stress Preventive Training with the Effectiveness of Trainers and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Trainer_Effect	3.313	141.801	.000	27.454	15.916	47.357
	Rank	-.022	.006	.941	.978	.550	1.741
	Constant	-2.321	72.049	.000	.098		

The odds ratio for rank was .978. This implied the enlisted Marines were .978 times more likely than the officers to feel positive about the combat operational stress preventive training, controlling for the effectiveness of the trainers (coded as

Trainer_Effect). The odds ratio for the effectiveness of the trainers was 27.454 ($p < .01$). This implied Marines were 27.454 times more likely to feel positive about the combat operational stress preventive training when they characterized the trainers as being effective, controlling for rank.

The next logistic regression model considered associations between the reported effectiveness of the combat operational stress preventive training (coded as Training_Effect) and rank (predictor variables) and the reported feelings toward the training (coded as Overall_Feel). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 174.013, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 87.3 percent. Table 30 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the effectiveness of the combat operational stress preventive training was a statistically significant predictor of feeling positive about the training.

The odds ratio for rank was 1.037. This implied the enlisted Marines were 1.037 times more likely than the officers to feel positive about the combat operational stress preventive training, controlling for the effectiveness of training (coded as Training_Effect). The odds ratio for the effectiveness of training was 31.859 ($p < .01$). This implied Marines were 31.859 times more likely to feel positive about the preventive combat operational stress training when they reported the training as being effective, controlling for rank.

Table 30

Logistic Regression Results for Predicting Feeling Positive about the Combat Stress Preventive Training with the Effectiveness of Training and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Training_Effect	3.461	131.883	.000	31.859	17.647	57.516
	Rank	.036	.015	.903	1.037	.581	1.851
	Constant	-2.149	66.280	.000	.117		

The next logistic regression model considered associations between the reported effectiveness of the combat operational stress preventive training materials (coded as Training_Material) and rank (predictor variables) and the reported feelings toward the training (coded as Overall_Feel). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 209.671, $p < .01$. Prediction success for the cases used in the development of the model was high, with an overall prediction success rate of 89.4 percent. Table 31 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the combat operational stress training materials were a statistically significant predictor of feeling positive about the training.

The odds ratio for rank was .676. This implied the enlisted Marines were .676 times more likely than the officers to feel positive about the combat operational stress preventive training, controlling for the effectiveness of training materials (coded as

Training_Material). The odds ratio for the effectiveness of training materials was 72.874 ($p < .01$). This implied Marines were 72.874 times more likely to feel positive about the combat operational stress preventive training when they reported the training materials as being effective, controlling for rank. Figure 4 depicts significant odds ratios for each of the independent variables described in Tables 24 through 31.

Table 31

Logistic Regression Results for Predicting of Feeling Positive about the Combat Stress Preventive Training with the Efficacy of Training Materials and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Training_Material	4.289	119.474	.000	72.874	33.775	157.238
	Rank	-.392	1.597	.206	.676	.368	1.241
	Constant	-1.881	57.195	.000	.152		

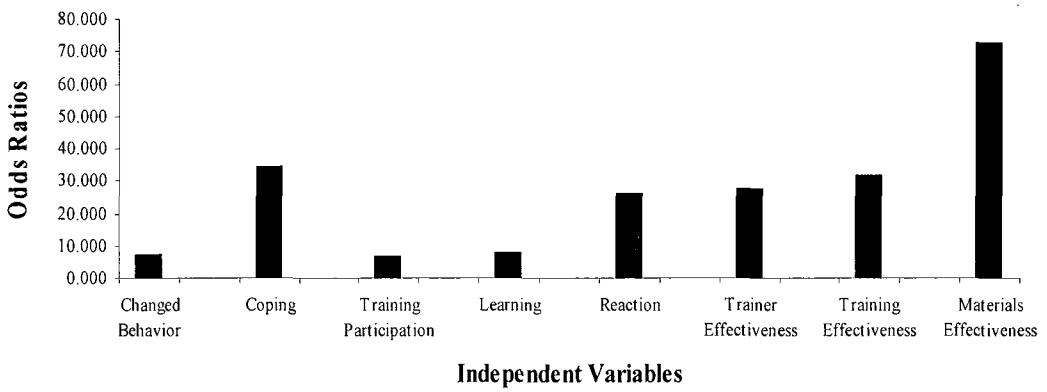

Figure 4. Significant Odds Ratios with Overall Feelings as the Dependent Variable.

Changed Behavior as the Dependent Variable

The first logistic regression model in this series considered associations between the reported level of combat operational stress preventive coping skills (coded as Coping) and rank (predictor variables) and actually using the learned skills in the respondents' daily lives (coded as Change_Behavior). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 82.719, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 75.8 percent. Table 32 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported possessing the combat operational stress preventive coping skills was a statistically significant predictor of using the learned skills in the respondents' daily lives.

Table 32

Logistic Regression Results for Predicting Using the Learned Skills in Marines' Daily Lives with Coping Skills and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Coping	2.569	62.767	.000	13.052	6.913	24.643
	Rank	.408	2.910	.088	1.504	.941	2.403
	Constant	-1.394	43.838	.000	.248		

The odds ratio for rank was 1.504. This implied the enlisted Marines were 1.504 times more likely than the officers to use the learned preventive combat operational stress

skills in their daily lives, controlling for possessing the coping skills (coded as Coping). The odds ratio for coping was 13.052 ($p < .01$). This implied Marines were 13.052 times more likely to use the learned combat operational stress preventive skills in their daily lives when they reported possessing the coping skills, controlling for rank.

The next logistic regression model considered associations between the respondents' participation in the combat operational stress preventive training (coded as COSC_Training) and rank (predictor variables) and actually using the learned skills in the respondents' daily lives (coded as Change_Behavior). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 67.263, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 66.9 percent. Table 33 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported participating in the combat operational stress preventive training was a statistically significant predictor of using the learned skills in Marines' daily lives.

The odds ratio for rank was 1.046. This implied the enlisted Marines were 1.046 times more likely than the officers to use the learned preventive combat operational stress skills in their daily lives, controlling for participating in the training (coded as COSC_Training). The odds ratio for participating in the training was 6.090 ($p < .01$). This implied Marines were 6.090 times more likely to use the learned combat operational stress preventive skills in their daily lives when they reported participating in the training, controlling for rank.

Table 33

Logistic Regression Results for Predicting Using the Learned Skills in Marines' Daily Lives with Participating in the Combat Stress Preventive Training and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	COSC_Training	1.807	54.180	.000	6.090	3.764	9.852
	Rank	.045	.039	.844	1.046	.671	1.629
	Constant	-1.951	56.963	.000	.142		

The next logistic regression model considered associations between the respondents' learning the combat operational stress preventive training material (coded as Learning) and rank (predictor variables) and actually using the learned skills in the respondents' daily lives (coded as Change_Behavior). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 101.845, p < .01. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 67.7 percent. Table 34 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported learning the combat operational stress preventive skills and techniques was a statistically significant predictor of using the learned skills in Marines' daily lives.

The odds ratio for rank was 1.342. This implied the enlisted Marines were 1.342 times more likely than the officers to use the learned combat operational stress preventive

skills in their daily lives, controlling for learning (coded as Learning). The odds ratio for learning was 13.606 ($p < .01$). This implied Marines were 13.606 times more likely to use the learned combat operational stress preventive skills in their daily lives when they reported learning the subject matter preventive skills and techniques, controlling for rank.

Table 34

Logistic Regression Results for Predicting Using the Learned Skills in Marines' Daily Lives with Learning and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Learning	2.610	61.593	.000	13.606	7.089	26.113
	Rank	.294	1.630	.202	1.342	.854	2.107
	Constant	-2.891	65.657	.000	.056		

The next logistic regression model considered associations between the respondents' feelings toward the combat operational stress preventive training (coded as Overall_Feel) and rank (predictor variables) and actually using the learned skills in the Marines' daily lives (coded as Changed_Behavior). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 76.671, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 75.0 percent. Table 35 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported feeling

positive about the combat operational stress preventive training was a statistically significant predictor of using the learned skills in Marines' daily lives.

Table 35

Logistic Regression Results for Predicting Using the Learned Skills in Marines' Daily Lives with Overall Feelings toward the Training and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Overall_Feel	1.955	69.653	.000	7.064	4.463	11.179
	Rank	.268	1.339	.247	1.307	.831	2.057
	Constant	-1.435	47.347	.000	.238		

The odds ratio for rank was 1.307. This implied the enlisted Marines were 1.307 times more likely than the officers to use the learned combat operational stress preventive skills in their daily lives, controlling for their feelings toward the training (coded as Overall_Feel). The odds ratio for feelings toward the training was 7.064 ($p < .01$). This implied Marines were 7.064 times more likely to use the learned combat operational stress preventive skills in their daily lives when they reported feeling positive about the training, controlling for rank.

The next logistic regression model considered associations between the respondents' reaction toward the combat operational stress preventive training (coded as Reaction) and rank (predictor variables) and actually using the learned skills in the respondents' daily lives (coded as Change_Behavior). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 72.993, $p < .01$. Prediction

success for the cases used in the development of the model was moderate, with an overall prediction success rate of 75.0 percent. Table 36 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported positively reacting toward the combat operational stress preventive training was a statistically significant predictor of using the learned skills in Marines' daily lives.

Table 36

Logistic Regression Results for Predicting Using the Learned Skills in Marines' Daily Lives with Reaction and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Reaction	2.061	64.249	.000	7.850	4.743	12.992
	Rank	.321	1.909	.167	1.378	.831	2.057
	Constant	-1.386	44.848	.000	.250		

The odds ratio for rank was 1.378. This implied the enlisted Marines were 1.378 times more likely than the officers to use the learned combat operational stress preventive skills in their daily lives, controlling for reaction toward the training (coded as Reaction). The odds ratio for reaction was 7.850 ($p < .01$). This implied Marines were 7.850 times more likely to use the learned combat operational stress preventive skills in their daily lives when they reported positively reacting toward the presented training, controlling for rank.

The next logistic regression model considered associations between the respondents' suffering from effects of combat operational stress (coded as Suffering) and

rank (predictor variables) and actually using the learned skills in the Marines' daily lives (coded as Changed_Behavior). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 10.132, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 66.9 percent. Table 37 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported suffering from effects of combat operational stress was a statistically significant predictor of using the learned skills in Marines' daily lives.

Table 37

Logistic Regression Results for Predicting Using the Learned Skills in Marines' Daily Lives with Suffering and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Suffering	.618	9.457	.002	1.855	1.251	2.750
	Rank	.208	.957	.328	1.231	.811	1.869
	Constant	-1.076	29.739	.000	.341		

The odds ratio for rank was 1.231. This implied the enlisted Marines were 1.231 times more likely than the officers to use the learned combat operational stress preventive skills in their daily lives, controlling for suffering from effects of combat operational stress (coded as Suffering). The odds ratio for suffering was 1.855 ($p < .01$). This implied Marines were 1.855 times more likely to use the learned combat operational stress

preventive skills in their daily lives when they reported suffering from effects of combat operational stress, controlling for rank.

The next logistic regression model considered associations between the reported effectiveness of the trainers (coded as Trainer_Effect) and rank (predictor variables) and actually using the learned skills in the respondents' daily lives (coded as Changed_Behavior). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 40.207, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 70.4 percent. Table 38 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the perceived effectiveness of the trainers was a statistically significant predictor of using the learned skills in Marines' daily lives.

Table 38

Logistic Regression Results for Predicting Using the Learned Skills in Marines' Daily Lives with the Effectiveness of the Trainers and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Trainer_Effect	1.387	38.541	.000	4.002	2.583	6.200
	Rank	.245	1.230	.267	1.277	.829	1.969
	Constant	-1.252	39.697	.000	.286		

The odds ratio for rank was 1.277. This implied the enlisted Marines were 1.277 times more likely than the officers to use the learned combat operational stress preventive

skills in their daily lives, controlling for the effectiveness of the trainers (coded as Trainer_Effect). The odds ratio for the effectiveness of the trainers was 4.002 ($p < .01$). This implied Marines were 4.002 times more likely to use the learned combat operational stress preventive skills in their daily lives when they reported the trainers were effective in teaching the training content, controlling for rank.

The next logistic regression model considered associations between the reported effectiveness of the combat operational stress preventive training (coded as Training_Effect) and rank (predictor variables) and actually using the learned skills in the respondents' daily lives (coded as Changed_Behavior). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 107.672, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 78.1 percent. Table 39 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the perceived effectiveness of the training was a statistically significant predictor of using the learned skills in Marines' daily lives.

The odds ratio for rank was 1.445. This implied the enlisted Marines were 1.445 times more likely than the officers to use the learned combat operational stress preventive skills in their daily lives, controlling for the effectiveness of the training (coded as Training_Effect). The odds ratio for the effectiveness of the training was 13.238 ($p < .01$). This implied Marines were 13.238 times more likely to use the learned combat

operational stress preventive skills in their daily lives when they reported the subject matter training was effective, controlling for rank.

Table 39

Logistic Regression Results for Predicting Using the Learned Skills in Marines' Daily Lives with the Effectiveness of the Training and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Training_Effect	2.583	85.656	.000	13.238	7.660	22.876
	Rank	.368	2.266	.132	1.445	.895	2.335
	Constant	-1.535	49.512	.000	.215		

The next logistic regression model considered associations between the reported effectiveness of the combat operational stress preventive training materials (coded as Training_Material) and rank (predictor variables) and using the learned skills in the respondents' daily lives (coded as Change_Behavior). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 77.007, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 75.6 percent. Table 40 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the perceived effectiveness of the training materials was a statistically significant predictor of using the learned skills in Marines' daily lives.

The odds ratio for rank was 1.172. This implied the enlisted Marines were 1.172 times more likely than the officers to use the learned combat operational stress preventive skills in their daily lives, controlling for the perceived effectiveness of the training materials (coded as Training_Material). The odds ratio for the effectiveness of the training materials was 9.359 ($p < .01$). This implied Marines were 9.359 times more likely to use the learned combat operational stress preventive skills in their daily lives when they reported the training materials were effective, controlling for rank. Figure 5 depicts significant odds ratios for each of the independent variables described in Tables 32 through 40.

Table 40

Logistic Regression Results for Predicting Using the Learned Skills in Marines' Daily Lives with the Efficacy of the Training Materials and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Training_Material	2.236	64.679	.000	9.359	5.427	16.140
	Rank	.158	.474	.491	1.172	.746	1.840
	Constant	-1.248	39.751	.000	.287		

Learning as the Dependent Variable

The first logistic regression model in this series considered associations between the reported level of the combat operational stress preventive coping skills and techniques (coded as Coping) and rank (predictor variables) and learning the subject matter skills and techniques (coded as Learning). Results of the logistic regression analysis indicated

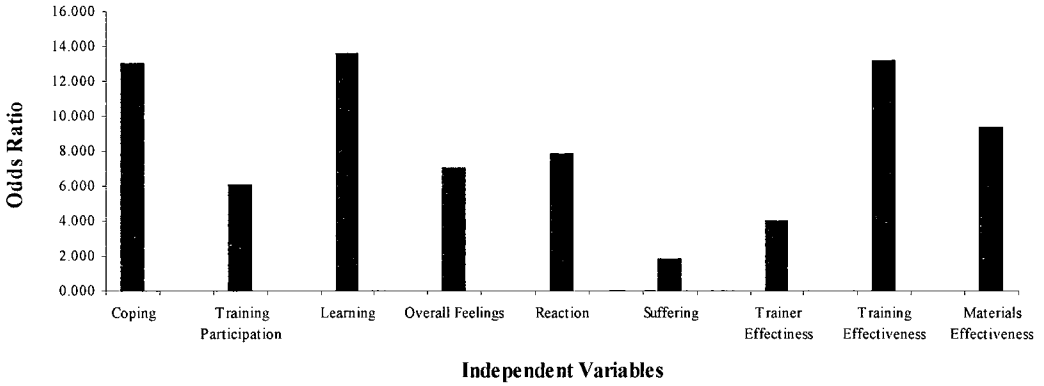

Figure 5. Significant Odds Ratios with Changed Behavior as the Dependent Variable.

the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 41.364, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 64.4 percent. Table 41 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported possessing the combat operational stress preventive coping skills was a statistically significant predictor of learning the training material.

Table 41

Logistic Regression Results for Predicting Learning the Skills and Techniques with Coping Skills and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Coping	2.440	21.616	.000	11.474	4.102	32.095
	Rank	-.077	.128	.721	.926	.608	1.410
	Constant	.424	5.540	.019	1.529		

The odds ratio for rank was .926. This implied the enlisted Marines were .926 times more likely than the officers to learn the combat operational stress preventive skills and techniques, controlling for possessing the coping skills (coded as Coping). The odds ratio for coping was 11.474 ($p < .01$). This implied Marines were 11.474 times more likely to learn the combat operational stress preventive skills and techniques when they reported possessing the coping skills, controlling for rank.

The next logistic regression model considered associations between the respondents' participating in the combat operational stress preventive training (coded as COSC_Training) and rank (predictor variables) and learning the subject matter skills and techniques (coded as Learning). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 120.660, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 75.6 percent. Table 42 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported participating in the combat operational stress preventive training was a statistically significant predictor of learning the preventive skills and techniques.

The odds ratio for rank was .634. This implied the enlisted Marines were .634 times more likely than the officers to learn the combat operational stress preventive skills and techniques, controlling for participating in the training (coded as COSC_Training). The odds ratio for participating in the training was 9.636 ($p < .01$). This implied Marines were 9.636 times more likely to learn the subject matter skills and techniques when they

reported participating in the combat operational stress preventive the training, controlling for rank.

Table 42

Logistic Regression Results for Predicting Learning the Skills and Techniques with Participating in the Combat Stress Training and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	COSC_Training	2.266	102.646	.000	9.636	6.217	14.936
	Rank	-.456	3.623	.057	.634	.396	1.014
	Constant	-.284	1.852	.174	.753		

The next logistic regression model considered associations between using the learned skills in the respondents' daily lives (coded as Change_Behavior) and rank (predictor variables) and learning the combat operational stress preventive skills and techniques (coded as Learning). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 101.770, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 66.9 percent. Table 43 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported using the learned skills and techniques in the respondents' daily lives was a statistically significant predictor of learning the subject matter preventive skills and techniques.

Table 43

Logistic Regression Results for Predicting Learning Skills and Techniques with Changed Behavior and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Change_Behavior	2.610	61.593	.000	13.606	7.089	26.113
	Rank	-.282	1.559	.212	.754	.485	1.174
	Constant	.194	1.070	.301	1.214		

The odds ratio for rank was .754. This implied the enlisted Marines were .754 times more likely than the officers to learn the skills and techniques, controlling for using the learned skills in the respondents' daily lives (coded as Change_Behavior). The odds ratio for changed behavior was 13.606 ($p < .01$). This implied Marines were 13.606 times more likely to learn the subject matter skills and techniques when they reported using the learned skills in their daily lives, controlling for rank.

The next logistic regression model considered associations between the respondents' feelings toward the combat operational stress preventive training (coded as Overall_Feel) and rank (predictor variables) and learning the subject matter preventive skills and techniques (coded as Learning). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 54.538, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 64.4 percent. Table 44 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence

intervals (CI) for odds ratio for each predictor. The Wald test reported feeling positive about the combat operational stress preventive training was a statistically significant predictor of learning the subject matter skills and techniques.

Table 44

Logistic Regression Results for Predicting Learning Skills and Techniques with Overall Feelings toward the Training and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Overall_Feel	2.025	36.758	.000	7.577	3.937	14.582
	Rank	-.141	.420	.517	.869	.568	1.329
	Constant	.335	3.339	.068	1.398		

The odds ratio for rank was .869. This implied the enlisted Marines were .869 times more likely than the officers to learn the skills and techniques, controlling for their feelings toward the training (coded as Overall_Feel). The odds ratio for feelings toward the training was 7.577 ($p < .01$). This implied Marines were 7.577 times more likely to learn the skills and techniques when they reported feeling positive about the training, controlling for rank.

The next logistic regression model considered associations between the respondents' reaction toward the combat operational stress preventive training (coded as Reaction) and rank (predictor variables) and learning the combat operational stress preventive skills and techniques (coded as Learning). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 65.271, $p < .01$. Prediction

success for the cases used in the development of the model was moderate, with an overall prediction success rate of 64.4 percent. Table 45 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported positively reacting toward the combat operational stress preventive training was a statistically significant predictor of learning the subject matter knowledge.

Table 45

Logistic Regression Results for Predicting Learning the Combat Stress Related Knowledge with Reaction and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Reaction	2.853	29.962	.000	17.341	6.243	48.165
	Rank	-.100	.207	.649	.905	.590	1.389
	Constant	.335	3.351	.067	1.399		

The odds ratio for rank was .905. This implied the enlisted Marines were .905 times more likely than the officers to learn the combat operational stress preventive skills and techniques, controlling for Marines' reaction toward the training (coded as Reaction). The odds ratio for reaction was 17.341 ($p < .01$). This implied Marines were 17.341 times more likely to learn the combat operational stress preventive skills and techniques when they reported positively reacting toward the presented training, controlling for rank.

The next logistic regression model considered associations between the reported effectiveness of the trainers (coded as Trainer_Effect) and rank (predictor variables) and learning the combat operational stress preventive skills and techniques (coded as

Learning). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 94.705, $p < .01$. Prediction success for the cases used in the development of the model was high, with an overall prediction success rate of 86.3 percent. Table 46 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the perceived effectiveness of the trainers was a statistically significant predictor of learning the combat operational stress preventive skills and techniques.

Table 46

Logistic Regression Results for Predicting Learning the Skills and Techniques with Effectiveness of the Trainers and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Trainer_Effect	2.674	78.660	.000	14.495	8.028	26.171
	Rank	-.454	2.248	.134	.635	.351	1.150
	Constant	-2.604	76.748	.000	.074		

The odds ratio for rank was .635. This implied the enlisted Marines were .635 times more likely than the officers to learn the combat operational stress preventive skills and techniques, controlling for the effectiveness of the trainers (coded as Trainer_Effect). The odds ratio for the effectiveness of the trainers was 14.495 ($p < .01$). This implied Marines were 14.495 times more likely to learn the combat operational stress preventive

skills and techniques when they reported the trainers were effective in teaching the training content, controlling for rank.

The next logistic regression model considered associations between the reported effectiveness of the combat operational stress preventive training (coded as Training_Effect) and rank (predictor variables) and learning the subject matter preventive skills and techniques (coded as Learning). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 72.383, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 64.4 percent. Table 47 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the perceived effectiveness of the training was a statistically significant predictor of learning the combat operational stress preventive skills and techniques.

Table 47

Logistic Regression Results for Predicting Learning the Skills and Techniques with the Effectiveness of the Training and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Training_Effect	3.178	28.469	.000	23.999	7.468	77.123
	Rank	-.104	.223	.637	.902	.586	1.386
	Constant	.323	3.091	.079	1.381		

The odds ratio for rank was .902. This implied the enlisted Marines were .902 times more likely than the officers to learn the combat operational stress preventive skills and techniques, controlling for the effectiveness of the training (coded as Training_Effect). The odds ratio for the effectiveness of the training was 23.999 ($p <$ .01). This implied Marines were 23.999 times more likely to learn the combat operational stress preventive skills and techniques when they reported the training was effective, controlling for rank.

The next logistic regression model considered associations between the reported effectiveness of the combat operational stress preventive training materials (coded as Training_Material) and rank (predictor variables) and learning the subject matter preventive skills and techniques (coded as Learning). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 66.832, $p < .01$. Prediction success for the cases used in the development of the model was moderate, with an overall prediction success rate of 64.4 percent. Table 48 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the training materials were a statistically significant predictor of learning the combat operational stress preventive skills and techniques.

The odds ratio for rank was .806. This implied the enlisted Marines were .806 times more likely than the officers to learn the combat operational stress preventive skills and techniques, controlling for the effectiveness of the training materials (coded as Training_Material). The odds ratio for the effectiveness of the training materials was

30.824 ($p < .01$). This implied Marines were 30.824 times more likely to learn the combat operational stress preventive skills and techniques when they reported the training materials were effective, controlling for rank. Figure 6 depicts significant odds ratios for each of the independent variables described in Tables 41 through 48.

Table 48

Logistic Regression Results for Predicting Learning the Skills and Techniques with the Effectiveness of the Training Materials and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Training_Material	3.428	22.480	.000	30.824	7.472	127.166
	Rank	-.216	.995	.319	.806	.527	1.232
	Constant	.441	6.061	.000	1.555		

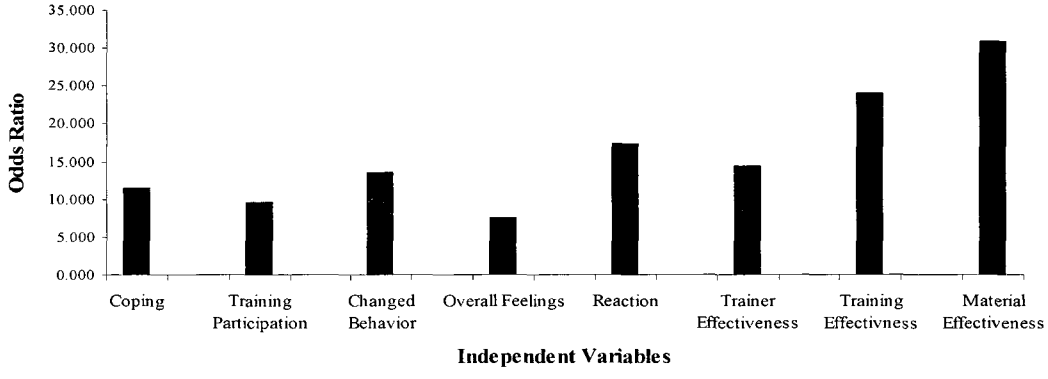

Figure 6. Significant Odds Ratios with Learning as the Dependent Variable.

Reacting as the Dependent Variable

The first logistic regression model in this series considered associations between the reported level of the combat operational stress preventive coping skills (coded as Coping) and rank (predictor variables) and reacting toward the presented training (coded

as Reaction). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 85.769, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 84.6 percent. Table 49 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported possessing the combat operational stress preventive coping skills was a statistically significant predictor of reacting positively toward the presented training.

Table 49

Logistic Regression Results for Predicting Positive Reaction toward the Training with Coping Skills and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Coping	2.595	78.832	.000	13.402	7.557	23.769
	Rank	-.094	.117	.733	.910	.532	1.559
	Constant	-1.930	64.326	.000	.145		

The odds ratio for rank was .910. This implied the enlisted Marines were .910 times more likely than the officers to react positively toward the preventive training, controlling for possessing the subject matter coping skills (coded as Coping). The odds ratio for coping was 13.402 ($p < .01$). This implied Marines were 13.402 times more likely to react positively toward the preventive training when they reported possessing the combat operational stress preventive coping skills, controlling for rank.

The next logistic regression model considered associations between the respondents' participating in the combat operational stress preventive training (coded as COSC_Training) and rank (predictor variables) and reacting toward the presented training (coded as Reaction). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 64.107, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 80.2 percent. Table 50 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported participating in the combat operational stress preventive training was a statistically significant predictor of positively reacting toward the presented training.

Table 50

Logistic Regression Results for Predicting Positive Reaction toward the Training with Participating in the Combat Stress Training and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	COSC_Training	2.393	38.480	.000	10.948	5.140	23.320
	Rank	-.474	3.368	.066	.622	.375	1.033
	Constant	-2.882	55.665	.000	.056		

The odds ratio for rank was .622. This implied the enlisted Marines were .622 times more likely than the officers to react positively toward the presented training, controlling for participating in the training (coded as COSC_Training). The odds ratio for

participating in the training was 10.948 ($p < .01$). This implied Marines were 10.948 times more likely to react positively toward the presented combat operational stress preventive training when they reported participating in the training, controlling for rank.

The next logistic regression model considered associations between using the learned skills in the respondents' daily lives (coded as Change_Behavior) and rank (predictor variables) and reacting toward the presented combat operational stress preventive training (coded as Reaction). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 73.502, $p < .01$. Prediction success for the cases used in the development of the model was relatively high, with an overall prediction success rate of 80.2 percent. Table 51 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported using the learned skills in the respondents' daily lives was a statistically significant predictor of positively reacting toward the presented training.

Table 51

Logistic Regression Results for Predicting Positive Reaction toward the Training with Changed Behavior and Rank as Independent Variables

						95.0% CI for Exp(B)	
Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	Lower	Upper
1	Change_Behavior	2.061	64.249	.000	7.850	4.743	12.992
	Rank	-.416	2.480	.115	.660	.393	1.107
	Constant	-2.087	68.749	.000	.124		

The odds ratio for rank was .660. This implied the enlisted Marines were .660 times more likely than the officers to positively react toward the presented combat operational stress preventive training, controlling for using the learned skills in the respondents' daily lives (coded as Change_Behavior). The odds ratio for changed behavior was 7.850 ($p < .01$). This implied Marines were 7.850 times more likely to positively react toward the combat operational stress preventive training when they reported using the learned skills in their daily lives, controlling for rank.

The next logistic regression model considered associations between the respondents' feelings toward the combat operational stress preventive training (coded as Overall_Feel) and rank (predictor variables) and reacting toward the presented training (coded as Reaction). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 157.598, $p < .01$. Prediction success for the cases used in the development of the model was high, with an overall prediction success rate of 86.3 percent. Table 52 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported feeling optimistic about the combat operational stress preventive training was a statistically significant predictor of learning the subject matter preventive skills and techniques.

The odds ratio for rank was .747. This implied the enlisted Marines were .747 times more likely than the officers to positively react toward the presented training, controlling for their feelings toward the training (coded as Overall_Feel). The odds ratio for feelings toward the training was 25.784 ($p < .01$). This implied Marines were 25.784

times more likely to react positively toward the presented training when they reported feeling optimistic about the training, controlling for rank.

Table 52

Logistic Regression Results for Predicting Positive Reaction toward the Training with Overall Feelings about the Training and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Overall_Feel	3.250	123.907	.000	25.784	14.549	45.693
	Rank	-.292	.921	.337	.747	.411	1.356
	Constant	.-2.549	76.431	.000	.078		

The next logistic regression model considered associations between the reported effectiveness of the trainers (coded as Trainer_Effect) and rank (predictor variables) and reacting toward the presented training (coded as Reaction). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, n = 480) = 132.649, $p < .01$. Prediction success for the cases used in the development of the model was high, with an overall prediction success rate of 84.6 percent. Table 53 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the perceived effectiveness of the trainers was a statistically significant predictor of positively reacting toward the combat operational stress preventive training.

The odds ratio for rank was .793. This implied the enlisted Marines were .793 times more likely than the officers to positively react toward the presented training,

controlling for the effectiveness of the trainers (coded as Trainer_Effect). The odds ratio for the effectiveness of the trainers was 18.579 ($p < .01$). This implied Marines were 18.579 times more likely to react positively toward the presented training when they reported the trainers were effective in teaching the training content, controlling for rank.

Table 53

Logistic Regression Results for Predicting Positive Reaction toward the Training with the Effectiveness of the Trainers and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Trainer_Effect	2.922	111.013	.000	18.579	10.788	31.995
	Rank	-.232	.639	.134	.793	.449	1.401
	Constant	-2.407	75.715	.000	.090		

The next logistic regression model considered associations between the reported effectiveness of the combat operational stress preventive training (coded as Training_Effect) and rank (predictor variables) and reacting toward the presented training (coded as Reaction). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 211.645, $p < .01$. Prediction success for the cases used in the development of the model was high, with an overall prediction success rate of 91.0 percent. Table 54 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the perceived effectiveness of the combat

operational stress preventive training was a statistically significant predictor of positively reacting toward the training.

Table 54

Logistic Regression Results for Predicting Positive Reaction toward the Training with the Effectiveness of the Training and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Training_Effect	4.058	150.483	.000	57.873	30.261	110.680
	Rank	-.184	.280	.597	.832	.421	1.644
	Constant	-2.726	72.892	.000	.065		

The odds ratio for rank was .832. This implied the enlisted Marines were .832 times more likely than the officers to react positively toward the presented training, controlling for the effectiveness of the training (coded as Training_Effect). The odds ratio for training effectiveness was 57.873 ($p < .01$). This implied Marines were 57.873 times more likely to react positively toward the presented combat operational stress preventive training when they reported the training was effective, controlling for rank.

The next logistic regression model considered associations between the reported effectiveness of the combat operational stress preventive training materials (coded as Training_Material) and rank (predictor variables) and reacting toward the presented training (coded as Reaction). Results of the logistic regression analysis indicated the two-predictor model provided a statistically significant improvement over the constant-only model, χ^2 (2, $n = 480$) = 143.516, $p < .01$. Prediction success for the cases used in the development of the model was high, with an overall prediction success rate of 87.7

percent. Table 55 presents the regression coefficients (B), the Wald statistics, significance level, odds ratio [Exp(B)], and the 95.0 percent confidence intervals (CI) for odds ratio for each predictor. The Wald test reported the perceived effectiveness of training materials was a statistically significant predictor of positively reacting toward the presented training.

Table 55

Logistic Regression Results for Predicting Positive Reaction toward the Training with Training Materials and Rank as Independent Variables

Step	Variable Entered	*B*	Wald	Significance	Exp(*B*)	95.0% CI for Exp(B) Lower	Upper
1	Training_Material	3.304	116.886	.000	27.222	14.955	49.551
	Rank	-.530	3.071	.080	.588	.325	1.065
	Constant	-2.002	65.005	.000	.135		

The odds ratio for rank was .588. This implied the enlisted Marines were .588 times more likely than the officers to positively react toward the presented combat operational stress preventive training, controlling for the perceived effectiveness of training materials (coded as Training_Material). The odds ratio for the effectiveness of training materials was 27.222 ($p < .01$). This implied Marines were 27.222 times more likely to positively react toward the presented combat operational stress preventive training when they reported the training materials were effective, controlling for rank. Figure 7 depicts significant odds ratios for each of the independent variables described in Tables 49 through 55.

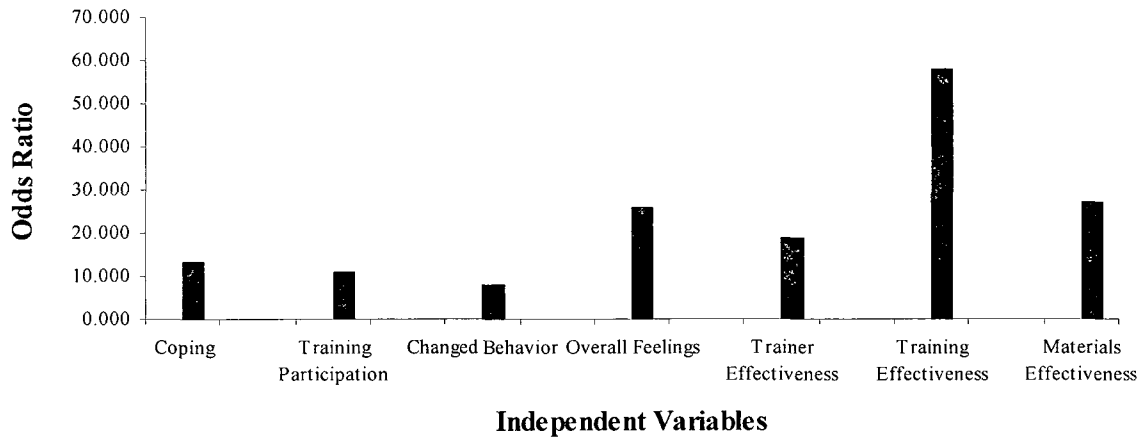

Figure 7. Significant Odds Ratios with Positive Reaction as the Dependent Variable.

Qualitative Methodology

The primary purpose of the qualitative methodology was to supplement and support the quantitative methodology. Consequently, the researcher conducted training observations and interviews as part of data collection efforts to meet the objectives of this study. The researcher also used triangulation of data techniques in order to confirm and validate the findings as they emerged. This approach was based on the principle that no single technique could fully and objectively answer the research questions (Creswell, 2007). By having two different qualitative methods, the researcher was able to objectively cross-check and confirm the emerging themes, interpretations, and conclusions. Specifically, the researcher compared observations with interviews in order to substantiate what the interview respondents voiced. The researcher also used a research log for keeping track of data and emerging understandings resultant from this inquiry.

Data Analysis

The researcher used spiral methodology technique to analyze the data collected in this study. Spiral methodology analysis involved systematic procedures to code and classify qualitative data to ensure that important themes and patterns emerged (Creswell, 2007). It was also essential to reduce the data for analysis and allow for drawing and verifying appropriate conclusions (Creswell, 2007). Adhering to these principles, the researcher transcribed all interview data from the recording device into a typed text, and then divided the text into meaningful segments by having each interview question and the participant's response becoming a separate segment. As a result, the researcher was able to code the data according to the training effectiveness related themes, which included reaction, learning, knowledge transfer, and long term results. The researcher applied a similar data analysis methodology to the training observation data. Conclusions were drawn by looking at the data as a whole, having the two categories combined as one set of qualitative data as recommended by Creswell (2007).

Qualitative Findings

While this qualitative inquiry provided a plethora of information, the four dominant themes were *dissatisfaction with training, being able to learn the basics, not applying the learned material in the field, and lack of long-term success of the training*. *Dissatisfaction with training* refers to participants' negative perceptions of the combat operational stress preventive training. *Being able to learn the basics* refers to Marines successfully learning the combat operational stress preventive training essentials. *Not applying the learned material in the field* concerns Marines not actually putting into use new combat operational stress training knowledge in their daily lives. Finally, *lack of*

long-term success of the training concerns the combat operational stress preventive training not resulting in lasting tangible and quantifiable successes.

Dissatisfaction with Training

Almost all of the interviewed Marines expressed a general dissatisfaction with the combat operational stress preventive training. Four junior enlisted, three out of four senior enlisted Marines, and three out of four officers, described the training as one where "no one paid attention," which gave opportunities for "some sleep and respite", and referred to the instructors as "poor," leaving "lots of room for improvement." On the other hand, just two other interviewees, an officer and one senior enlisted Marine, called the training "an interesting talk" and "rather informative." The senior enlisted Marine also voiced "the instructor was pretty good, not great, but simply got the job done."

Observing the training sessions resulted in similar findings. While the majority of the participants listened and paid attention, an estimated 15-20 percent of the observed participants were inattentive and visibly not trying to learn. These individuals elected to engage in sidebar conversations with fellow Marines, read other non-training materials, and even some Marines had difficulties remaining alert. Such negative signs of not paying attention to the instruction could be indicative of a poorly designed and delivered training activity (Kirkpatrick, 2006).

Additionally, a review of post-training anonymous feedback forms suggested that the training slides were poorly designed and contained too much information, with many of the observed training participants describing the presentation slides as "confusing" and "hard to follow". Furthermore, many comments referred to a lack of instructor-learner interaction and not providing opportunities for learner involvement and exchanges either

with the instructor or fellow students. The sheer number of the negative comments confirmed the current format of training, consisting of static PowerPoint™ slides, was not satisfactory.

Ability to Learn the Basics

In general, all of the interviewees indicated they understood what was meant by *combat operational stress*. They indicated this new knowledge came either from attending formal training sessions or informal training provided by their leaders. Moreover, 10 out of 12 interviewees pointed out they did not like the training because of a poor training delivery format as all the currently formatted training consists of lectures which utilize static PowerPoint™ slides. Eight interviewees also specified questionable knowledge and "unqualified" background of some instructors, which could translate into overall poor quality of the training sessions (Kirkpatrick, 2006).

Ten out of 12 interviewees were also unable to identify specific techniques learned from the combat operational stress preventive training. Observing the training sessions did not provide insights into understanding whether participants actually learned the training material. The instructors asked the observed Marines basic questions and consequently received correct answers. Review of the post-training feedback forms also echoed the lack of learning specific skills and techniques. The training participants reported now being confused and puzzled by having too much information provided in such a short time. None of the post-training feedback forms indicated the training participants learned something new and useful in terms of practical knowledge, skills, and techniques.

Not Applying the Learned Material in the Field

All of the interviewees also noted an inability to transfer knowledge from the training sessions. Additionally, three out of 12 interviewees alluded that the ability to transfer learning was "up to someone's personality and being able to maintain the composure." "It had nothing to do with the combat stress preventive training." All interviewed senior enlisted Marines and officers voiced that as far as actually seeing changed behavior in their Marines applying learned combat operational stress preventive skills in their daily lives, they "simply did not see it." The emerging theme from the qualitative comments was the current training format was not effective in having Marines apply the learned skills in their daily lives.

Lack of Long-Term Success of the Training

None of the interviewees reported any drastic decreases in new mental health cases, family related problems, alcohol, and drug abuse cases around their immediate working environments. The emerging theme was the training was not being effective in ensuring the long-term successes of the combat operational stress preventive training. This theme was triangulated with the program training documents and the Defense Medical Surveillance System (DMSS), which revealed meaningful statistical data. Specifically, the Marine Corps medical database showed increases in new mental health, PTSD, drug, and alcohol dependence and abuse cases amongst active duty Marines between years 2003 and 2008, resulting in re-emergence of the powerful theme of lack of the long-term success (DMSS, 2009; Sipko, 2008).

Particularly, the number of new medically diagnosed mental health disorder cases, amongst active duty Marines, grew each year of Operations Iraqi Freedom and Enduring

Freedom. Since year 2003, the number of new mental health disorder cases grew by 9,375 cases (DMSS, 2009; Sipko, 2008). This was a very serious increase and in most likelihood could be attributed to the Marine Corps' continued combat deployments to Iraq and Afghanistan. Figure 8 depicts the rise of new medically diagnosed mental health disorder cases in the Marine Corps between January 1, 2003 (11,972 new cases) and December 31, 2008 (21,347 new cases) (DMSS, 2009).

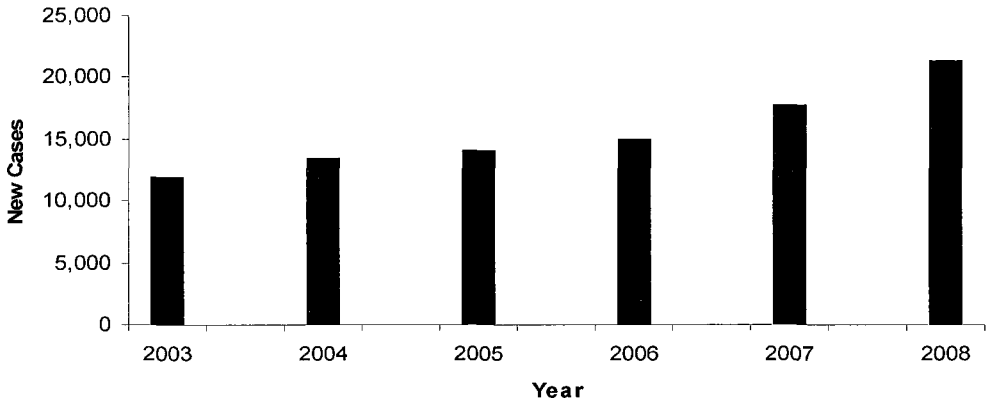

Figure 8. New Mental Health Cases in the Marine Corps.

Similarly, the number of new medically diagnosed post traumatic stress disorder (PTSD) cases grew each year of Operations Iraqi Freedom and Enduring Freedom. Since year 2003, the number of new PTSD cases increased by 1,998 new cases which translated into a whopping 734 percent increase (DMSS, 2009; Sipko, 2008). Indeed, it was a very powerful statistic and very few would doubt this increase could not be attributed to the Marine Corps' continued participation in the current war effort and lack of the long-term success of the preventive combat operational stress training and education practices. Figure 9 depicts the rise of new medically diagnosed post traumatic stress disorder (PTSD) cases in the Marine Corps between January 1, 2003 (271 new cases) and December 31, 2008 (2,266 new cases) (DMSS, 2009).

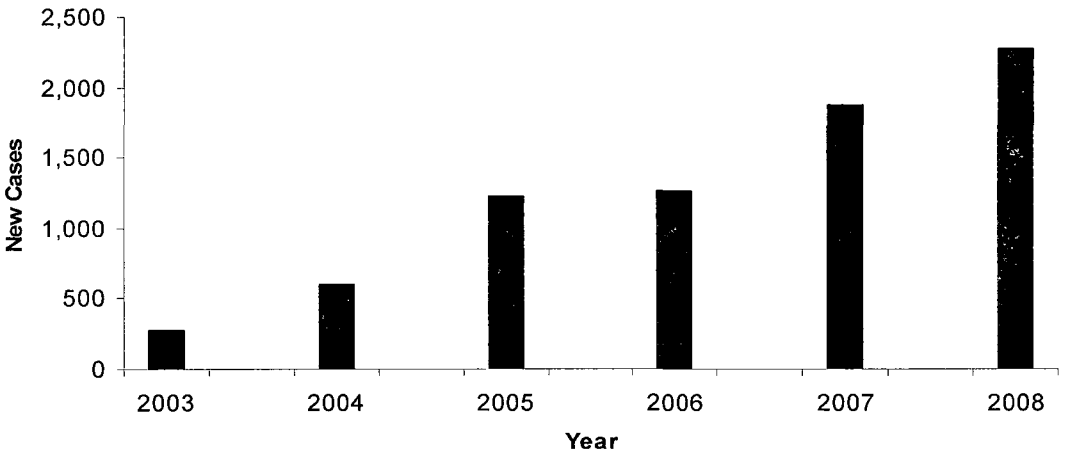

Figure 9. New Post Traumatic Stress Disorder Cases in the Marine Corps.

Additionally, after dropping slightly in years 2004 and 2005, the number of new medically diagnosed drug abuse or dependence cases grew sharply each year of Operations Iraqi Freedom and Enduring Freedom. Since year 2003, new drug abuse or dependence cases in the Marine Corps grew by 2,677 cases which translated into a considerable 98 percent increase (DMSS, 2009; Sipko, 2008). This increase had especially become evident during the last three years and in most likelihood could be correlated to "weariness of war participation" as perhaps some Marines did not see "the light at the end of the tunnel" and turned to drugs for stress relief. Figure 10 depicts the rise of new medically diagnosed drug abuse and dependence cases in the Marine Corps between January 1, 2003 (2,744 new cases) and December 31, 2008 (5,421 new cases) (DMSS, 2009).

Likewise, after dropping slightly in year 2005, the number of new medically diagnosed alcohol abuse or dependence cases also grew in the Marine Corps. Since year 2003, the number of new alcohol abuse or dependence cases increased by 715 cases which translated into a 22 percent increase (DMSS, 2009; Sipko, 2008). This increase

had also become evident during the last three years and probably could be correlated to "weariness of war participation" as more Marines turned to drinking for stress relief. Figure 11 depicts the rise of new medically diagnosed alcohol abuse and dependence cases in the Marine Corps between January 1, 2003 (3,212 new cases) and December 31, 2008 (3,927 new cases) (DMSS, 2009).

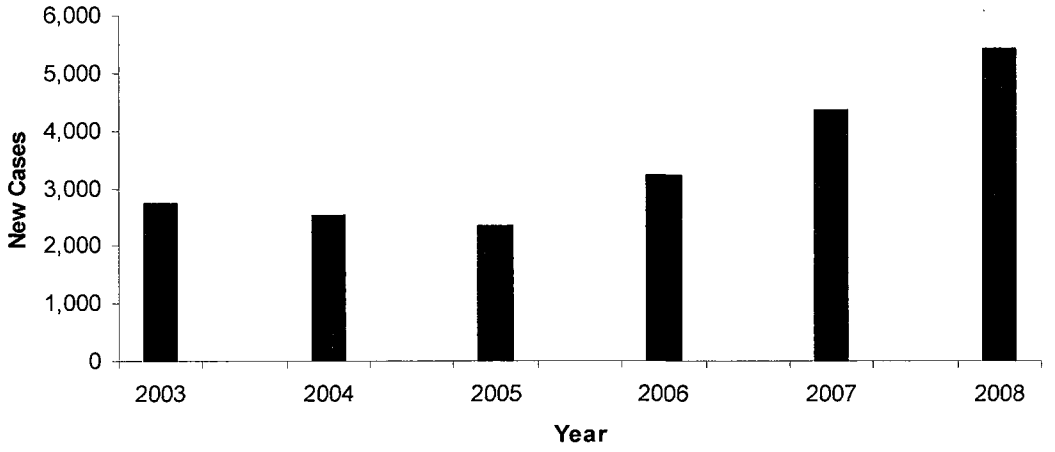

Figure 10. New Drug Dependence and Abuse Cases in the Marine Corps.

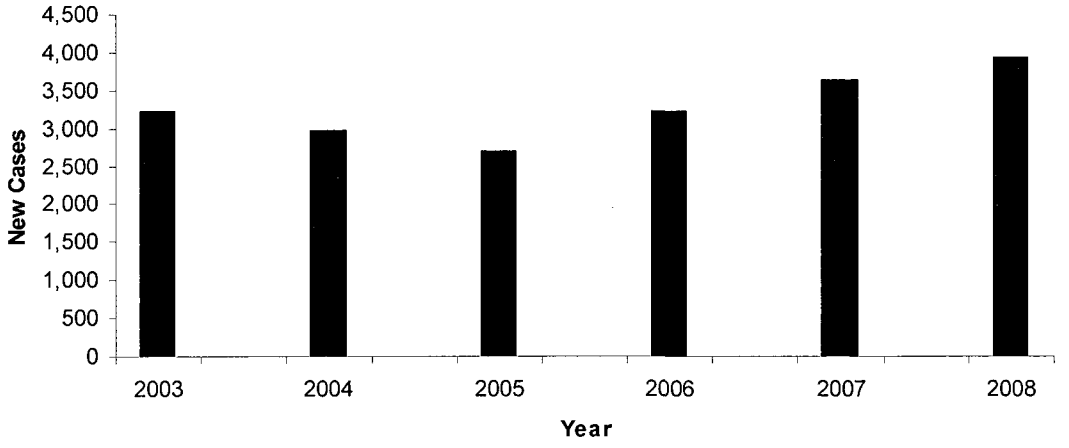

Figure 11. New Alcohol Dependence and Abuse Cases in the Marine Corps.

The above showed descriptions and qualitatively derived statistical data indicated rises in new mental health disorders, post traumatic stress disorders, substance dependence and abuse cases in the Marine Corps triangulated with what the interviewees

pointed out. Specifically, the currently formatted combat operational stress preventive training was not effective in ensuring the long-term successes of the training. This qualitative theme was particularly noteworthy and significant because it had also been triangulated by this study's quantitative descriptive and inferential statistical findings, which added immensely to its validity.

Summary

The findings of the quantitative and qualitative analyses revealed the majority of the Marines, regardless of rank, did not react favorably to the currently formatted combat operational stress preventive training. Some of the Marines learned the basics of the training, most of the Marines did not apply the learned preventive skills in their daily lives, and the currently formatted combat operational stress preventive training program for both the enlisted Marines and officers had not been a success as evidenced by a number of statistically significant logistic regressions, further supported by descriptive statistics, and finally triangulated by qualitative interviews and training observations. Additionally, the respondents' self-reported experiences of effects from combat operational stress do affect their evaluation of the effectiveness of the combat operational stress preventive training as evidenced by several statistically significant logistic regressions.

Chapter V discusses the study's findings. It opens with a summary of the study. Next conclusions are presented for each of the research questions ordered by quantitative and qualitative inquiries. The findings are discussed relative to the theoretical and practical foundations used for this study. Finally, Chapter V closes with recommendations for use of this study and for future research.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter summarizes the study, presents conclusions, and makes recommendations for use of this study. The conclusions discuss the findings from logistic regressions, descriptive statistics, and the qualitative methodology. The recommendations address uses for this study as well as ideas for future research in this area.

Summary

The problem investigated in this study was whether the Marine Corps combat operational stress preventive training program meets the training effectiveness criteria of the Marine Corps. There were three questions which guided this study:

1. To what extent do the respondents' self-reported experiences of effects from combat operational stress affect their evaluation of the effectiveness of the Marine Corps combat operational stress preventive training?
2. To what extent does the Marine Corps combat operational stress preventive training program for *Marine officers* meet the training effectiveness criteria of the Marine Corps?
3. To what extent does the Marine Corps combat operational stress preventive training program for *enlisted Marines* meet the training effectiveness criteria of the Marine Corps?

This study was significant in several aspects. Most important, this study is significant because it concerns our Nation's troops. Additionally, it would be difficult to develop a more effective combat operational stress preventive training program without first understanding the sense and meaning of the individual experiences of Marines who

perceived the training as effective or ineffective. Using insights from this research, the Marine Corps Combat Operational Stress Control program officers may improve their prevention program methodology thus positively contribute to the preservation of the Marine Corps forces. Theoretical significances for this study entailed investigating relationships between research variables and proposing research data collection instruments. These documents could also be used as templates for follow on investigations.

Practical significances of the study included creating training evaluation methodologies. Such methodologies could also be used by other military and civilian training and education entities. Since this study focused on individual experiences, it may provide other researchers with insights essential for constructing quantitative instruments that could aid in predicting those being affected by effects of combat operational stress. Additionally, the study may provide other researchers with additional empirical knowledge which could be used in evaluating other training and education activities.

The study faced several limitations related to its participants and the subject matter. First, the study was focused exclusively on active duty U.S. Marines. Second, preventive Combat Operational Stress Control consisted only of formal and informal training instituted and managed by the Combat Operational Stress Control branch of the Headquarters, U.S. Marine Corps. Third, full disclosure of the participants' perceptions toward effects of combat operational stress and the effectiveness of the combat operational stress preventive training might have been hindered by reluctance of the individuals to disclose their feelings and opinions completely. Fourth, this study included

only volunteers as none of the Marine participants was forced or ordered to participate in the study.

The participants consisted of active duty and reserve Marines on active duty stationed at the Marine Corps bases located in Quantico, Virginia; Camp Lejune, North Carolina; and Camp Pendleton, California. For the purposes of the quantitative analysis, the researcher obtained a random sample of 480 Marines. The sample size for the qualitative inquiry was based on qualitative data saturation as recommended by Creswell (2007). The researcher reached the point of sample data saturation after performing 12 qualitative interviews using a purposefully stratified sample of 12 Marines.

There were three instruments used for this study. For the purposes of quantitative inquiry, an online based survey was utilized. This survey contained a number of Likert scale type questions built around Kirkpatrick's (2006) four-level evaluation of training effectiveness constructs: reaction, learning, knowledge transfer, and long-term results. Concerning the qualitative inquiry, the researcher conducted interviews using an interview protocol form, which contained a number of open-ended interview questions related to the effectiveness of the combat operational stress preventive training. These questions were also built around Kirkpatrick's (2006) four-level evaluation of training effectiveness constructs. An observation protocol instrument/checklist was used for the purposes of qualitative observations of training sessions. The observation protocol instrument contained checklist items that are relevant to training and conducting productive observation sessions.

For the purposes of quantitative data collection, the researcher sent an e-mail to Commanding Officers of randomly selected five Marine Corps units each consisting of

about 1,000 Marines. The sent e-mail contained a link to the web-based survey and requested each respective unit Commanding Officer to forward that e-mail to all members of his or her unit in order to allow the members to voluntarily and anonymously access and complete the survey. As a result, the researcher obtained completed responses from 480 Marines.

For the purposes of qualitative analysis, the researcher performed and then reached a qualitative data saturation after conducting 12 individual interviews with Marines using a purposefully stratified sample. This qualitative sample consisted of four enlisted Marines, four staff non-commissioned officers, and four commissioned officers. Additionally, the researcher observed and reached the point of qualitative data saturation after observing four combat operational stress training sessions in order to collect qualitative data related to the effectiveness of the combat operational stress preventive training.

The researcher used both descriptive and inferential statistical methods. The descriptive statistics allowed the researcher to organize, summarize, and describe the associated data. The inferential statistical methods provided the researcher the opportunities to make predictions about the characteristics of the Marine Corps population. In order to answer Research Question 1, the researcher used descriptive statistics consisting of frequencies and percentages in order to organize, summarize, and describe the data. Then, the researcher followed the analysis with binary logistic regressions in order to assess the associations between the demographic variables, training evaluation constructs, and self-reported experiences of effects from combat related stress. The researcher performed a series of binary logistic regressions to

determine the odds ratios (ORs) and 95.0 percent confidence intervals (CIs) for each variable of interest.

The researcher answered Research Questions 2 and 3 using both quantitative and qualitative methodologies. For the quantitative analysis, descriptive statistics consisting of frequencies and percentages were used in order to organize, summarize, and describe the data. The researcher followed this with binary logistic regressions in order to assess the associations between the demographic characteristics, impressions of the received combat operational stress preventive training, learning preventive combat operational stress concepts and techniques, actually using the learned skills and techniques, overall feelings toward the combat operational stress training, possessing combat operational stress coping skills, and individual perceptions whether the training was effective or ineffective. The researcher performed a series of binary logistic regressions to determine the odds ratios (ORs) and 95.0 percent confidence intervals (CIs) for each variable of interest.

A qualitative analysis of data collected to answer Research Questions 2 and 3 were also performed. A similar data analysis methodology was applied to the observation based dataset. Conclusions were first drawn from the data obtained individually from interviews, observations, and documents review and then from the data as a whole, having the three categories combined as one set of qualitative data as recommended by Creswell (2007).

Quantitative Conclusions

The following section outlines conclusions for each of the research questions. Conclusions were drawn by considering the study's results in the context of Kirkpatrick's

(2006) constructs for training evaluation: reaction, learning, changed behavior, and effectiveness of training/long terms results.

Research Question 1

Research Question 1 focused on whether the respondents' self-reported experiences of effects from combat operational stress affect their evaluation of the effectiveness of the Marine Corps combat operational stress preventive training program. There were a number of findings which helped in answering the question. The following lists each specific finding followed by a discussion:

Finding #1: The descriptive statistics reported that 169 respondents out of 480 (35.20 percent) indicated suffering from effects of combat operational stress. This statistic supports findings of the prior studies which reported that approximately 30 percent of the veterans who were deployed to recent combat zones might suffer from effects of combat operational stress (Iribarren, Prolo, Neagos, & Chiappelli, 2005). This is obviously a very serious outcome as potentially over one-third of the American combat Marines with prior deployment histories in support of Operations Enduring and Iraqi Freedom might suffer from effects of combat operational stress with potentially severe implications on themselves. The researcher feels strongly these suggestions need to be taken seriously by the senior leadership in the Marine Corps, the Department of Defense, and eventually Congress with appropriate preventive program actions enacted or instituted by these branches and agencies of the U.S. government.

Finding #2: The first significant logistic regression model considered associations between the respondents' changed behavior and suffering from effects of combat operational stress. The odds ratio for changed behavior as a result of the Marines using

the learned combat operational stress preventive skills was 1.855 ($p < .01$). This implied when Marines used the learned combat operational stress preventive skills in their daily lives, they were 1.855 times more likely to report suffering from effects of combat operational stress. This finding was important because it showed the significance of using the learned skills and techniques in Marines' daily lives. Marines, by virtue of learning and then actually using the newly acquired skills and techniques, had a greater chance of disclosing their suffering from effects of combat operational stress. By knowing and understanding more about effects of combat operational stress, Marines were then better prepared to seek the needed help from mental health professionals (Gaskin, 2008; Nash, 2007). This is, in itself, a very positive outcome. This study had confirmed this fact and further supported the soundness and holistic value of properly instituted preventive training and education activities as recommended by Gaskin (2008) and Nash (2007) .

Finding #3: The next significant logistic regression model considered associations between the respondents' possessing the combat operational stress coping skills and suffering from effects of combat operational stress. The odds ratio for possessing the coping skills was 2.580 ($p < .01$). This implied when Marines reported possessing the combat operational stress coping skills, they were 2.580 times more likely to disclose suffering from effects of combat operational stress.

The Marine respondents should had acquired their preventive combat operational stress coping skills as a result of the subject matter training and education efforts. By possessing the requisite coping skills, the respondents had a significantly greater chance of disclosing their suffering from effects of combat operational stress. Similarly to the earlier finding, this result confirmed the importance of preventive training and education

services in terms of Marines' ability to learn and understand what it meant to suffer from effects of combat operational stress. As a result, the affected Marines were able to seek the needed help more effectively with positive effects upon themselves and their families. Such inherent abilities to seek needed help from mental health professionals was also one of the main goals of the preventive combat stress training and education efforts (Gaskin, 2008, Nash, 2007).

Finding #4: The next significant logistic regression model considered associations between participating in the combat operational stress preventive training and suffering from effects of combat operational stress. The odds ratio for participating in the combat operational stress preventive training was 1.986 ($p < .01$). This implied when Marines reported participating in the combat operational stress preventive training, they were 1.986 times more likely to report suffering from effects of combat operational stress.

This finding profoundly underscored the importance of preventive training and education efforts. Just sheer participation in formal combat operational stress preventive training classes significantly increased the likelihood of the respondents admitting they actually suffered from effects of combat operational stress. As a result, the affected Marines could seek the needed help being fully informed, which often means getting the mental health help quicker and before their mental health conditions actually worsen. This was also one of the main goals of the preventive combat operation stress control training (Gaskin, 2008; Nash, 2007).

Finding #5: The next significant logistic regression model considered associations between the effectiveness of the combat operational stress preventive training and

suffering from effects of combat operational stress. The odds ratio for the effectiveness of the training was 1.324. This implied when Marines reported the training as being effective, they were 1.324 times more likely to report suffering from effects of combat operational stress. This finding further stresses the importance of effective preventive training services. By knowing and understanding concepts related to combat operational stress preventive training and education efforts, Marines had a higher propensity to disclose their suffering from effects of combat operational stress as shown by this finding's logistic regression. This meant the affected Marines could then seek the needed help more effectively, which was essential from both the mental health care point of view and the efficacy of the preventive combat operational stress control training and education efforts (Gaskin, 2008; Nash, 2007). Table 56 summarizes the findings used to answer Research Question 1.

Table 56

Summary of Findings Used to Answer Research Question 1

Key Points for Findings 1 through 5
Finding #1: 35.20 percent of the respondents disclosed suffering from effects of combat stress.
Finding #2: When Marines reported using the learned combat operational stress preventive skills in their daily lives, they were 1.855 times more likely to disclose suffering from effects of combat operational stress.

Table 56 (continued)

Summary of Findings Used to Answer Research Question 1

Key Points for Findings 1 through 5
Finding #3: When Marines reported possessing the combat operational stress coping skills, they were 2.580 times more likely to disclose suffering from effects of combat operational stress.
Finding #4: When Marines reported participating in the combat operational stress preventive training, they were 1.986 times more likely to report suffering from effects of combat operational stress.
Finding #5: When Marines reported the training as being effective, they were 1.324 times more likely to report suffering from effects of combat operational stress.

Research Questions 2 and 3

Research Question 2 focused on whether the Marine Corps combat operational stress preventive training program for *Marine officers* meets the training effectiveness criteria of the Marine Corps. Research Question 3 focused on whether the Marine Corps combat operational stress preventive training program for *enlisted Marines* meets the training effectiveness criteria of the Marine Corps. None of the logistic regressions was statistically significant in differentiating between the enlisted and the officers in terms of determining the effectiveness or the ineffectiveness of the combat operational stress preventive training. In other words, there were not reportable statistical differences between the officers and the enlisted Marines as far as reporting the effectiveness of the

combat operational stress preventive training. Hence, the following findings pertain equally to both groups - the enlisted Marines and the officers.

Finding #1: From the descriptive statistics report, only 96 respondents out of 480 (20.00 percent) considered the Marine Corps combat operational stress preventive training either as fully effective or at least acceptable. This straightforward descriptive statistic was significant in itself because it powerfully showed the inherent shortcomings of the current combat operational stress preventive program as 80.00 percent of the respondents considered the training either as not fully effective or not effective at all. The Marine Corps needs to examine closely this area and consider this finding as unacceptable. This was because having an ineffective preventive training program negatively impacted the mental health of our Nation's combat Marines (Gaskin, 2008; Nash, 2007).

Finding #2: The first significant logistic regression model in this series considered associations between the respondents' changed behavior as a result of using the learned subject matter skills and techniques in Marines' daily lives and the reported effectiveness of the combat operational stress preventive training. The odds ratio for changed behavior was 13.238 ($p < .01$). This implied when Marines reported using the learned combat operational stress preventive skills in their daily lives, they were 13.238 times more likely to indicate the training was effective.

This finding had profound implications on the effectiveness and long term results of the combat operational stress preventive training. The Marine Corps, as an underwriting organization of the combat operational stress preventive training efforts, would greatly benefit from Marines actually changing their behavior by using the learned

combat operational stress preventive skills on a daily basis. This was because actually using the learned skills prevents occurrences of combat stress related illnesses and results in the long term success of the whole program - a very desirable end state (Gaskin, 2008; Nash, 2007).

Finding #3: The next logistic regression model considered associations between the respondents' coping skills acquired by participating in the combat stress preventive training and the reported effectiveness of the training. The odds ratio for possessing combat operational stress preventive coping skills was 20.557 ($p < .01$). This implied possessing the combat operational stress preventive coping skills increased the odds by 20.557 times of indicating the training was effective. This finding further underscored the importance of the combat operational stress preventive training in ensuring the training participants actually acquired preventive coping skills. This was because possessing such skills significantly increased the chances of having an effective combat operational stress preventive training - an extremely desirable outcome.

Finding #4: The next logistic regression model considered associations between the respondents' participating in the combat operational stress preventive training and the reported effectiveness of the training. The odds ratio for participating in the combat operational stress preventive training was 19.058 ($p < .01$). This finding implied participating in the combat operational stress preventive training increased 19.058 times the odds of reporting the training was effective. It also further validated and showed the immense importance of the combat operational stress preventive training and education efforts. In this case, sheer participation in the training greatly increased the chances of indicating the entire training effort had been effective. The current program was

definitely less effective than it could have been since only 60 percent of the respondents reported attending any formal training classes. The Marine Corps leaders needed to ensure their Marines actually attended the preventive training classes. This was because participating in combat operational stress preventive training classes positively impacted the effectiveness of the whole training program, as shown by this finding's statistically significant logistic regression.

Finding #5: The next logistic regression model considered associations between the efficacy of the training materials and the effectiveness of the training. The odds ratio for the effectiveness of the training materials was 48.182 ($p < .01$). This implied Marines were 48.182 times more likely to consider the training as being effective when they indicated the associated training materials were also effective. This finding was particularly important because it directly linked the efficacy of the training materials to the overall effectiveness of the training as suggested by this statistically significant logistic regression. Currently, only 84 out of 480 (17.50 percent) respondents considered the current format of the related training materials as at least acceptable. The associated logistic regression suggested an extremely strong relationship between the respondents' thinking of the training materials as effective and the overall efficacy of the presented training.

The Marine Corps should be, therefore, concerned with ensuring the associated training materials were attractive to Marines in terms of usability, accessibility, readability, and actually helping them acquire the subject matter new knowledge. Ideally, the training materials should be experiential, which in itself often results in an enhanced post-training memory retention of the presented learning materials as recommended by

Knowles (1984) and Kirkpatrick (2006). As of now, there were too many Marines who reported the current state of the training materials as poor and ineffectual. Since, there was a direct relationship between the quality of the training materials and the effectiveness of the training (Kirkpatrick, 2006), the Marine Corps needed to ensure the combat operational stress preventive training materials possess an appropriate level of quality to reflect what Marines wanted and needed. Otherwise, the effectiveness of the whole combat operational stress preventive training program could be and unfortunately had been negatively impacted.

Finding #6: The next logistic regression model considered associations between the respondents' overall feelings toward the preventive combat operational stress training and the effectiveness of the training. The odds ratio for the Marines' overall feelings toward the preventive combat operational stress training was 31.859 ($p < .01$). This implied Marines were 31.859 times more likely to consider the subject matter preventive training as being effective when they indicated having positive feelings toward the combat operational stress preventive training.

The implications of this finding were also significant. Marines' positive feelings toward the combat operational stress training were directly related to the effectiveness of the whole training program. Currently, only 117 out of 480 (24.30 percent) respondents reported having definitely positive feelings about the combat operational stress preventive training program. The associated logistic regression suggested an extremely strong relationship between the respondents having positive feelings about the preventive training program and the effectiveness of the whole training effort.

The Marine Corps should be concerned with ensuring the training participants have positive feelings toward the training. As of now, there were too many Marines who indicated having negative feelings toward it, which in turn had harmfully impacted the overall effectiveness of the combat operational stress preventive training. This was definitely an undesirable end state. In order to counter this, the Marine Corps should strive to improve the overall quality of the training. By improving the quality of the training and thus its image, the overall effectiveness of the training could be enhanced too (Kirkpatrick, 2006), which was obviously a desirable end state.

Finding #7: The next logistic regression model considered associations between the respondents' reported efficacy of the trainers and the effectiveness of the combat operational stress preventive training. The odds ratio for the efficacy of the trainers was 17.831. This implied Marines were 17.831 times more likely to consider the combat operational stress preventive training as being effective when they indicated the trainers who conducted the training were proficient.

Currently, only 117 out of 480 (24.40 percent) respondents thought of the trainers as being fully effective. The associated logistic regression suggested a very strong relationship between the efficacy of the trainers and the effectiveness of the whole training program. The Marine Corps should be concerned with the quality of the training presenters. This was because having effective trainers directly correlated with an eventual success of the whole training program as recommended by Kirkpatrick (2006). As of now, there were too many Marines who did not think very highly of the combat operational stress preventive training instructors, which in turn had negatively impacted the overall effectiveness of the training. Without doubt, the Marine Corps needed to

improve the proficiency of the trainers since having capable and subject matter knowledgeable instructors was one of the fundamental requirements for an effective preventive training program (Kirkpatrick, 2006).

Finding #8: The next logistic regression model considered associations between the respondents' learning the combat operational stress preventive skills and techniques and the reported effectiveness of the training. The odds ratio for learning was 23.999 ($p <$ .01). This implied Marines were 23.999 times more likely to consider the combat operational stress preventive training as being effective when they indicated they actually learned the subject matter skills and techniques.

Currently, 309 out of 480 (64.40 percent) respondents indicated learning new knowledge related to combat operational stress preventive training. However, 171 out of 480 (36.60 percent), or over one third of the respondents, indicated they did not acquire any new knowledge related to combat operational stress preventive training, which should be a concern. The associated logistic regression suggested a very strong relationship between learning new combat operational stress knowledge and the effectiveness of the subject matter training program. The Marine Corps should be concerned with the fact the training participants actually learned the subject matter new knowledge. This was because learning new combat operational stress knowledge strongly correlated with the success of the whole training program, as shown by the associated logistic regression. As of now, there were too many Marines who did not consider their combat operational stress preventive learning a success, which in turn had negatively impacted the effectiveness of the combat operational stress preventive training program. The Marine Corps needed to do a better job at ensuring Marines actually learned new

knowledge during the training, since learning new subject matter knowledge had such a positive consequence upon the overall effectiveness of the combat operational preventive training as indicated by this finding's logistic regression.

Finding #9: The next logistic regression model considered associations between the respondents' reaction toward the preventive combat operational stress training and the effectiveness of the training. The odds ratio for reaction was 57.873 ($p < .01$). This implied Marines were 57.873 times more likely to consider the training as being effective when they had positive reaction toward the received training.

Currently, only 96 out of 480 (20.00 percent) respondents indicated reacting positively toward the presented combat operational stress preventive training. The associated logistic regression suggested a strong relationship between the positive reaction to the presented training and the effectiveness of the whole training effort. The Marine Corps should be concerned with Marines positively reacting toward the presented training and thus enjoying the training. This was because having a positive reaction to the presented training directly correlated with success of the whole training program, as suggested by the associated logistic regression and Kirkpatrick (2006). As of now, there were too many Marines who did not react favorably to the presented combat operational stress preventive training, which in turn had negatively affected the overall effectiveness of the training. The presented training format needed to be attractive to Marines in such a way, so they would react favorably to the presented training. When Marines react favorably and consequently enjoy the training, the whole training program could be then positively affected with desirable end states of decreased number of PTSD cases, other mental health related disorders, drug and alcohol abuse cases, and instances of intimate

partner violence. Table 57 provides a summary of findings used to answer Research Questions 2 and 3.

Table 57

Summary of Findings Used to Answer Research Questions 2 and 3

Key Points For Findings 1 through 9
Finding #1: Only 96 respondents out of 480 (20.00 percent) considered the Marine Corps combat operational stress preventive training either as fully effective or at least acceptable.
Finding #2: When Marines reported using the learned combat operational stress preventive skills in their daily lives, they were 13.238 times more likely to indicate the subject matter training was effective.
Finding #3: When Marines reported possessing the combat operational stress coping skills, they were 20.557 times more likely to indicate the subject matter training was effective.
Finding #4: When Marines reported participating in the combat operational stress preventive formal training, they were 19.058 times more likely to report the subject matter training was effective.
Finding #5: When Marines indicated the combat stress preventive training materials were effective, they were 48.182 times more likely to consider the subject matter training as effective. Only 84 out of 480 (17.50 percent) respondents considered the current format of the subject matter training materials as at least acceptable.

Table 57 (continued)

Summary of Findings Used to Answer Research Questions 2 and 3

Key Points For Findings 1 through 9
Finding #6: When Marines indicated having positive feelings toward the combat operational stress preventive training, they were 31.859 times more likely to consider the subject matter training as being effective. Only 117 out of 480 (24.40 percent) respondents reported having definitely positive feelings about the combat operational stress preventive training program.
Finding #7: When Marines indicated the trainers who conducted the combat operational stress preventive training were proficient, they were 17.831 times more likely to consider the subject matter training as being effective. Only 117 out of 480 (24.40 percent) respondents thought of the trainers as being fully effective.
Finding #8: When Marines indicated actually learning the subject matter skills and techniques, they were 23.999 times more likely to consider the combat operational stress preventive training as being effective.
Finding #9: When Marines positively reacted toward the received combat stress preventive training they were 57.873 times more likely to consider the training as being effective. Only 96 out of 480 (20.00 percent) respondents indicated reacting positively toward the presented combat operational stress preventive training.

Qualitative Conclusions

The primary purpose of the study's qualitative segment was to explore the effectiveness of the combat operational stress preventive training services in order to

answer Research Questions 2 and 3. Overall, the qualitative study's participants were dissatisfied with the training. This finding applies equally to both officers and enlisted as there were no discernible differences of stated opinions between both groups. While the current format of the preventive training had been successful in providing some basic information about the combat operational stress preventive training, it had not resulted in Marines learning specific pragmatic skills that could be readily applied in the field. This fact had been confirmed by all the interviewees, who indicated they did not see Marines applying learned preventive combat stress skills and techniques in their daily lives. Additionally, the observed instructors did not provide any post-training tests, so there were no means of measuring whether the participants acquired new knowledge as recommended by Kirkpatrick (2006). Although some of the participants correctly answered a few basic questions from the instructors, this was certainly not enough to assess whether in fact all the participants or at least a majority of them actually learned the subject matter new knowledge.

Additionally, any training activity should result in transfer of knowledge with the training participants applying the learned skills in real life situations (Kirkpatrick, 2006). However, other than increasing awareness of the combat operational stress preventive training program, the training did not provide the Marines with the specific tools to deal with effects of combat operational stress. As mentioned earlier, all the interviewees did not see their Marines applying the learned preventive combat stress skills in their daily lives, which meant the expected transfer of knowledge did not occur. The researcher triangulated this finding with the Defense Medical Surveillance System (DMSS), which showed consecutive annual increases in new mental health, PTSD, drug, and alcohol

abuse cases in the Marine Corps starting at the onset of the 9/11 related hostilities and continuing to this date (DMSS, 2009; Sipko, 2008). The rising combat operational stress casualties indicated the training program participants were having difficulties in applying what they had learned in the combat operational stress preventive training program.

Actual military combat operations often resulted in a rise of mental health casualties (Hoge et al., 2004; Hoge et al., 2006; Smith et al., 2008). Early intervention practices, such as properly instituted training and education, could result in a decrease of mental health occurrences (Litz, Gray, Bryant, & Adler, 2002; Hall, Cipriano, & Bicknell, 1997). Based on this paradigm, it was important the Service properly instituted preventive combat operational stress education and training services. Such training activities should be effective in teaching and instilling Marines with appropriate pragmatic coping skills and techniques as required by the Marine Corps (Gaskin, 2008; USMC, 2004). As a result, the newly learned coping skills and techniques could be then readily applied in Marines' daily lives. The Marine Corps had preventive education and training services in place; however, this study suggested the currently formatted and delivered combat operational stress preventive training was not effective in decreasing the Marine Corps mental health casualty rates.

Synopsis of the Conclusions

In summary, several conclusions resulted from this study. First, the Marines' experiences from effects of combat operational stress, evidenced by instances of suffering from effects of combat operational stress, influenced how they evaluated the effectiveness of the combat operational stress preventive training. This study reported statistically significant relationships between using the learned preventive combat skills

in Marines' daily lives, possessing combat operational stress coping skills, participating in combat operational stress preventive training classes, reporting the effectiveness of the combat operational stress preventive training program, and admitting to having suffered from effects of combat operational stress. This implied the combat operational stress preventive training program does significantly influence Marines in admitting they had combat operational stress related problems. This finding was also beneficial in terms of Marines' ability to seek the needed mental health therapy. By virtue of being better informed about the combat operational stress concepts and principles, they should be much better prepared to voluntarily seek and then get the needed help from mental health professionals. This positive effect of the combat operational stress preventive training had also been one of the main goals of the preventive combat operational stress training (Gaskin, 2008; Nash, 2007).

Second, the current state of the program does not seem to be fully effective in having Marines, regardless of rank, use the learned combat skills in their daily lives which also negatively impacts the effectiveness of the whole training program. These claims have been evidenced by several descriptive statistics and associated significant logistic regression models. Specifically, the study reported statistically significant relationships between Marines using the newly acquired combat operational stress preventive knowledge in their daily lives, possessing preventive coping skills, participating in combat operational stress preventive classes, positively reacting toward the presented training, actually learning new combat operational stress related knowledge, the efficacy of the combat operational stress training materials, having

positive feelings toward the combat operational stress training program, reported proficiency of the trainers, and the effectiveness of the whole training program.

These findings strongly imply the whole program was significantly dependent on Kirkpatrick's (2006) evaluation of the training effectiveness constructs. In order for the program to be fully effective, Marines needed to positively react to the presented training, and then they needed to learn new knowledge associated with the preventive combat operational stress training. After they successfully acquired this new knowledge, they needed to incorporate the learned skills and techniques into their daily lives by actually using this newly developed proficiency on a daily basis. Only then, the whole program might achieve its intended overarching goal of fewer cases of mental health problems, fewer alcohol and drug related incident cases, and fewer instances of intimate partner violence amongst the active duty Marines.

Unfortunately, the current state of the combat operational stress prevention training program had not been fully effective. Both quantitative and qualitative inquiries revealed the fact that only a relatively small number of Marines reacted positively and consequently enjoyed the training. There were some Marines who learned basic facts about the combat operational stress, but only a small number of them indicated using this new knowledge in their daily lives. Finally, the majority of the Marines indicated the whole combat operational stress preventive training program had not been fully effective. This fact had been triangulated by the Defense Medical Surveillance System (DMSS) which indicated consecutive rises in PTSD, drug, and alcohol related mental health cases in the Marine Corps since the beginning of the 9/11 related hostilities (DMSS, 2009; Sipko, 2008).

Recommendations

Based upon the outcomes of this study, several recommendations are proposed. The first set of recommendations addresses using the study's findings to guide immediate corrective suggestions for improving the current state of the Marine Corps combat operational stress preventive program. The next recommendations concern future research in the area of combat operational stress preventive training and education services.

Implementing Findings of the Study

This study's findings can be implemented in several ways. First, the researcher needs to share the study's findings with the Marine Corps Combat Operational Stress Control branch officers. The goal of sharing the findings with the officers is to enhance the current combat operational stress preventive training and education services. Findings will be shared through face-to-face presentations to the entire branch staff and the Combat Operational Stress Control program Director. By virtue of personally making the presentations, the researcher will make the program officers aware of the shortcomings in the current state of the combat operational stress preventive training and education services discovered or confirmed by this study. By knowing and fully understanding the discrepancies, the program officers will be able to take corrective actions in order to improve the subject matter training program.

Some of the noted discrepancies included using inadequate training materials consisting of static Microsoft® PowerPoint™ slides. A number of the respondents, observed trainees, and interviewees indicated the presented training material was inherently dull, unattractive, and non-engaging. As a result, a majority of the respondents

did not react favorably to the training. Despite two thirds of the respondents indicated learning the basic combat operational stress related concepts, a majority of the respondents did not use the learned skills in their daily lives. Consequently, the whole combat operational stress training program was not fully effective, as suggested by this study's quantitative and qualitative inquiries.

Doctrinally, the Marine Corps trains as it fights which means individual Marines are expected to use the learned knowledge pragmatically in the field and if applicable in their daily lives (USMC, 2004). Presently, the preventive combat operational stress training program has fallen short of this goal. The Marine Corps leaders need to strive and encourage Marines assigned under them to use the learned combat operational stress preventive skills and techniques in their daily lives. As more Marines practice what they learn, eventually the whole preventive training program should improve in terms of discernible decreases in new mental health related cases which include fewer new instances of PTSD, fewer new cases of other combat operational stress related mental health maladies, fewer drug and alcohol abuse cases, and fewer instances of intimate partner violence.

The Marine Corps Combat Operational Stress Control branch officers need to start the program improvement with the actual training process. Per the Marine Corps training doctrine, the combat operational stress preventive training needs to be rank and grade focused and standardized across the Marine Corps to include all formal schools, pre-deployment training requirements, and sustainment training (USMC, 2004). Additionally, in order to facilitate the current world-wide operations, it is recommended to develop alternative training means, such as interactive internet resources, situational

vignettes, videos, and other best practice training solutions to enhance and expand the training program quality, accessibility, and consistency.

It is fascinating that instructional technology might be the key to the future for improved combat operational stress preventive training. For instance, web-based applications accessible anywhere, anytime could be an answer to distributed operations faced by many Marine Corps units deployed in support of combat operations in Iraq and Afghanistan. Web-based asynchronous presentations and situational vignettes would be reused many times by thousands of Marines. This reuse factor would drive the overall costs down - a great benefit of the information technology. Moreover, the training presentations and situational vignettes should be interactive in nature to reinforce the learning process and boost the retention rates as much as possible as recommended by Knowles (1984). Additionally, there should be computer-based training (CBT) available through digital video discs (DVDs) which could be used in situations when the Internet connectivity is spotty or just not available. This is especially true in forward deployed situations. By having available DVD-based training materials, forward deployed troops would simply insert DVDs into their unit training laptops and conduct the needed training as appropriate.

Combat operational stress preventive training based on state of the art instructional technology has a chance of becoming a force-multiplier by virtue of its flexibility and reusability. This is because today's instructional technology provides the capability for training and education that is continuous and accessible 24/7 anywhere in the world. Combat Operational Stress Control is a comprehensive, multi-disciplinary approach to prevent, identify, and manage the adverse effects of combat operational

stress on the physical, psychological, social, and spiritual health of Marines (Gaskin, 2008; Nash, 2007). Likewise, instructional technology based combat operational stress preventive training also needs to be comprehensive and multi-faceted to mirror the multi-disciplinary approach to the combat stress preventive training.

State of the art instructional technology delivery methods allow for a high degree of interactivity and simulations which translate into a successful memory retention of the associated learning material (Knowles, 1984). The technology enhanced training would teach the basics of the expected, predictable, emotional, intellectual, physical, and behavioral reactions to combat operational stress. Such training would stress the employment of effective leadership, enhancement of unit cohesion, morale, and effectual interpersonal communications. Instructional technology could be the enabler to achieve these goals. All of this could be accomplished with less bureaucracy and more flexibility directly benefiting the Marine Corps' greatest and most important resources - the individual Marines.

In order to achieve these goals, the Combat Operational Stress Control branch officers need to revamp the current training format in such a way that it is truly interesting, captivating, and engaging as judged by the program's ultimate customers, the individual Marines. When more Marines start to react positively to the presented training, in most likelihood, they will learn more effectively with increased memory retention rates. By knowing more about the combat operational stress preventive concepts and with preventive skills and techniques committed to the long-term memory, Marines should be more prone to use the learned skills and techniques in their daily lives. Only then, the whole program could become more effective as evidenced by discernible decreases in

new PTSD cases, fewer new other mental health problems and illnesses, fewer drug and alcohol abuse cases, and fewer instances of intimate partner violence.

Future Research

Based on the study's findings, several follow-on studies are recommended. First, another study which would compare longitudinally whether the Marine Corps combat operational stress preventive training has in fact improved, providing the Service incorporated the suggestions derived and described by this study. Second, each sister Service (the Army, the Navy, and the Air Force) has also been required by the Department of Defense to institute their own combat operational stress preventive training programs (Department of Defense, 1999). It is recommended to conduct an assessment of each of the Services respective combat operational stress preventive training programs to determine their effectiveness or ineffectiveness. As a value added benefit of such assessments, best practices derived from the Service specific program reviews could be then shared through a peer-reviewed published article. Third, each military service has its own special and elite groups (e.g., Special Forces in the Army, the Navy SEALs, or fighter pilots in the Air Force). It is interesting to find out how each specific military service branch deals with combat operational stress inherently and undoubtedly found within the rank and file of these special military groups.

The recommendations described in this study have a strong potential to result in perceptible improvements of the Marine Corps combat operational stress preventive training program. And utmost importantly, the recommendations have a potential to directly benefit our Nation's individual Marines, thus directly contribute to their mental health well being. This is significant because having fully mentally fit Marines also

holistically contributes to both preservation of the Marine Corps forces and the overall combat readiness of the Marine Corps (Gaskin, 2008; Nash, 2007). It is the Marine Corps' best interest to incorporate the study's recommendations. The implementation of the recommendations would also meet expectations of the American public who in good faith entrusted their daughters and sons into the Marine Corps care and thus justifiably expect their daughters and sons back home healthy and ready for full and productive civilian lives.

REFERENCES

Adler, A. B., Vaitkus, M. A., & Martin, J. A. (1996). Combat exposure and post-traumatic stress symptomatology among U.S. soldiers deployed to the Gulf War. *Military Psychology, 8*, 1-14.

Adler, A. B., Dolan, C. A., & Castro, C. A. (2000). U.S. soldier peacekeeping experiences and well being after returning from deployment to Kosovo. *Proceedings of the 36th International Applied Military Psychology Symposium, Split, Croatia: Ministry of Defense of the Republic of Croatia*, 30-34.

Aldwin, C. M. (1994). *Stress, coping, and development: An integrative perspective.* New York: Guilford Press.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders.* Washington, DC: Author.

Armed Forces Health Surveillance Center. (2009). *Medical Surveillance Monthly Report*. Retrieved June 03, 2009 from http://afhsc.army.mil/msmr_pdfs/2009 /v16_n04.pdf#Page=01.

Bartone, P. T., Ursano, R. J., Saczynski, K., & Ingraham, L. H. (1989). The impact of a military air disaster on the health of assistance workers: A prospective study. *Journal of Nervous and Mental Disease, 177*, 317-327.

Bartone, P. T.,Vaitkus, M. A., & Adler A. B. (1998). Dimensions of psychological stress in peacekeeping operations. *Military Medicine, 163*, 587-593.

Bartone, P. T. (1999). Hardiness protects against war-related stress in Army reserve forces. *Consulting Psychology Journal, 51*, 72-82.

Bergman, B., & Brismar, B. (1991). A 5-year follow-up study of 117 battered women. *American Journal of Public Health, 81*, 1486-1489.

Bliese, P. D., Wright, K. M., Adler, A. B., & Thomas, J. L. (2006). *Psychological screening validation with soldiers returning from combat.* In: M. Roy, eds. Novel approaches to the diagnosis and treatment of post-traumatic stress disorder. Amsterdam, the Netherlands: NATO/IOS Press: 78-86.

Boelen, P. A., de Keijser, J., Van den Hout, M. A., & Van den Bout, J. (2007). Treatment of complicated grief: A comparison between cognitive-behavioral therapy and supportive counseling. *Journal of Consulting and Clinical Psychology, 75*, 277-284.

Boelen, P. A., & Prigerson, H. G. (2007). The influence of symptoms of prolonged grief disorder, depression, and anxiety on quality of life among bereaved adults: A prospective study. *European Archives of Psychiatry and Clinical Neuroscience, 257*, 444-452.

Boscarino, J. A. (1997). Diseases among men 20 years after exposure to severe stress: Implications for clinical research and medical care. *Psychosomatic Medicine, 59*, 605-614.

Brandt, G. T., Norwood, A. E., Ursano, R. J., Wain, H., Jaccard, J. T., Fullerton, C. S., & Wright, K. (1997). Psychiatric morbidity in medical and surgical patients evacuated from the Persian Gulf War. *Psychiatry Services, 48*, 102-104.

Breuer, J., & Freud, S. (1957). *Studies on hysteria.* New York: Basic Books. (Original published in 1895).

Campbell, J. C. (2002). Health consequences of intimate partner violence. *Lancet, 359*, 1331-1336.

Campbell, J. C., Jones, A. S., Dienemann, J., Kub, J., Schollenberger, J., & O'Campo, P. (2002). Intimate partner violence and physical health consequences. *Archives of Internal Medicine, 162*, 1157-1163.

Centers for Disease Control and Prevention. (2003). *Costs of intimate partner violence against women in the United States*. Atlanta, GA: Centers for Disease Control and Prevention.

Cigrang, J. A., Peterson, A. L., & Schobitz, R. P. (2005). Three American troops in Iraq: evaluation of a brief exposure therapy treatment. *Pragmatic Case Studies in Psychotherapy, 1*, 1-25.

Cochran, W.G. (1977). *Sampling techniques*. New York: John Wiley & Sons.

Cohen, S., Gottlieb, B., & Underwood, L. (2000). Social relationships and health. In S. Cohen, L. Underwood, & B. Gottlieb (Eds.). *Measuring and intervening in social support* (pp. 3-25). New York: Oxford Press.

Coker, A. L., Smith, P. H., Bethea, L., King, M. R., & McKeown, E. (2000). Physical health consequences of physical and psychological intimate partner violence. *Archives of Family Medicine, 9*, 451-457.

Coker, A. L., Davis, K. E., Arias, I., Desai, S., Sanderson, M., & Brandt, H. M. (2002). Physical and mental health effects of intimate partner violence for men and women. *American Journal of Preventive Medicine, 23*, 260-268.

Corrigan, P. W., Markowitz, F. E., & Watson, A. C. (2004). Structural levels of mental illness stigma and discrimination. *Schizophrenia Bulletin, 30*, 481-491.

Cox, A. A. (1995). *Unit cohesion and morale in combat: Survival in a culturally and racially heterogeneous environment.* Fort Leavenworth, KS: School of Advanced Military Studies.

Creswell, J. W. (2007). *Qualitative inquiry & research design: Choosing among five approaches.* Newbury Park, CA: Sage.

Da Costa, J. M. (1871). On irritable heart: A clinical study of a form of functional cardiac disorder and its consequences. *American Journal of Medical Science, 61*, 17-52.

Davidovitz, R., Mikulincer, M., Shaver, P. R., Izsak, R., & Popper, M. (2007). Leaders as attachment figures: Leaders' attachment orientations predict leadership-related mental representations and followers' performance and mental health. *Journal of Personality and Social Psychology, 93*, 632-650.

Dean, E. T. (1997). *Shook over hell: Post-traumatic stress, Vietnam, and the Civil War.* Cambridge, MA: Harvard University Press.

Defense Medical Surveillance System (DMSS). (2009). *Defense Medical Epidemiology Database (DMED), 2009* [Data File]. Available from Armed Forces Health Surveillance Center web site, http://afhsc.army.mil/index.asp.

Department of the Army. (2006). *Combat and operational stress control.* Washington DC: Author.

Department of Defense. (1999). *Combat stress control (CSC) programs.* Washington DC: Author.

Department of Defense. (2009). Active duty military personnel strengths by regional area and by country. Washington, DC: Washington Headquarters Services.

Dick, W., & Carey, L. (1996). *The systematic design of instruction.* New York: Haper Collins College Publishers.

Dohrenwend, B. P., Turner, J. B., Turse, N. A, Adams, B. G., Koenen, K. C., & Marshall, R. (2007). Continuing controversy over the psychological risks of Vietnam for U.S. veterans. *Journal of Trauma Stress, 20,* 449-465.

Doyle, M. E. M. (2000). Combat stress control detachment: A commander's tool. *Military Review, 3,* 65-71.

Eisenstat, S. A., & Bancroft, L. (1999). Domestic violence. *New England Journal of Medicine, 341,* 886-892.

Elder, G. H., & Clipp E. C. (1988). Combat experience, comradeship, and psychological health. In J. P. Wilson, Z. Harel, & B. Kahana (Eds.), *Human adaptation to extreme stress* (pp. 131-156). New York: Plenum Press.

Engel, G. L. (1980). The clinical application of the biopsychosocial model. *American Journal of Psychiatry 137,* 535-544.

Engel, A. G., & Aquilino, C. A. (2004). Combat duty in Iraq and Afghanistan and mental health problems. *The New England Journal of Medicine, 351,* 1798-1800.

Engelhard, I. M., & Van den Hout, M. A. (2007). Preexisting neuroticism, subjective stressor severity, and post-traumatic stress in soldiers deployed to Iraq. *Canadian Journal of Psychiatry, 52,* 505-509.

Everly, G., & Castellano, C. (2004). *Psychological counterterrorism and World War IV.* Ellicott City, MD: Chevron.

Everly, G., & Lating, J. (2004). *Personality-guided therapy for post-traumatic stress disorder.* Washington, DC: American Psychological Association.

Fenichel, O. (1945). *The psychoanalytic theory of neurosis.* New York: W.W. Norton & Co.

Fontana, A., & Rosenheck, R. (1999). A model of war zone stressors and post-traumatic stress disorder. *Journal of Trauma Stress, 12*, 111-126.

Frankl, V. E. (1984). *Man's search for meaning.* New York: Simon & Schuster.

Friedman, M. J. (2004). Acknowledging the psychiatric cost of war. *New England Journal of Medicine, 351*, 75-77.

Gall, J., Gall, M., & Borg, W. (1999). *Applying educational research: A practical guide.* New York: Addison Wesley, Longman Inc.

Garland, F. (1993). Combat stress control in the post-war theater: Medical health consultation during the redeployment phase of operation desert storm. *Military Medicine, 158*, 334-338.

Gaskin, T. A. (2008). *Combat operational stress control (COSC) program update.* Paper presented at 2008 Combat Stress International Conference, San Diego, CA.

Gawande, A. (2004). Causalities of war: Military care for the wounded from Iraq and Afghanistan. *New England Journal of Medicine, 351*, 2471-2475.

Gilbert, T. (1998). A Leisurely Look at Worthy Performance. *The 1998 ASTD training and performance yearbook* (pp. 13-29). In Woods, J. & Gortada, J. (eds). New York: McGraw-Hill.

Global Security. (2009). *U.S. ground forces end strength.* Retrieved June 14, 2009 from http://www.globalsecurity.org/military/ops/iraq_orbat_es.htm.

Greenfeld, L., Rand, M., Craven, D., Klaus, P., Perkins, C., & Ringel, C. (1998). *Violence by intimates: Analysis of data on crimes by current or former spouses, boyfriends, and girlfriends*. Washington, DC: U.S. Department of Justice.

Grieger, T. A., Cozza, S., & Engel, C. C. (2005). *Course of PTSD and depression in battle injured soldiers*. Presented at 158th Annual Meeting of the American Psychiatric Association, Atlanta, GA.

Grossman, D. (1995). *On killing: The psychological cost of learning to kill in war and society*. Boston: Little, Brown & Company.

Hammes, T. A. (2004). *The sling and the stone.* St. Paul, MN: Zenith.

Hayes, M. (2003). Just who's talking ROI? *Information Week, 5*, 18.

Henning, K. R., & Freuh, B. C. (1997). Combat guilt and its relationship to PTSD symptoms. *Journal of Clinical Psychology, 53*, 801-808.

Hoge, C. W., Lesikar, S. E., Guevara, R., Lange, J., Brundage, J., Engel, C. C., Messer, S. C., & Orman, D. T. (2002). Mental disorders among U.S. military personnel in the 1990s: Association with high levels of health care utilization and early military attrition. *American Journal of Psychiatry, 159*, 1576-1583.

Hoge, C. W., Castro, C. A., Messer, S. C., McGurk, D., Cotting, D. L., & Koffman, R. L. (2004). Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *The New England Journal of Medicine, 351*, 13-22.

Hoge, C. W., Auchterlonie, J. L., & Milliken, C. S. (2006). Mental health problems, use of mental health services, and attrition from military service after returning from deployment to Iraq or Afghanistan. *Journal of the American Medical Association, 295*, 1023-1032.

Hoge, C. W., Terhakopian, A., Castro, C. A., Messer, S. C., & Engel, C. C. (2007). Association of post-traumatic stress disorder with somatic symptoms, health care visits, and absenteeism among Iraqi war veterans. *American Journal of Psychiatry, 164*, 150-153.

Horowitz, M. J., & Solomon, G. F. (1975). A prediction of delayed stress response syndromes in Vietnam veterans. *Journal of Social Issues, 31*, 67-80.

Horowitz, M. J., Siegle, B., Holen, A., Bonanno, G. A., Milbrath, C., & Stinson, C. H. (1997). Diagnostic criteria for complicated grief disorder. *American Journal of Psychiatry, 174*, 67-73.

Hosmer, D., & Lemeshow S. (2000). *Applied logistic regression.* NY: Wiley & Sons.

Hoyt, G. B. (2006). Integrated mental health within operational units: Opportunities and challenges. *Military Psychology, 18*, 309-320.

Hyams, K., Wignall, F., & Roswell, R. (1996). War syndromes and their evaluation: From the U.S. Civil War to the Persian Gulf War. *Annals of International Medicine, 125*, 398-405.

iCauslties.org. (2010). *Iraq and Afghanistan coalition casualty count.* Retrieved January 18, 2010 from http://icasualties.org.

Iribarren, J., Prolo, P., Neagos, N., & Chiappelli, F. (2005). Post-traumatic stress disorder: Evidence-based research for the third millennium. *Journal of Evidence-based Complementary and Alternative Medicine 2*, 503-512.

Iversen, A. C., Fear, N. T., & Ehlers, A. (2008). Risk factors for post-traumatic stress disorder among UK armed forces personnel. *Psychological Medicine, 38*, 511-522.

Ikin, J. F., Sim, M. R., Creamer, M. C., Forbes, A. B., McKenzie, D. P., Kelsall, H. L., Glass, D. C., McFarlane, A. C., Abramson, M. J., Ittak, P., Dwyer, T., Blizzard, L., Delaney, K. R., Horsley, K. W., Harrex, & Schwarz, H. (2004). War-related psychological stressors and risk of psychological disorders in Australian veterans of the 1991 Gulf War. *British Journal of Psychiatry, 18*, 116-126.

Janet, P. (1920). *The major symptoms of hysteria: Fifteen lectures given in the Medical School of Harvard University.* New York: Macmillan Co. (Original published in 1907).

Jones, F. D. (1995). Psychiatric lessons of war. In F.D. Jones, L. R. Sparacino, V. L. Wilcox, J. M. Rothberg, & J. W. Stokes (Eds.), *War psychiatry* (pp. 3-33). Washington, DC: Borden Institute.

Jones, S. (2004). Paying the price: The psychiatric cost of war. *Archives of Psychiatric Nursing, 18*, 119-120.

Jordan, B. K., Schlenger, W. E., Hough, R., Kulka, R. A., Weiss, D., Fairbank, J. A., & Marmar, C. R. (1991). Lifetime and current prevalence of specific psychiatric disorders among Vietnam Veterans. *Archives of General Psychiatry, 48*, 207-215.

Jordan, B. (1992). Problems in families of male Vietnam veterans with post-traumatic stress disorder. *Journal of Consulting and Clinical Psychology, 60*, 916-926.

Kang, H. K., & Hyams, K. C. (2004). Mental health care needs among recent war veterans. *New England Journal of Medicine, 352,* 1289-1301.

Kang, H. K., Natelson, B. H., Mahan, C. M., Lee, K. Y., & Murphy, F. M. (2003). Post-traumatic stress disorder and chronic fatigue syndrome-like illness among Gulf War veterans: a population-based survey of 30,000 veterans. *American Journal of Epidemiology, 157*, 141-148.

Kaplan, R. S., & Norton D. P. (2001). *The strategy-focused organization: How balanced scorecard companies thrive in the new business environment.* Boston, MA: Harvard Business School Press.

Kaylor, J. A., King, D. W., & King, L. A. (1987). Psychological effects of military service in Vietnam: A meta-analysis. *Psychological Bulletin, 102*, 257-271.

Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Post-traumatic stress disorder in the national comorbidity study. *Archives of General Psychiatry, 52*, 1048-1060.

Kirkpatrick, D. (2006). *Evaluating Training Programs.* San Francisco, CA: Berrett-Koehler Publishers.

King, D. W., King, L. A., Gudanowski, D. M., & Vreven, D. L. (1995). Alternative representations of war zone stressors: Relationships to post-traumatic stress disorder in male and female Vietnam Veterans. *Journal of Abnormal Psychology, 104*, 184-196.

King, D. W., King, L. A., Foy, D. W., Keane, T. M., & Fairbank, J. A. (1999). Post-traumatic stress disorder in a national sample of female and male Vietnam veterans: Risk factors, war zone stressors, and resilience-recovery variables. *Journal of Abnormal Psychology, 108,* 164-170.

Knowles, M. (1984). *The Adult Learner: A Neglected Species*. Houston, TX: Gulf Publishing.

Knowles, M. (1984). *Andragogy in Action*. San Francisco: Jossey-Bass.

Kobasa, S. C. (1979). Stressful life events, personality and health: An inquiry into hardiness. *Journal of Personality and Social Psychology, 37,* 1-11.

Koenen, K. C., Stellman, J. M., Stellman, S. D, & Sommer, J. F. (2003). Risk factors for course of post-traumatic stress disorder among Vietnam veterans: A 14-year follow-up of American Legionnaires. *Journal of Consulting and Clinical Psychology, 71*, 980-986.

Kolkov, T. T., Grieger, T. A., Morse, J. S. & Spira, J. (2005). *Post-deployment distress in medical personnel following deployment*. Presented at 158th Annual Meeting of the American Psychiatric Association, Atlanta, GA.

Koren, D., Norman, D., Cohen, A., Berman, J., & Klein, E. M. (2005). Increased PTSD risk with combat-related injury: A matched comparison study of injured and uninjured soldiers experiencing the same combat events. *American Journal of Psychiatry, 162*, 276-282.

Kormos, H. R. (1978). The nature of combat stress. In C. R. Figley (Ed.), *Stress disorders among Vietnam Veterans* (pp. 3-22). New York: Brunner-Routledge.

Kubany, E. (1994). A cognitive model of guilt typology in combat-related PTSD. *Journal of Traumatic Stress, 7*, 3-19.

Kulka, R. A., Schlenger, W. E., Fairbank, J., Hough, R. L., Jordan, B. K, Marmar, C. R., & Weiss, D. S. (1990). *Evidence of post-traumatic stress disorder, in trauma and the Vietnam War generation: Report of findings from the National Vietnam*

Veterans Readjustment Study. New York: Brunner/Mazel.

Lamberg, L. (2004). Military psychiatrists strive to quell soldiers' nightmares of war. *Journal of the American Medical Association, 292*, 1539-1540.

Lazarus, R. S. & Folkman, S. (1984). *Stress, appraisal, and coping.* New York: Springer Publishing Company.

Lazarus, R .S. (1999). *Stress and emotion: A new synthesis.* New York: Springer Publishing Company.

Leshin, C. B., Pollock, J., & Reigeluth, C. M. (1992). *Instructional design strategies and tactics*. Englewood Cliffs, NJ: Education Technology Publications.

Litz, B. T., King, L. A., King, D. Q., Orsillo, S. M., & Friedman, M. J. (1997). Warriors as peacekeepers: Features of the Somalia experiences and PTSD. *Journal of Consulting and Clinical Psychology, 65*, 1001-1010.

Litz, B. T., Orsillo, S. M., Friedman, M., Ehlich, P., & Batres, A. (1997). Post-traumatic stress disorder associated with peacekeeping duty in Somalia for U.S. military personnel. *American Journal of Psychiatry, 154*, 178-184.

Litz, B. T., Gray, M., Bryant, R., & Adler, A. (2002). Early intervention for trauma: Current status and future directions. *Clinical psychology: Science and practice, 9*, 112-134.

Litz, B. T. (2006). *The unique circumstances and mental health impact of the wars in Afghanistan and Iraq.* Retrieved June 03, 2009 from http://www.ncptsd.va.gov/ncmain/ncdocs/fact_shts/fs_iraqafghanistan_wars.html?opm=1&rr=rr46&srt=d&echorr=true.

Maddi, S. R. (1999). The personality construct of hardiness: Effect on experiencing, coping and strain. *Consulting Psychology Journal, 51*, 83-94.

Maddi, S. R., & Khoshaba, D. M. (2003). Hardiness training for resiliency and leadership. In D. Paton, J. M. Violanti, & L. M. Smith (Eds.), *Promoting capabilities to manage post-traumatic stress* (pp. 43-58). Springfield, IL: Thomas.

Marlowe, D. H. (2001). *Psychological and psychosocial consequences of combat and deployment with special emphasis on the Gulf War*. Santa Monica, CA: RAND Corporation.

Marshall, A. D., Panuzio, J. & Casey, T. F. (2005). Intimate partner violence among military veterans and active duty servicemen. *Clinical Psychology Review, 25*, 862-876.

McCarroll, J. E., Ursano, R. J., Liu, X., Thayer, L. E., Newby, J. H., Norwood, A. E., & Fullerton, C. S. (2000). Deployment and the probability of spousal aggression by U.S. Army soldiers. *Military Medicine, 165*, 41-44.

McLeer, S. V., & Anwar, R. (1989). A study of battered women presenting in an emergency department. *American Journal of Public Health, 79*, 65-66.

Meyers, L. S., Gamst, G., Guarino G. (2006). *Applied multivariate research: Design and interpretation.* Thousand Oaks, CA: Sage

Nagl, J. A. (2005). *Counterinsurgency lessons from Malaya and Vietnam.* Chicago: University of Chicago Press.

Nash, W. P. (2006). *Combat stress injury theory, research, and management.* New York: Routledge.

Nash, W. P. (2007). *Marine Corps combat operational stress control (COSC): Where we are, how we got here?* Paper presented at the United States Marine Corps Tri-MEF Combat Stress Conference, Camp Pendleton, CA. Retrieved June 03, 2009 from http://www.usmc-mccs.org/cosc/conf2007/documents/3B%202%20PBQ%20MCCOSCC%202007.pdf.

Nash, W. P., Silva, C., & Litz, B. T. (2009). The historical origins of military and veteran mental health stigma, and the stress injury model as a means to reduce it. *Psychiatric Annals, 39*, 90-101.

National Institute for Mental Health (NIMH). (2008). *Post-traumatic stress disorder (PTSD): A real illness.* Retrieved June 14, 2009, from http://www.nimh.nih.gov/health/publications/post-traumatic-stress-disorder-a-real-illness/complete.pdf.

Nemiah, J. C. (1998). Early concepts of trauma, dissociation, and the unconscious: Their history and current implications. In J. D. Bremner & C. R. Marmar (Eds.), *Trauma, memory, and dissociation.* Washington, DC: American Psychiatric Press.

Ott, C. H., Lueger, R. J., Kelber, S. T., & Prigerson, H. G. (2007). Spousal bereavement in older adults: Common, resilient, and chronic grief with defining characteristics. *Journal of Nervous and Mental Disease, 195*, 332-341.

Papa, A. T., Neria, Y., & Litz, B. T. (2008). Traumatic bereavement in war veterans. *Psychiatric Annals, 38,* 686-691.

Paton, D., Violanti, J. M., & Smith L. M. (2003). *Promoting capabilities to manage post-traumatic stress*. Springfield, IL: Thomas.

Perconte, S. T., Wilson, A. T., Pontius, E. B., Dietrick, A. L., & Spiro, K. J. (1993). Psychological and war stress symptoms among deployed and non-deployed reservists following the Persian Gulf War. *Military Medicine, 158,* 516-521.

Phillips, J. (1996). *Measuring the results of training.* The ASTD Training - Development Handbook (pp. 313-141). Craig, R.(ed.). New York: McGraw-Hill.

Pivar, I. L., & Field, N. P. (2004). Unresolved grief in combat veterans with PTSD. *Journal of Anxiety Disorders, 18,* 745-755.

Plichta, S. B. (1992). The effects of woman abuse on health care utilization and health care status: A literature review. *Women's Health Issues, 2,* 154-163.

Prigerson, H. G., Maciejewski, P. K., & Rosenheck, R. A. (2001). Combat trauma: Trauma with highest risk of delayed onset and unresolved post-traumatic stress disorder symptoms, unemployment, and abuse among men. *Journal of Nervous and Mental Disease, 189,* 99-108.

Regier, D., Narrow, W., Rae, D., Manderscheid, R., Locke, B., & Goodwin, F. (1993). The de facto U.S. mental and addictive disorders service system: Epidemiologic catchment area prospective 1-year prevalence rates of disorders and services. *Archives of General Psychiatry, 50,* 85-94.

Resnick, H. S., Kilpatrick, D. G., Dansky, B. S., Saunders, B. E., & Best, C. (1993). Prevalence of civilian trauma and post-traumatic stress disorder in a representative national sample of women. *Journal of Consulting and Clinical Psychology, 61,* 984-991.

Rogers, G. L. (1986). The leader as teacher. *Military Review, 7,* 7-8.

Rosenberg, S. D., Mueser, K. T., Friedman, M. J., Gorman, P. G., Drake, R.E., & Vidaver, R. M. (2001). Developing effective treatments for post-traumatic disorder among people with severe mental illness. *Psychiatric Services, 52,* 1453-1461.

Ruvulo, M. H. (1990). Possible selves. Personalized representations of goals. *Goal Concepts in Psychology* (pp. 95-124). Pervin, L. (Eds). Hillsdale, NJ: Lawrence Erlbaum.

Sammons, M. (2005). Psychology in the public sector: Addressing the psychological effects of combat in the U.S. Navy. *American Psychologist, 67,* 899-909.

Schnurr, P. P., Friedman, M. J., Foy, D. W., Shea, M. T., Hsieh, F. Y., & Lavori, P. W. (2003). Randomized trial of trauma-focused group therapy for post-traumatic stress disorder: Results from a Department of Veteran Affairs cooperative study. *Archives of General Psychiatry, 60,* 481-489.

Shay, J. (1994). *Achilles in Vietnam: Combat trauma and the undoing of character.* New York: Scribner.

Shear, K., Frank, E., Houck, P. R., & Reynolds, C. F. (2005). Treatment of complicated grief: A randomized controlled trial. *Journal of the American Medical Association, 293,* 2601-2608.

Shephard, B. (2000). *A war of nerves: Soldiers and psychiatrists in the twentieth century.* Cambridge, MA: Harvard University Press.

Sipko, M. M. (2008). Combat operational stress control: Prevention through training and education. *Marine Corps Gazette, Professional Journal of U.S. Marines (92),* 11, 77-80.

Sipko, M. M. (2008). Technology can help with combat operational stress. *Proceedings. U.S. Naval Institute. Independent Forum on National Defense (134)*, 11, 1,269, 70-72.

Smith, T. C., Ryan, M. A. K., Wingard, D. L., Slymen, D. J., Sallis, J. F., & Kritz-Silverstein, D. (2008). New onset and persistent symptoms of post-traumatic stress disorder self-reported after deployment and combat exposures: prospective population based U.S. military cohort study. *BMJ (British Medical Journal), 336*, 366-376.

Southwick, S. M., Morgan, C. A., Darnell, A., Bremner, D., Nicolaou, A. L., Nagy, L. M., & Charney, D.S. (1995). Trauma-related symptoms in veterans of Operation Desert Storm: A 2-year follow-up. *American Journal of Psychiatry, 152*, 1150-1155.

Stevens, L. M. (2006). Post-traumatic stress disorder. *The Journal of the American Medical Association, 296*, 614-630.

Straus, M. A., & Gelles, R. J. (1990). *How violent are American families? Estimates from the National Family Violence Re-survey and other studies*. In M. A. Straus, & R. J. Gelles (Eds.), Physical violence in American families (pp. 95-112). New Brunswick, NJ: Transaction.

Sutherland, C. A., Sullivan, C. M., & Bybee, D. I. (2001). Effects of intimate partner violence versus poverty on women's health. *Violence Against Women, 7*, 1122-1143.

Swan, W. (2008). *COSC: The Operational Forces' perspective*. Paper presented at the 2008 Combat Stress International Conference, San Diego, CA.

Taft, C. T., Pless, A. P., Stalans, L. J., Koenen, K. C., King, L. A., & King, D. W. (2005). Risk factors for partner violence among a national sample of combat veterans. *Journal of Consulting and Clinical Psychology*, 73, 151-159.

Tjaden, P., & Thoennes, N. (1998). *Prevalence, incidence, and consequences of violence against women: Findings from the National Violence Against Women Survey No. NCJ 172837)*. Washington, DC: U.S. Department of Justice, Office of Justice Programs.

Toomey, R., Kang H. K., Karlinsky, J. Baker, D. G., Vasterling, J. J., Alpern, R., Reda, D. J., Henderson, W. G., Murphy, F. M., & Eisen, S. A. (2007). Mental health of U.S. Gulf War veterans 10 years after the war. *The Journal of Mental Science, 190*, 385-393.

Tovey, M. (1997). *Training in Australia.* Sydney: Pretice Hall Australia.

Wang, X., & Shuai, N. (2008). *The multilevel comprehensive grey evaluation model for enterprise training effect.* Paper presented at 2008 International Conference on Education Technology and Training, Shanghai, China.

Warner, C. H. (2007). Division mental health in the new Brigade Combat Team structure: Part II. Redeployment and post-deployment. *Military Medicine, 172*, 912-917.

Watson, C. G., Kucala, T., Juba, M., Manifold, V., Anderson, P. E., & Anderson, D. (1991). A factor analysis of the DSM-III post-traumatic stress disorder criteria. *Journal of Clinical Psychology, 47*, 205-214.

Weiss, D. S., Marmar, C. R, Schlenger, W. E., Fairbank, J. A., Jordan, B. K., Hough, R. L., & Kulka, R. A. (1992). The prevalence of lifetime and partial post-

traumatic stress disorder in Vietnam theater veterans. *Journal of Traumatic Stress, 5*, 365-376.

Wolfe, J, Brown, P., & Kelly, J. M. (1993). Reassessing war stress: Exposure and the Persian Gulf War. *Journal of Social Issues, 49*, 15-31.

Wong, M. R., & Cook, D. (1992). Shame and its contribution to PTSD. *Journal of Traumatic Stress, 5*, 557-562.

Van der Kolk, B. A., & Van der Hart, O. (1989). Pierre Janet and the breakdown of adaptation in psychological trauma. *American Journal of Psychiatry 146*, 1530-1540.

Van der Kolk, B. A.,Weisaeth, L, & Van der Hart, O. (1996). History of trauma in psychiatry. In B. A. Van der Kolk, A. C. McFarlane, & L.Weisaeth (Eds.), *Traumatic stress: The effects of overwhelming experience on mind, body, and society* (pp. 556-589). New York: Guilford Press.

United States Army Surgeon General. (2006). *Operation Iraqi Freedom (OIF) Mental Health Advisory Team (MHAT) report.* Retrieved June 22, 2009 from http://www.armymedicine.army.mil/news/mhat/MHAT_Report.pdf.

United States Census Bureau. (2009). *Facts for features: Special edition - U.S. Armed Forces and veterans*. Washington, DC: United States Census Bureau.

United States Marine Corps (USMC). (2004). *How to conduct training.* Washington, DC: Author.

United States Marine Corps (USMC). (2004). *Systems approach to training.* Washington, DC: Author.

United States Marine Corps (USMC). (2009). *Combat operational stress control.* Washington, DC: Author.

United States Marine Corps (USMC). (2009). *Marine Corps Concepts and Programs.* Washington, DC: Author.

United States Marine Corps (USMC). (2009). *Manpower performance indicators (MPI),* [Data File]. Available from Manpower and Reserve Affairs Web site, https://www.manpower.usmc.mil.

Ursano, R. J., Grieger, T. A., & McCarroll, J. E. (1996). Prevention of post-traumatic stress: Consultation, training, and early treatment. In B. A. van der Kolk, A. C., McFarlane, & L. Weisaeth (Eds.), *Traumatic stress: The effects of overwhelming experience on mind, body, and society* (pp. 441-462). New York: Guilford.

APPENDIX A

Effectiveness of Combat Operational Stress Preventive Training Survey

Marines:

You are invited to participate in the **Effectiveness of Preventive Combat Operational Stress Control Training** survey. The purpose of the survey is to assess the effectiveness of combat operational stress preventive training services. The survey is completely anonymous. Your participation in this study is voluntary. Participation in the survey poses minimal risk since subject's responses are anonymous and cannot be traced to an individual. By completing this survey you acknowledge that you understand the purpose of this research and that you are willing to participate.

Thank you very much for your time and support. If you wish to participate, please start the survey now by clicking on the **Continue** button below.

What is your MOS type?

- ☐ Combat Arms
- ☐ Combat Support
- ☐ Aviation
- ☐ Ground Aviation
- ☐ Administration
- ☐ Logistics
- ☐ Communications
- ☐ Intelligence

How old are you?

- ☐ 18-19
- ☐ 20-25
- ☐ 26-30
- ☐ 31-35

- ☐ 36-40
- ☐ 41-45
- ☐ 46-50
- ☐ 51 or more

How many years in the military?

- ☐ 1-5
- ☐ 6-10
- ☐ 11-15
- ☐ 16-20
- ☐ 21-25
- ☐ 25 and more

What is your gender?

- ☐ Male
- ☐ Female

What is your rank?

- ☐ Enlisted (E-1 through E-3)
- ☐ Non-commissioned Officer
- ☐ Staff Non-commissioned Officer
- ☐ Warrant Officer
- ☐ Commissioned Officer

What is your component status?

- ☐ Active Duty (AD)
- ☐ Active Duty Reserve (AR)
- ☐ Selected Reserve (Mobilized)
- ☐ Selected Reserve (Drilling)
- ☐ Individual Ready Reserve (IRR)

Have you ever attended combat operational stress preventive training classes?

- ☐ Yes
- ☐ No

What were your impressions of the training received?

Poor		Neutral		Outstanding
☐	☐	☐	☐	☐

Did you learn specific principles, facts, and techniques during the training?

- ☐ Yes
- ☐ No

Did you actually use any of the learned skills and techniques?

- ☐ Yes
- ☐ No

How would you rate the effectiveness of the training?

Poor ☐ ☐ ☐ ☐ ☐ Outstanding

Have you ever suffered from the effects of combat operational stress?

☐ Yes

☐ No

Was the received combat operational stress preventive training effective in helping you cope with the effects of combat operational stress?

No ☐ ☐ ☐ ☐ ☐ Yes

How would you rate the effectiveness of the currently used combat operational stress preventive training materials?

Poor ☐ ☐ ☐ ☐ ☐ Outstanding

How would you rate the effectiveness of the trainers who actually presented the combat operational stress preventive training material?

Poor ☐ ☐ ☐ ☐ ☐ Outstanding

What are your overall feelings about the combat operational stress preventive training program?

Poor ☐ ☐ ☐ ☐ ☐ Outstanding

APPENDIX B

Interview Protocol

Combat Operational Stress Preventive Training

The following steps need to be taken in order to schedule and conduct interviews concerning combat operational stress preventive training sessions.

Schedule the interview with the Marine a week before the interview needs to be conducted. The already scheduled interview needs to be confirmed three days before the actual day to include the meeting time and place.

On the day and time of the interview, meet the Marine, introduce yourself, and establish rapport.

"The Marine Corps Operational Stress Control branch would like to know more about your personal experiences concerning previously conducted combat operational stress preventive training. I would like to talk with you to learn about your experiences during the training and if the training and education you received helped you cope with stress during the actual combat deployment overseas."

"I would like to tape record our conversation if that is okay with you, so that I will have an accurate record. Our conversation will be confidential. I will not use your name in any discussions or in any writings related to the research. Only group data will be reported. Is that okay?"

<Be sure to voice record the above paragraphs and the student's answer.>

"Do you have any questions about this project? Shall we begin?"

1. "As I understand, you had an opportunity to attend combat operational stress preventive training. What were your impressions of the training you received?

Topics to be used for probing questions to use if Marines cannot think of any experiences or do not mention these areas:

- Classroom settings
- Quality of training materials
- Audio-visuals
- Time of day of the training
- Interesting training topic
- Relevance of the training topic

2. "Can you tell me what specific principles, facts, and techniques did you learn?"

Topics to be used for probing questions to use when Marines cannot think of any experiences or do not mention these areas:

- After action reviews
- Stigma reduction
- Resiliency training
- Stress inoculation
- Cohesion building
- Family peer support
- Family stress reduction
- Decompression
- Small unit support and discussions
- Return and reunion preparation
- Peer and self-assessment for stress
- Sustain unit support

3. "What are your thoughts on actually using knowledge acquired during the training? Could you also comment on presumably changed behavior in yourself and your peers resulting from the received training?"

Topics to be used for probing questions to use when Marines cannot think of any experiences or do not mention these areas:

- Well trained and confident
- Fit and tough
- High level of unit cohesiveness
- Professional preparedness
- Taking care of younger and less experienced
- Boosting confidence in others

4. "Could you provide some thoughts on the effectiveness of the received training? Specifically, please comment on your personal feelings on the conducted training and if the training resulted in actual tangible results?"

Topics to be used for probing questions to use when Marines cannot think of any experiences or do not mention these areas:

- Less unit mental health casualties
- More unit cohesiveness
- Remaining calm and steady
- Being confident in self and others

- Getting the job done
- Remaining in control physically, mentally, and emotionally
- Behaving ethically and morally
- Retaining a sense of humor
- Sleeping enough
- Eating the right amount
- Working out and staying fit
- Playing well and often
- Remaining active socially and spiritually

5. "In what ways did the received training help you cope with the effects of combat operational stress while being deployed?"

Topics to be used for probing questions to use when Marines cannot think of any expectations or do not mention these areas:

- Exposure to combat situations
- Exposure to live fire
- Convoy operations
- Improvised Explosive Devices (IEDs)
- Hand to hand combat
- Invisible enemy
- Who is the friend or foe?
- Loneliness
- Separation from loved ones
- Family problems back home
- Extreme weather (hot during the day and cold during the night)

6. "Currently combat operational stress control training packages consist of static PowerPoint slides. Please, provide some thoughts and comments on the effectiveness or the ineffectiveness of such a training format?

Topics to be used for probing questions to use when Marines cannot think of any experiences or do not mention these areas:

- Static PowerPoint slides
- Hands-on "active" training
- Simulations
- Role playing
- Instructor relaying teaching material to his or her combat experiences
- Retention of presented materials

7. "Could you provide some thoughts on the effectiveness of the trainers who actually presented the combat operational stress preventive training materials?"

Topics to be used for probing questions to use if students cannot think of any experiences or do not mention these areas:

- Presentation skills
- Ability to keep audience motivated
- Appropriate tone of speaking voice
- Respect toward the audience
- Breaks offered every hour on the hour of the training

8. "What are your overall personal feelings about the combat operational stress preventive training not covered in previous questions?"

Topics to be used for probing questions to use when Marines cannot think of any experiences or do not mention these areas:

- Pre-deployment training requirements
- Class and the instructor
- Quality of training package
- Material easy to understand?
- Presentation material as a motivational catalyst toward the program
- Is it something useful or just another typical military brief?

"Thank you for taking the time to meet with me today. Is there anything else you feel would be helpful for me to know? ..... Again, thank you very much. Have a great day!"

APPENDIX C

Observation Checklist

Pre-class	**Observer Notes**
1. Instructor is on time or students loitering in hallway 2. General demeanor of instructor a. Appears prepared, happy to be in class, or hurried, nervous, visibly not confident. 3. Appearance of instructor and military students a. Appropriate military or civilian attire 4. Sociability of the instructor a. Enthusiastically greets students or shuns away b. Readily accessible to students, willing to answer student questions c. Topics of conversations relate to combat stress or are more of personal nature 5. Readiness of room a. Overhead projector and computer equipment working, white board, general classroom cleanliness, furniture	
During class	**Observer Notes**
1. Orderly beginning a. Instructor able to proceed with the instruction without any delays b. Students attentive and eager to proceed 2. Instructor a. Seem self-confident or rather tentative b. Profound subject matter knowledge c. Open to questions from students d. Skillfully manages interruptions e. Skillfully delivers quality instruction f. Talks to the slides 3. Students a. Giving attention to the instructor b. Seem interested or visibly bored c. Sidebar conversations d. Genuinely serious or flippant e. Asking pertinent questions or silent 4. Equipment a. Instructor being comfortable with the technology, knows the equipment	

End of class	**Observer Notes**
1. End on time, early, or late 2. Wrap up a. Goes over the major points b. Any questions from students about the combat stress preventive training program – instructor's ability to answer 3. Instructor a. Students dismissal procedures b. Instructor rushes from room or remains available to students c. Topics of conversations i. Combat stress related or rather personal 4. Students a. Seem comfortable with the instructor b. Conversations or comments to fellow students about combat stress preventive training class experience, or something unrelated c. Extend farewell greeting to the instructor or just ignore and disregard the instructor	

APPENDIX D

Quantitative Survey Questions and Levels of Training Evaluation

Quantitative Survey Question	Kirkpatrick's (2006) Level of Evaluation
What were your impressions of the training received?	Reaction
Did you learn specific principles, facts, and techniques during the training?	Learning
Did you actually use any of the learned skills and techniques?	Behavior Change
How would you rate the effectiveness of the training?	Long-term Results

APPENDIX E

Qualitative Interview Questions and Levels of Training Evaluation

Qualitative Interview Question	Kirkpatrick's (2006) Level of Evaluation
As I understand, you had an opportunity to attend combat operational stress control training sessions. What were your impressions of the training you received?	Reaction
Can you tell me what specific principles, facts, and techniques did you learn?	Learning
What are your thoughts on actually using knowledge acquired during the training? Could you also comment on presumably changed behavior in yourself and your peers resulting from the received training?	Behavior Change
Could you provide some thoughts on the effectiveness of the received training? Specifically, please comment on your personal feelings on the conducted training and if the training resulted in actual tangible outcomes?	Long-term Results

VITA

Marek M. Sipko

Darden College of Education
Old Dominion University
Norfolk, Virginia 23529

Marek Sipko is a retired U.S. Marine Corps officer with over 25 years of operational, leadership, and management experiences including aviation command and control, technical projects, and program management in private, government, and military organizations worldwide. He possesses extensive skills in telecommunications, enterprise architecture, joint and combined operations, human resource management, training, education, and international relations. He is currently a senior subject matter expert with General Dynamics Information Technology supporting the Marine Corps Systems Engineering Group. His current research agenda concerns training management and issues related to combat operational stress faced by American combat forces.

Education

Ph.D. in Education, Old Dominion University, 2010
M.S. in Information Technology Management, Naval Postgraduate School, 2006
M.B.A. in Business, National University, 1993
B.B.A. in Business, National University, 1989

Professional Society Membership

Omicron Delta Kappa Honor Society
Iota Lambda Sigma Honor Society
Golden Key International Honour Society
Project Management Institute
Marine Corps Association

Publications and Presentations

Sipko, M. M. (2007). Testing template and testing concept of operations for speaker authentication technology. *STAR, (58)*, 44, 26.

Sipko, M. M. (2008). Influence of socio-economic status on post-traumatic stress disorder in combat U.S. military veterans. *2008 International Combat Operational Stress Conference*. San Diego, CA.

Sipko, M. M. (2008). Combat operational stress control: Prevention through training and education. *Marine Corps Gazette, Professional Journal of U.S. Marines (92)*, 11, 77-80.

Sipko, M. M. (2008). Technology can help with combat operational stress. *Proceedings. U.S. Naval Institute. Independent Forum on National Defense (134)*, 11, 1,269, 70-72.