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Exploring Relationships Between Resilience, Thinking Styles, and PTSD Scores in Women Veterans

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Walden University
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Abstract

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MA, Argosy University, 2009

BS, Park University, 2001

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

In 2013, military leadership took action to lift the ban on women participating in combat roles, thus creating a vital need to understand protective cognitive factors in women veterans exposed to combat. There is no prior research examining the relationship between resilience and thinking styles in this population. The purpose of this quantitative survey study was to examine the predictive relationship between resilience, measured with the Connor-Davidson Resilience Scale, and thinking styles, measured with the Thinking Styles Inventory–Revised 2, on posttraumatic stress disorder (PTSD) scores, measured by PCL-5, in women with combat exposure (CE). A cross-sectional design was used. A convenience sample size of 130 female veterans ages 30 to 55 who had been deployed to Iraq and Afghanistan with a spectrum of PTSD scores and CE was recruited through Facebook's various women veterans organizations. The theoretical framework for this study was Sternberg's theory of mental self-government, which suggests there are different ways individuals will organize, govern their lives, and complete tasks. A Pearson's correlation analysis found significant relationships between the criterion (PSTD scores) and predictor variables (resilience, hierarchical, and liberal thinking styles). A multiple regression analysis found only resilience significantly predicted PTSD symptom scores. The results contribute to social change by adding to the limited research on resilience and thinking styles, which may further cognitive treatment for women veterans and, as the military female population increases, promote additional training for women veterans to increase resilience and enhance positive thinking styles.

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Dedication

I would like to dedicate this dissertation to God, my source of strength and inspiration throughout this journey. I would like to dedicate this work to special family members who are now deceased: my mother, my sister Barbara, and my nephews Shawn and David. I love you so much. Additionally, I would like to thank my two sons, Robbie and Malik, who have been a source of pride, love, and inspiration for me to reach my academic and professional goals.

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Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Study

Introduction

The purpose of this quantitative study was to explore the predictive relationship between resilience, thinking styles, and posttraumatic stress disorder (PTSD) system scores. In the future, there may be an increase of one hundred thousand more women on active duty in combat environments due to the lifting of the ban on women to work in combat roles (Kelly, Skelton, Patel, & Bradley, 2011; Kline et al., 2013). Therefore, studying the relationship between resilience and thinking styles as the possible predictors of PTSD scores in female veterans with combat exposure (CE) is vital to their overall well-being, family stability, military morale, and retention (Kline et al., 2013). Resilience and thinking styles have been used as criterion and predictor variables in studies for PTSD, anxiety, mental health, and gelotophobia (Guo-Hai & Yong, 2012; Sagone & De Caroli, 2013; Zhang, 2009).

Furthermore, empirical research results revealed that resilience and Type I thinking styles have been correlated to positive mental health in different populations (Zerach, Solomon, Cohen, & Ein-Dor, 2013; Zhang, 2009; Zhang & Wong, 2011). For example, Zhang (2009) used thinking styles as a predictor variable to examine anxiety in 378 university students in mainland China. Chen and Zhang (2010) used thinking styles as a predictor variable to determine if Type I thinking styles could predict mental health in 583 Chinese university students. Ponce-Garcia (2012) studied 194 undergraduates from Oklahoma City Community College to examine the relationship between thinking styles (predictor variable) and resilience (criterion variable). Sagone and De Caroli

(2013) studied resilience and thinking styles (predictor variable) in 130 Italian middle school adolescents. Zerach et al. (2013) used resilience as a predictor variable to study the relationship between posttraumatic stress symptoms and posttraumatic growth in 109 Israeli war veterans.

There are various social implications for this study. Thinking styles and resilience can be taught; therefore, psychoeducational curricula and interventions may be developed. Veterans' homelessness and substance abuse may be reduced by improving resilience. Finally, this study may assist with reducing barriers that women veterans experience when seeking treatment from the Veterans Administration (Washington, Bean-Mayberry, Riopelle, & Yano, 2011). This chapter provides background information, a brief explanation of variables, a problem statement, the purpose of the study, research questions, and the hypotheses. Additionally, this chapter provides the theoretical framework for the study, the nature of the study, definitions of terms, the limitations of the study due to the design, the significance of the study, and a summary.

Background

Throughout American history, women have played numerous roles in wars and conflicts. For example, during the Revolutionary War, some women were spies, and some women became soldiers due to the deaths of their husbands (Berkin, 2006). Some women were couriers and warned militia of the British troops' approach. Another example is Mammy Kate, a slave who planned and executed an escape for the future governor of Georgia from British forces, which cost her life (Schultz, 1992). Women discovered to be impersonating military men during the Civil War were brutally whipped

and ostracized (Schultz, 1992). During the Civil War, women in the north and south worked as nurses, sometimes without a title or pay (Schultz, 1992). In the south, female civilians were called to military duty several times (Schultz, 1992). Many women of status in the north were handpicked by medical officials to support the war effort as nurses (Schultz, 1992). In World War I, women were recruited by the Secretary of the Navy for enlistment into the Navy and Marine Corps and directed to fill positions such as draftsman, radio operator, and translators (Murdoch et al., 2006).

Military women were paid and received rank just like their male counterparts. In World War II several female units were established to support the war in anticipation of the shortage of men to fight. The Women's Army Corps (WAC) was established in 1943. In the same year, the Nurse Training Bill was altered to allow African American women to become nurses. During the Vietnam War, it was estimated that 7,500 to 11,000 nurses were in the country. Nurses during this war reported being overwhelmed by the number of casualties, the severe injuries, sexual harassment, and lack of sleep (Pless, Kaiser, Spiro, Lee, & Mager, 2012).

Overall, the women who participated in the Vietnam War accounted for less than one percent of the military population (Amara, 2013). Today women account for 14% of the active duty forces in the United States military, and many women have recently deployed to combat operations such as Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF; Dutra et al., 2011; Hassija, Jakupcak, Maguen, & Shipherd, 2012). It was estimated that over 180,000 women have been deployed to Iraq and Afghanistan (Carlson, Stromwall, & Lietz, 2013; Street, Vogt, & Dutra 2009).

During OEF and OIF, women accounted for 10% to 20% of the deployed population (Amara, 2013). Women are currently the fastest growing population in the military (Washington et al., 2011). About half of the women discharged from the military are below the age of 50 years compared to about a quarter of their male counterparts (Amara, 2013). According to Gamache, Rosenheck, and Tessler (2003), women veterans are more likely than men to have an income below $30,000, live alone, and have a diagnosis of addiction. They also have a greater potential for PTSD diagnosis and are more vulnerable to homelessness than their male counterparts.

Peer reviewed mental health research has frequently focused on military men experiencing CE pre- and postdeployment, and this has resulted in few published studies that are dedicated to the impact of CE on women (Dutra et al., 2011; Hassija et al., 2012; Kelly et al., 2011; Luxton, Skopp, & Maguen, 2010). Only 4% to 31% of women veterans report CE, and women veterans are more likely to be diagnosed with PTSD than their male counterparts (Tsai, Rosenheck, Decker, Desai, & Harpaz-Rotem, 2012; Tsai, Rosenheck, & Kane, 2014). PTSD has been associated with CE and identified as a service connected factor of homelessness among veterans (Luxton et al., 2010; Metraux, Clegg, Daigh, Culhane, & Kane, 2013; Schaffer, 2012).

Some researchers have suggested that military sexual trauma (MST) is the most prevalent factor contributing to PTSD in military women (Carter-Visscher et al., 2010; Vogt et al., 2011). However, according to Luxton et al. (2010), CE is a stronger predictor for PTSD in military women than MST. There is empirical evidence to support PTSD as a major problem among female veterans who have CE (Luxton et al., 2010). Creech,

Swift, Zlotnick, Taft, and Street, (2015) examined 134 women deployed to Afghanistan and Iraq, and the research revealed that CE was directly and positively associated with PTSD symptoms. According to Hassija et al. (2012), CE was the variable significantly associated with PTSD symptoms.

The gap in the literature is the lack of knowledge and understanding about the relationship between resilience and thinking styles in women who have combat related PTSD. Also, there is a lack of knowledge about the positive impact variables such as resilience and thinking styles may have on PTSD scores in female veterans. In psychology research, there has been a move towards understanding positive attributes such as happiness and resilience that foster well-being in individuals (Agazio & Buckley, 2010; Schok, Kleber, & Lensvelt-Mulders 2010).

Research suggests that positive thinking styles have been associated with healthy mental health (Chen & Zhang, 2010). The Department of Defense (DOD) became concerned when military personnel were returning from OIF and OEF with PTSD and depression and were committing suicide at alarming rates (Seligman & Fowler, 2011). DOD recognized the impact that these issues had on morale, retention, and combat readiness in the United States' all-volunteer military forces (Seligman & Fowler, 2011).

The Comprehensive Soldier Fitness (CSF) program was purchased by DOD to assist with training soldiers to improve their resilience (Cornum, Matthews, & Seligman, 2011; Seligman & Fowler, 2011). The downside of the CSF program, according to Eidelson, Pilisuk, and Soldz (2011), is that it was never tested before implementation for this population and the results of the program were modest. This research is needed to

test and gain an understanding of the predictive relationship between resilience and thinking styles in female veterans with CE.

Problem Statement

The lifting of the ban on women in combat roles has expanded the purview of women in the military. This action will create a need to examine protective factors that foster mastery over stressful events. Resilience is well supported in the research literature as a protective factor for deployed military personnel and veterans seeking treatment through the VA for PTSD with CE (Dutra et al., 2011; Luxton et al., 2010). However, Type I thinking styles have not been investigated in this population. There is research literature to support the impact of protective factors (resilience and thinking styles) on large populations of male veterans with CE and PTSD symptoms.

However, there is a gap in the research literature to support the study of protective factors in women veterans, especially those women deployed to OIF and OEF with PTSD symptoms and CE experiences. Not all women in the military who return from combat environments receive a diagnosis of PTSD or even have many symptoms of PTSD (Schok et al., 2010). However, based on the growing number of women enlisting and becoming veterans, it is vitally important that studies be conducted to identify those factors that may increase the risk and level of PTSD symptomology in women with CE.

Purpose of the Study

The more CE military personnel experience, the more likely there will be a PTSD diagnosis (Aupperle, Connolly, Stillman, May, & Paulus, 2013). Military personnel exposed to combat may have to live with PTSD for long periods of time, or they may

experience a late onset of PTSD symptoms (Potter et al., 2013). Some patients with a diagnosis of PTSD are still seeking treatment 10 years after initial diagnosis and trauma (Arbanas, 2010). CE women veterans diagnosed with PTSD may benefit from their resilient peers. There is research to suggest that resilient veterans returning from deployments can become a great asset to assist those veterans who are not psychologically healthy after deployments (Schok et al., 2010). Additionally, there is previous research on CE to suggest a relationship between resilience and PTSD symptoms (Boasso, Steenkamp, Nash, Larson, & Litz, 2015; Luxton et al., 2010). This study is the first study examining the predictive relationship between resilience and thinking styles on PTSD scores in women veterans with CE. In a military environment with many stressful events, it is vital to understand how these variables impact PTSD symptoms. The purpose of this quantitative study was to examine the relationship between resilience and thinking styles in women veterans with CE who have a spectrum of PTSD symptom scores.

Research Questions

This quantitative study addressed these research questions:

RQ1: Is there a relationship between resilience score and PTSD symptom scores in women veterans with CE?

$H_0$1: There is no relationship between resilience score and PTSD symptom scores in women veterans with CE.

$H_1$1: There is a relationship between resilience score and PTSD symptom scores in women veterans with CE.

RQ2: Is there a relationship between legislative thinking style and PTSD symptom scores in women veterans with CE?

$H_0$2: There is no relationship between legislative thinking style and PTSD symptom scores in women veterans with CE.

$H_1$2: There is a relationship between legislative thinking style and PTSD symptom scores in women veterans with CE.

RQ3: Is there a relationship between judicial thinking style and PTSD symptom scores in women veterans with CE?

$H_0$3: There is no relationship between judicial thinking style and PTSD symptom scores in women veterans with CE

$H_1$3: There is a relationship between judicial thinking style and PTSD symptom scores in women veterans with CE.

RQ4: Is there a relationship between hierarchic thinking style and PTSD symptom scores in women veterans with CE?

$H_0$4: There is no relationship between hierarchic thinking style and PTSD symptom scores in women veterans with CE?

$H_1$4: There is a relationship between hierarchic thinking style and PTSD symptom scores in women veterans with CE.

RQ5: Is there a relationship between global thinking style and PTSD symptom scores in women veterans with CE?

$H_0$5: There is no relationship between global thinking style and PTSD symptom scores in women veterans with CE.

$H_1$5: There is a relationship between global thinking style and PTSD symptom scores in women veterans with CE.

RQ6: Is there a relationship between liberal thinking style and PTSD symptom scores in women veterans with CE?

$H_0$6: There is no relationship between liberal thinking style and PTSD symptom scores in women veterans with CE.

$H_1$6: There is a relationship between liberal thinking style and PTSD symptom scores in women veterans with CE.

RQ7: How well do resilience and thinking styles predict PTSD symptom scores in women veterans with CE?

$H_0$7: Resilience and thinking style scores do not predict PTSD symptom scores in women veterans with CE.

$H_1$7: Resilience and thinking style scores do predict PTSD symptom scores in women veterans with CE.

Theoretical Framework

Sternberg's theory of mental self-government (MSG) asserts that individuals have a variety of ways to manage activities and therefore may choose different styles to manage tasks. The management of these activities can be interpreted as thinking styles (Zhang & Sternberg, 2005; Zhang & Wong, 2011). Zhang and Sternberg's (2005) research suggested that individuals will use different types of thinking styles to bring about positive outcomes depending on the task. Thinking styles will change over time depending on the individuals' experiences, and this theory has been used in a variety of

settings (Zhang & Wong, 2011). Furthermore, Sternberg's theory of mental self-government was created from various research areas such as problem solving, coping strategies, and cognitive style (Zhang & Sternberg, 2005).

MSG has never been used with the veteran population. However, MSG has been used with a variety of other populations. For example, Zhang (2009) recruited 378 Chinese University students to study the relationship between anxiety and thinking styles in Shanghai, China. Zhang's (2009) findings revealed that higher scores in Type I thinking styles contributed to students having higher levels of resistance to anxiety.

MSG comprises 13 styles, three types, and five categories of thinking styles. Type I thinking style consists of legislative, judicial, hierarchical, global, and liberal styles. Type II consists of executive, local, monarchic, and conservative styles. Type III consists of anarchic, oligarchic, internal, and external styles (Zhang & Wong, 2011). The five categories consist of function, form, level, scopes, and leaning (Zhang & Wong, 2011). A function consists of three styles, including legislative, executive, and judicial (Sternberg, 1997). A function relates to the different functions of government and is compared to how an individual performs these functions in their thinking (Sternberg, 1997). Form consists of hierarchical, oligarchic, monarchic, and anarchic styles (Sternberg, 1997). Sternberg's theory compares the forms of government in society to the organization of an individual (Sternberg, 1997). Levels consist of global and local; these levels relate to the levels of government and are compared to the levels of self-esteem and cognitive development (Sternberg, 1997). Scope refers to internal or external styles (Sternberg, 1997). A scope is an individual preference to work on a project independently or to

collaborate (Sternberg, 1997). Leaning consists of liberal and conservative styles (Sternberg, 1997). These styles are personal styles, not political styles (Sternberg, 1997).

Nature of the Study

This quantitative research will use Pearson's correlation and multiple linear regression statistical analysis. The Pearson correlation was used to ascertain relationships between variables, and the multiple regressions analyze how well resiliency and thinking styles can predict the variability of PTSD scores. This quantitative study is consistent with previous studies that have explored resilience and thinking styles and the impact these variables have on mental health. However, there are two primary focuses of this study. The primary focus of this study was to explore the relationship between PTSD symptom scores and resilience and Type I thinking styles in female veterans with CE. The second focus of this study was to explore whether resilience and thinking styles can predict PTSD symptom scores.

Definitions

Combat exposure: War zone exposure (Luxton et al., 2010).

Deployment: Current or past movement that entails an operation, location, command, or duty that is different from the service members' permanent duty assignment (Conard & Sauls, 2014).

Hardiness: Features three characteristics that include the individual's beliefs that they have control of their own life experiences, the individual's sustained commitment to working on themselves, and the individual's view of change as a challenge for growth (Kobasa, 1979)

Intellectual styles: A general term used to include all styles, such as cognitive style, learning style, and thinking style. (Zhang & Sternberg, 2005).

Posttraumatic Growth (PTG): An internal positive change that takes place as a result of trauma or personal struggle (Tedeschi & McNally, 2011).

Posttraumatic Stress Disorder (PTSD): Behavioral symptoms consistent with reliving the event or trauma, negative thoughts, negative mood, and stimulation (American Psychiatric Association [APA], 2013).

Psychological well-being (PWB): Mental health well-being that builds upon an individual's description of subjective well-being (Burns, Anstey, & Windsor, 2011).

Resilience: A process or an outcome by which an individual demonstrates positive adjustments in spite of adverse or traumatic events (Masten, 2011).

Subjective well-being: An individual's overall assessment of life that is consistent with high positive outcomes and low negative outcomes (Ng & Diener, 2014)

Thinking styles: An individual's preference as to how to process information and handle tasks (Zhang & Sternberg, 2005).

Type I thinking styles: A positive human characteristic that consists of creativity, cognitive complexity, a strong sense of self-esteem, openness to learning new skills and thought, and purposefulness (Zhang & Sternberg, 2005).

Value laden: A style being more adaptive and valued in society (Chen & Zhang, 2010).

Women in combat: Women who have been deployed and exposed to hostile theaters of war while on active duty.

Assumptions

For this study, I assumed that each participant responded honestly to each survey. Also, I assumed that each participant possessed at least an elementary reading level and was sufficiently aware of self to respond to the survey questions. I assumed that every participant had some PTSD symptoms and at least one deployment with CE.

Scope and Delimitations

For this study, a cross-sectional examination was conducted on the relationship between resilience and thinking styles in women veterans with combat-related PTSD symptoms. I chose a cross-sectional research design for this study because this design was the best design to answer the research questions. Sternberg's MSG was used for the framework due to the cognitive and personality theoretical link between thinking styles and resilience variables. Furthermore, the MSG model focuses on specific cognitive characteristics in an individual (Mak, Ng, & Wong, 2011; Zhang, 2011). Fredrickson's (2001) theory of broaden-and-build of positive emotions suggests that positive emotions assist in coping with trauma by broadening an individual's thought and action to build upon their physical and/or intellectual sources. This theory was be used for this study due to the strong emphasis upon emotion for its model.

Agaibi and Wilson's (2005) literature review on trauma, PTSD, and resilience discussed five variables personality, affect regulation, coping, ego defense, and the utilization and mobilization of protective factors and resources to aid in coping, to discuss the person x situation model of resilience. Previous research studied these variables and the interaction to explain resilient behavior in individuals who have PTSD.

The person x situation model of resilience postulates that there are several factors that may be responsible for different forms of resilient behavior in trauma populations based on the person and the situation (Agaibi &Wilson, 2005). This model was not used because there was no focus on the different thinking styles as mentioned in Sternberg's MSG model.

The diathesis-stress model is a medical model that has recently been applied to psychological disorders (Elwood, Hahn, Olatunji, & Williams, 2009). The diathesis-stress model suggests that there are specific factors activated by stress that are associated with symptoms (Elwood et al., 2009). Conceptual thinking styles may influence women veterans' vulnerability as suggested by the diathesis-stress model (Elwood et al., 2009).

For this subject, factors that contribute to symptoms are not being studied. Sternberg's MSG model focuses on the positive characteristics of healthy personality and cognitive traits rather than a psychopathological model. Finally, all of the participants for this study were female military members, and therefore the findings cannot be generalized to an entire military population.

Limitations

One limitation of this study was that the assessment tools can be a threat to internal validity. The assessment tools are self-report measures exclusively, and responses would necessarily be subjective. The second limitation of this study was the period of time after CE may impact the level of resilience used to reduce PTSD symptoms. Women veterans who have experienced CE may demonstrate PTSD symptoms differently over a period of time after the trauma. There is research literature

that supports the evolution of PTSD symptoms after trauma (Lyons, 1991). For example, female rape victims may demonstrate an increased amount of emotional distress following the trauma compared to a woman who may have learned the appropriate coping skills years after the trauma (Lyons, 1991). Another limitation of this study was that CE may not be the only principal stressor for women deployed to OIF and OEF. According to Carter-Visscher et al. (2010), sexual trauma is a principal stressor of PTSD in women.

Significance

In this quantitative study I sought to understand the relationship between resilience and thinking styles in female veterans with PTSD symptoms and CE. Very few studies have examined protective factors in women veterans with PTSD symptoms and CE (Escolas, Pitts, Safer & Bartone, 2013).There have been several studies that have predominantly focused on male veterans' pre- and postdeployment (Carlson et al., 2013).

Due to the lifting of the ban on women to serve in combat roles, CE will likely increase for women as offensive occupational opportunities increase (Carlson et al., 2013). This study will build on existing knowledge regarding resilience and thinking styles, as well as provide new gender-specific knowledge. Furthermore, research supports that resilience and thinking styles can be learned (Seligman & Fowler, 2011; Zhang & Sternberg, 2005). According to Luthans, Avolio, Avey, and Norman (2007), the factors of resilience such as optimism, hope, and self-efficacy can be learned and developed over time. Thinking styles are flexible, and therefore, mental health may improve if an individual thinking style can be changed (Chen & Zhang, 2010).

This study contributes new knowledge on the relationship between resilience and thinking styles in women veterans with PTSD symptoms and CE deployed to OIF and OEF. This knowledge may assist with the development of predeployment screening tools for women attached to combat units. This information can be used to assist clinicians in formulating treatment plans and curricula based on the needs of this population to increase levels of resilience and effectiveness of thinking styles (Benda & House, 2003).

Summary

This chapter provided an overview of the study, its purpose, a brief description of the variables used in this quantitative study, and the research questions used. An exhaustive research revealed no previous studies that examined the relationship between thinking styles and resilience in female veterans who had been exposed to combat. Chapter 2 provides an in-depth review of research literature to support the necessity for this research.

Chapter 2: Literature Review

Introduction

The purpose of this quantitative study was to explore the degree to which resilience and thinking styles can predict PTSD scores in women veterans with CE. This study focused on female veterans who had been exposed to combat and had PTSD symptoms. Previous studies have examined thinking styles in academic and nonacademic settings (Zhang & Sternberg, 2005). Thinking styles have been studied in mental health and occupations (Chen & Liu, 2012; Zhang, 2010; Chen & Zhang, 2010). However, thinking styles have never been studied in a female veteran population. A substantial number of studies and treatments on resilience have focused on male military CE (Kelly et al., 2011). There is a gap in the literature regarding a relationship between resilience and thinking styles and PTSD symptom scores in women exposed to combat. This research is the first of its kind to study the relationship between resilience and thinking styles in this population. Based on the growing number of women enlisting and becoming veterans, it is vitally important that studies be conducted to ascertain an understanding of PTSD in women after CE compared to their male counterparts (Kelly et al., 2011).

Limited research has been dedicated to female veterans' well-being after they are exposed to combat environments (Kelly et al., 2011). Women deployed to combat environments are at risk of experiencing combat trauma (Street, Gradus, Giasson, Vogt, & Resick, 2013). Also, women deployed to combat environments, such as Afghanistan and Iraq, are more likely than men to screen positive for PTSD (Luxton et al., 2010). When women are diagnosed with PTSD, they are at risk of becoming homeless and

developing substance abuse disorders (Currier, Holland, & Drescher, 2014). The literary foundation for this study comes from literature focused on women in combat, PTSD, resilience, and thinking styles. The literature review is divided into six sections.

In the first section I discuss the history of women in combat and the impact of PTSD. The second section presents theorist work on intellectual styles and MSG. In the third section I discuss thinking styles and relevant research to support the use of this variable in the study. In the fourth section I examine resilience as it pertains to civilian and military populations. The fifth section presents common components of resilience and thinking styles. Finally, in the summary of the chapter I discuss the changes to the ban on women in combat, Sternberg's MSG and the importance of the research.

Literature Search Strategy

My literature research strategy focused on academic journals, textbooks, and dissertations. EBSCOhost, Google Scholar, and ProQuest were the primary search engines used for this study. I used EBSCOhost as the primary source of relevant peer reviewed journals and articles. For this study, I used Google Scholar as an alternate source for peer reviewed academic journals. I used ProQuest as a source for one dissertation. Ninety-five percent of the journal articles acquired were within the range of 2009 to 2014. Keywords for this study were: *females, resilience, hardiness, thinking styles, combat exposure, military, PTSD,* and *symptoms*. Other databases and websites that I used were SAGE Premier, Taylor & Francis Online, and the U.S. Department of Veteran Affairs: National Center for PTSD website.

History of Women in Combat

Women participating in combat is not a new event in history. During the revolutionary war, women played a support role in combat (Street et al., 2009). In 1948, President Harry Truman signed the Women's Armed Services Act. This law allowed women to serve in the military as medical or support staff during times of war (Dutra et al., 2011). In 1994, the Direct Ground Combat Definition and Assignment rule was established (Prividera & Howard, 2014). This rule mandated the military to exclude women from all direct ground combat roles (Prividera & Howard, 2014). In January 2013, that rule became defunct due to the Women in Service Implementation Plan which gave women the opportunity to enlist for direct combat roles in the United States military (Prividera & Howard, 2014). During OIF and OEF, about half of the active duty women deployed to support these two wars (Dutra et al., 2011).

During OIF and OEF, military women experienced some unique challenges (Carlson et al., 2013). For example, during these wars, women were expected to endure several deployments, spend less time with family, and prepare in less time for future deployments (Carlson et al., 2013). Twelve percent of OIF military women attached to infantry or combat support units have reported moderate CE, and 3% have reported intense CE (Street et al., 2009). Military women deployed to combat environments are more likely to be diagnosed with PTSD (Luxton et al., 2010). PTSD has been found to be related to OIF and OEF postdeployments (Luxton et al., 2010). PTSD is a mental health disorder defined as a trauma and stress related disorder in the *Diagnostic and Statistical Manual of Mental Disorders–5* (DSM-5; APA, 2013). These findings suggest that female

veterans who experience CE are struggling with poor mental health due to trauma or stress; however, not all female veterans experience poor mental health due to CE (Kelly et al., 2011).

History of Intellectual Styles

Intellectual styles are defined as the preferred way an individual processes information and accomplishes tasks (Zhang & Sternberg, 2005). Intellectual styles consist of cognitive styles, learning styles, and thinking styles (Zhang & Sternberg, 2005). Thinking styles are based on Sternberg's MSG (Zhang & Sternberg, 2005). Sternberg's MSG originated from various research models on styles (Zhang & Sternberg, 2005). The construct of intellectual styles suggests that there are high and low preferences of cognitive complexity in individuals.

Type I thinking styles are associated with higher levels of cognitive complexity, creativity, and holistic thinking (Zhang & Sternberg, 2005). Type II thinking style characteristics require less cognitive complexity and use an analytical process of thinking (Zhang & Sternberg, 2005). Type III style will exhibit Type I and Type II styles depending on an individual's goal to complete a task (Zhang & Sternberg, 2005).

According to Zhang and Sternberg (2005), there are nine models of styles, and there were several scholars who did exemplary work on theorizing intellectual styles. Curry's (1983) model was one of the first comprehensive theories to explain learning styles. Curry's model suggests that learning styles are metaphorically like layers of an onion. For example, the inner layer consists of personality dimensions and is the most stable. Next, Curry described the middle layer as the cognitive personality layer.

This layer is vital because it links the inner and outer layers (Curry, 1983). Curry explained the outer layer is called the instruction preference, the environment in which the individual chooses to learn. Furthermore, Curry hypothesized that the personality styles are stable and the instructional preference can be altered because it consists of learning styles.

The next model is Miller's cognitive processes model. This model consists of perception, memory, and thought (Sternberg & Zhang, 2005). Sternberg and Zhang (2005) explained that Miller's model categorized styles into two distinct poles: analytic and holistic. The analytic pole characteristics are field independence, sharpening, converging, and serial information processing (Sternberg & Zhang 2005). The holistic pole characteristics are field dependent, leveling, diverging, and holistic information processing to describe individual styles (Sternberg & Zhang, 2005).

These characteristics fall into one of the three parts of Miller's cognitive process model. For example, field independent and field dependent are perceptual cognitive processes that pertain to how individuals view objects as separate from their backgrounds or as dependent upon the current background (Sternberg & Zhang, 2005). A flaw with this model is that the model works within the confines of a bipolar style (Sternberg & Zhang, 2005).

According to Sternberg and Zhang (2005), Riding and Cheema's model is a mixture of cognitive styles. The Riding and Cheema model consists of two cognitive style dimensions (Sternberg & Zhang, 2005). The holistic–analytic dimension describes how individuals process information entirely or in parts. The verbal imagery dimension

describes how individuals characterize information through thinking verbally or using mental images. These two cognitive style dimensions have been linked to learning performance, learning preferences, subject preferences, conduct, and occupation behavior as well as well-being (Sternberg & Zhang, 2005). Furthermore, Sternberg and Zhang (2005) point out that there is empirical evidence to support that these two styles are related to learning.

Finally, Grigorenko and Sternberg's model represents the most current work on styles, formulated during the late 1990s (Zhang & Sternberg, 2005). Their model suggests that styles will fall into cognition-centered, personality-centered, or activity-centered styles. A weakness of Grigorenko and Sternberg's model is that it has not been tested against other styles (Zhang & Sternberg, 2005).

Sternberg's Theory of Mental Self Government

Sternberg's MSG uses cognitive tradition, personality-centered tradition, and the activity-centered tradition (Zhang & Sternberg, 2005). Furthermore, this theory uses research from problem solving and coping strategies. The use of these three traditions and research provides an inclusive and comprehensive view of thinking styles compared to the other models (Zhang & Sternberg, 2005). The two major theoretical propositions of the MSG theory suggests that individuals' thinking styles are similar to the construct regarding levels of government and how persons prefer to use their abilities to complete tasks (Hommerding, 2002; Zhang & Sternberg, 2005).

For example, the United States government is broken down into different branches of government, such as legislative, executive, and judicial branches, and the

MSG theory suggests that an individual's thinking styles resemble the same construction. Sternberg's MSG is based on 13 thinking styles, three intellectual styles, and five dimensions. These provide descriptive characteristics to delineate an individual's specific style type (Chen & Zhang, 2010; Zhang & He, 2011; Zhang & Sternberg, 2005; Zhang &Wong, 2011). Sternberg's three thinking style types came from the work of previous theorists on intellectual styles (Zhang & Wong, 2011). Type I style is value laden due to an emphasis on creativity and cognitive intricacy (Chen & Zhang, 2010). Type I thinking styles consist of the functioning thinking styles; these include legislative, judicial, hierarchical, global, and liberal styles (Chen & Liu, 2012).

Type II thinking styles consist of executive, local, monarchic, and conservative styles (Chen & Liu, 2012). Type II is not as attractive as Type I, requires lower cognitive intricacy, and is not as valued by society (Zhang & Wong, 2011). Finally, Type III consists of oligarchic, anarchic, internal, and external styles (Zhang & Wong, 2011). Type III is easily differentiated and less vigorous (Zhang & Wong, 2011). Type III may show traits of Type I or Type II dependent on the type of task in which the individual is engaged (Zhang & Wong, 2011). Zhang and Sternberg (2005) point out that Type I thinking styles are associated with positive variables, variables such as self-esteem and resilience, for example (Zhang & Sternberg, 2005).

Type II styles are positively associated variables with associated negative variables (Zhang & Sternberg, 2005). For example, low self-esteem or lack of life purpose would be associated with Type II styles (Zhang & Sternberg, 2005). Type III is easily distinguished from the other styles and associated with social variables (Zhang &

Sternberg, 2005). Sternberg's MSG has frequently been applied to academic and nonacademic studies. For example, Zhang (2009) used MSG theory to predict anxiety in students.

Zhang's (2009) findings suggest that students with Type I thinking styles and external thinking styles are negatively associated with state and trait anxiety. Students who possessed a Type II thinking style were conservative and positively associated with state and trait anxiety.

Thinking Styles

Thinking styles are intellectual styles and are defined as how individuals process information using knowledge and a preferred method of utilizing mental abilities in academic and nonacademic environments (Hommerding, 2002; Zhang & Sternberg, 2005; Zhang & Wong, 2011). Furthermore, thinking styles can be confused with an individual's abilities. Abilities are based on what the individual can do; a thinking style is based on how the individual prefers to use their ability to perform a task (Zhang, 2002). Zhang and Sternberg (2005) point out that thinking styles can change based on an individual's environment and life experiences. CE is a life event that has been empirically substantiated to change an individual's life and the way he/she thinks (Simmons & Yoder, 2013). Therefore, we hypothesize a relationship between thinking style and PTSD symptom scores in women veterans with CE.

There have been several studies that used thinking styles in nonacademic settings. For example, Hommerding (2002) studied Florida Library Directors styles of thinking towards changes in services and technology and choices such as types of acquisitions for

technology. Hommerding's (2002) findings suggest that Florida Library Directors prefer to use legislative thinking styles rather than oligarchic or global styles. Characteristics of legislative thinking style include the use of creative strategies and choice of activities. The legislative style would be a favorable style when working with new types of technology and changes in services. Some studies used thinking styles to predict mental health disorders because thinking styles are flexible (Chen & Zhang, 2010; Zhang & Sternberg, 2005).

According to Chen and Zhang (2010), thinking styles are related to good mental health. For example, according to the research conducted by Chen and Liu (2012), three of the 13 thinking styles predicted gelotophobia. Gelotophobia is a fear of being laughed at in public. Zhang's (2009) study on anxiety and thinking styles suggests that four of Type I thinking styles were negatively associated with state and trait anxiety. Chen and Zhang's (2010) study on thinking styles and mental health used the General Severity Index, which is considered a superlative indicator of mental health, and the Symptom Checklist (SCL-90) to assess mental health status.

Chen and Zhang's (2010) statistical analysis revealed that four of the 13 thinking styles were significant for the General Severity Index. Results for the SCL-90 revealed that a hierarchical style, which is a Type I thinking style, was negatively predictive for nine of the SCL-90 subscales and the General Severity Index. Though these findings are significant, care should be a consideration to use thinking styles as a form of mental health treatment until additional peer reviewed research is published. Sagone and De

Caroli (2013) found a significant correlation and the relationship between resiliency, self-efficacy, and thinking styles among adolescents in an Italian middle school.

Chen and Zhang (2010) studied mental health and thinking styles using Sternberg's theoretical framework. Chen and Zhang (2010) recruited 583 Chinese university students. The Symptom Checklist-90 consists of a 90-item checklist that assesses psychological distress. For example, the symptoms are reported on scales for anxiety, phobic-anxiety, hostility, paranoia, and isolationism etc. The results from this checklist provide a general symptom index score (Blake et al., 1990).

The General Severity Index (GSI) has been considered one of the best indexes for mental health (Chen & Zhang, 2010). The GSI was used to assess their sample of 362 females and 221 males with a mean age of 21 years. Chen and Zhang (2010) used stepwise multiple regression analysis and revealed that two Type I thinking styles had significant predictive power for the General Severity Index. A correlation analysis revealed that hierarchical Type I thinking style was negatively associated to the GSI.

According to Agaibi and Wilson (2005), resilience (e.g. hardiness) has been studied as a personality variable and as a cognitive variable. Zhang and Wong (2011) suggested that hardiness (resilience) has been associated with a healthy personality trait. Zhang and Wong (2011) examined hardiness and thinking styles in 400 Chinese University students. Their study revealed that four of the five Type I thinking styles legislative, judicial, hierarchical, and liberal were associated with hardiness (resilience). This study would be the first time Sternberg’s MSG theory has been used on a military population.

Resilience

Protecting the nation means military personnel must complete their mission regardless of obstacles in a combat environment. Psychological and emotional stability are necessary components when in combat environments to promote success. Wars and terroristic acts against the United States have prompted military leaders to move toward resilience to reduce adverse effects of combat and increase military effectiveness (Simmons & Yoder, 2013).

In the science of resilience, there is substantial literature devoted to children and adolescents due to their lack of experience with coping skills (Werff, Pannekoek, Stein, & Wee, 2013). Learning the impact resilience possesses after childhood and adolescence is vital to female veterans due to the lifting of the ban on women in combat roles (Werff, Pannekoek, Stein, & Wee, 2013). Resilience is a variable researchers suggest provides protective factors to prevent PTSD and fosters positive mental health for individuals that have been exposed to trauma (Kelly et al., 2011; Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009; Youssef, 2013).

In the absence of resilience, PTSD has an adverse physiological implication to mental health. The brain is a powerful organ; however, the brain can be impacted adversely due to CE. There is research to suggest that the size of the hippocampus and amygdale decrease due to PTSD (Aupperle et al., 2013). There are also other portions of the brain that are impacted by PTSD and CE. The decrease in the volume of the orbitofrontal cortex (OFC) has been associated with CE and severe PTSD (Aupperle et al., 2013). According to Noonan, Kolling, Walton, and Rushworth, (2012) the OFC is

responsible for rewards, learning, and decision making. When the OFC is impaired, the patient's ability to make choices and learn can be adversely affected (Aupperle et al., 2013; Noonan et al., 2012).

Research supports neurological connection to resilience. Neuro-imaging studies suggest that the prefrontal cortex of resilient individuals has increased activation (Werff, Pannekoek, Stein, & Wee, 2013). Empirical research suggests that PTSD adversely impacts the medial prefrontal cortex, which handles higher cognitive functioning (Yehuda, Flory, Southwick & Charney, 2006).

Simmons and Yoder (2013) compared hardiness to resilience because the variable moderates physical and mental stressful events and has shown to be associated with the same variables such as self-efficacy, optimism, and self-esteem as resilience. In some literature, the scholars' use of resilience has been loosely associated with other constructs such as hardiness, post traumatic growth (PTG), and well-being. According to Zhang and Wong, (2011) several studies have used resilience and hardiness as variables and reported positive association to self-efficacy, optimism, and self-esteem. Also, resilience is a construct that can be taught. Luthans et al.'s (2007) research point out factors of resilience such as optimism, hope and self-efficacy, and these factors can be learned and developed over time.

This point of view is consistent with Martin Seligman and his colleagues with the development of the CSF program for the United States Army (Cornum et al., 2011). The DOD recognized that mental health disorders such as PTSD adversely impacted U.S. military personnel's abilities to perform day to day military duties. Suicides in the

military were increasing, which impacted family relationships and morale (Adler, Castro, & McGurk, 2009; Cornum et al., 2011; Simmons & Yoder, 2013). There was a need in the U.S. military during OIF and OEF to assist military personnel in surviving mentally from CE (Simmons & Yoder, 2013).

A shift towards mental health with a focus on resilience education created several interventions designed to help military personnel with CE. Combat Operational Stress Control (COSC) and Trauma Risk Management (TRiM) were two types of programs designed to identify mental health pathology, and then provide immediate care and follow up treatment (Adler, Castro, & McGurk, 2009.

Next, The Battlemind Psychological Debriefing was designed to provide intervention services for deployed units at different time periods, as well as for post-deployed units (Adler, Castro, & McGurk, 2009). The Battlemind Psychological Debriefing program was beneficial in reducing mental health symptoms in CE military personnel. However, the DOD sought a new approach to resilience due to the impact of CE and the increase of the PTSD diagnosis (Cornum et al., 2011). The former American Psychological Association (APA) President Martin E.P. Seligman and his colleagues instituted a program called the CSF program that focused on resilience training and psychological strengthening to reduce the amount of pathological responses due to CE in U. S. military personnel (Cornum et al., 2011; Seligman & Fowler, 2011).

The program consisted of four parts. The first part consisted of an assessment in various areas of a soldier's life (Cornum et al., 2011). For example, the program would assess a soldier's spiritual and emotional fitness. Next, specific learning modules were

taught to improve specific domains that were assessed (Cornum et al., 2011). An assessment was given to measures the psychological fitness of entry-level soldiers. Finally, noncommissioned officers (NCO) were introduced to the 10-day Master Resilience Training (MRT).

Upon completion of the training, the NCO was then responsible for training subordinates (Reivich, Seligman, & McBride, 2011). According to Cornum et al. (2011), the MRT program was adapted from the Penn Resilience Program (PRP) at the University of Pennsylvania. The PRP was originally developed for children and adolescent students to teach them to become resilient. The MRT design used key components from the PRP program, and adjustments were made to fit the needs of the military environment (Reivich, Seligman, & McBride, 2011). The program was put into place in late 2010 to provide a positive psychology approach to reduce the amount of PTSD diagnosis in active duty service members returning from OIF and OEF, as well as veteran populations (Cornum et al., 2011; Reivich, Seligman, & McBride, 2011).

The CSF resilience program came with a cost of $125 million and flaws (Eidelson et al., 2011). According to Eidelson et al., (2011) the CSF program was never tested on a military population before implementation to ensure the program would be effective with a military sample. Eidelson et al. (2011) also stated that the PRP impact results were modest and not consistent. These interventions provided no empirical evidence regarding how military personnel exposed to combat think to foster resilience. Furthermore, these interventions did not focus on military women's exposure to combat. We hypothesize that there will be a relationship between resilience and PTSD symptoms.

Resilience has been identified as a factor of Post-traumatic Growth (PTG). PTG is a proposed construct to be used in the CSF program to teach soldiers about resilience and assist in improving their psychological and emotional tolerance. According to Tedeschi and McNally (2011), Posttraumatic Growth and resilience are two distinct constructs. Resilience can enhance PTG in veterans; some veterans with high levels of resilience may never experience PTG. Therefore, resilience can improve PTG; however, it is not a precursor to PTG.

Furthermore, if PTG becomes a module in the CSF, Tedeschi and McNally (2011) suggested that a base level of resilience should be determined before measuring PTG in veterans due to high level resilience inversely impacting PTG levels. The construct of psychological well-being has been associated with resilience. Burns et al. (2011) suggested that psychological well-being is defined as mental health well-being and builds upon an individual's description of subjective well-being. Resilience has been used in psychological well-being to describe positive feelings and behaviors related to coping skills used in adverse life events (Burns et al., 2011).

Resilience and Thinking Styles

There is an important reason for examining the relationship between thinking styles and resilience in female veterans that have been exposed to combat. Resilience and thinking styles are variables that have been studied in cognitive and personality domains. For example, the cognitive component in thinking styles has been defined as the preferred way an individual processes information (Zhang, 2011). Resilience research suggests that positive emotions in individuals promote positive thoughts about themselves, their life

and their world (Mak, Ng, & Wong, 2011). These positive emotions foster positive cognitions (Mak, Ng, & Wong, 2011). Positive cognitions have been suggested to increase life satisfaction and enhance well-being in individuals (Mak, Ng, & Wong, 2011). Resilience and thinking styles have also been associated with personality.

Thinking styles has a personality component, and the study of personality has focused on an individual's behavior that fosters creativity, problem solving, and management of difficult events (Balkis & Isiker, 2005). For example, Balkis and Isiker's (2005) study revealed that the artistic personality type is significantly correlated to the Type I legislative thinking style. The legislative style in Sternberg' theory suggest that an individual with this style uses creative strategies and prefers to make their own choices (Zhang, 2009). Zhang and Huang's (2001) study of 408 students in China revealed that more intricate thinking styles, found in Type I styles, were positively correlated with extroversion and openness personality characteristics and personality per the five factor personality trait factor model. One study using the NEO Five Factor Inventory reported a significant correlation between agreeableness and conscientiousness personality characteristic and high levels of resilience in live kidney donors (Rudow, Iacoviello, & Charney, 2014). We hypothesize that is there a relationship between Type I thinking styles and resilience in women veterans with CE.

Furthermore, thinking styles and resilience can be taught and modified (Sternberg & Zhang, 2005; Cornum et al., (2011). For example, Sternberg and Zhang (2005) suggest that thinking styles Type I and Type II can be modified through training programs. However, Type I and Type II styles are more stable and therefore, difficult to alter and

require more time to change. Type III is not as stable as the previous types and can be modified in less time (Sternberg & Zhang, 2005).

Summary

The role of women in the military is evolving due to the lifting of the ban on women participating in ground combat roles. As military roles for women expand into combat roles, research suggest that they are more likely to receive a diagnosis of PTSD (Luxton et al., 2010). Sternberg's theory of MSG was cultivated by theorist research on intellectual styles (Zhang & Sternberg, 2005).

These intellectual styles have been placed in three categories in Sternberg's model to provide more inclusive style characteristics for various types of individuals (Zhang & Sternberg, 2005). What is known is that thinking styles can be applied to different populations and environments. Resilience is a protective factor against PTSD. Resilience and thinking styles have mutual components. There has not been a study designed to examine the relationship between resilience and thinking styles in the veteran female population. The literature review revealed the importance of research for this population and the three common components associated with resilience and thinking styles. Previous research supports the idea of a relationship between resilience and thinking styles. This study will build upon previous research and fill the gap in research regarding the female veteran's population exposed to combat. Chapter 3 will discuss the methodology for this study.

Chapter 3: Methodology

Introduction

The purpose of this quantitative study was to explore the predictive relationship between resilience and thinking styles on PTSD scores in female veterans with CE. Moreover, the findings of this study build upon the existing literature regarding thinking styles and resilience pertaining to veterans. For example, prior PTSD research on female veterans has not examined the factors that may reduce the risk of PTSD symptoms in female veterans exposed to CE (Kelly et al., 2011). Also, the more CE military personnel experience, the more likely the veteran will demonstrate PTSD symptoms (Aupperle et al., 2013). Furthermore, due to the lifting of the ban on women enlisting in direct military combat roles, studies are necessary to examine factors that reduce the risk of PTSD symptoms (Macera, Aralis, Highfill-McRoy, & Rauh, 2014).

In this chapter I discuss the methodology used for this quantitative study. I discuss the rationale for the research design first, followed by the sample and setting and power analysis. This chapter provides a detailed description of the instrumentation and materials used followed by an explanation of data collection and analysis. Additionally, in this chapter I discuss threats to validity and ethical procedures and provide a summary of the chapter.

Rationale and Research Design

The variables identified in this study were continuous variables. The predictor continuous variables studied in this research were resilience and legislative, judicial, hierarchical, global, and liberal thinking styles. Resilience is a term that is often used to

explain an individual's ability to bounce back, adapt, or overcome adversity (Griffith & West, 2013). Type I thinking styles such as legislative, judicial, hierarchical, global, and liberal are styles that require the use of creativity for problem solving and feature sophisticated cognitive complexity (Zhang, 2009). The criterion variable was PTSD symptom scores. The DSM-5 describes PTSD as a trauma and stress related disorder characterized by several criteria (APA, 2013).

A quantitative research design was appropriate for this study due to the research questions asked. A continuous variable consists of a numerical value that can be given to each participant on a scale of measurement (Field, 2013). For RQs 1 to 6, I used a Pearson's product moment correlation, and for RQ7, I used a multiple regression to analyze continuous variables (Field, 2013). I used a Pearson's product moment correlation analysis to examine relationships between the criterion and predictor variables. I used a multiple regression analysis to determine if resilience, as measured by the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003), and thinking styles, as measured by Thinking Styles Inventory–Revised 2 (TSI-R2), can predict PTSD scores, as measured by PCL-5, a 25-item self-report checklist for DSM-5 (APA, 2013). The theoretical framework for this quantitative study was Sternberg's MSG theory.

Population

The target population was 105 U.S. women veterans with an age range from 30 to 55 who had been exposed to combat. The participants must have self-reported to have served in one of the four branches of service—Army, Navy, Air Force, and Marines—to

be included in this study. Participants must have self-reported to have been deployed to combat theaters during OIF and OEF.

Sample and Setting

I conducted a power analysis to determine the number of participants that would be needed for this study. A linear multiple regression fixed model, single regression coefficient was conducted in G*Power to calculate the sample size using a power of 0.80, an effect size of 0.35, a probability of .05, and two tailed (Faul, Erdfelder, Lang, & Buchner, 2007). A rule of thumb requires 15 participants per variable, and using resilience and legislative, judicial, hierarchical, global, and liberal thinking styles as my predictor variables and PTSD scores as my criterion variable (Field, 2013), the sample was to consist of 105 female veterans, 30 to 55 years of age. For this study, FaceBook (FB) was used to recruit participants. Recruitment letters were posted on FB American Women Veterans, Women Marines Association, Women of the U.S. Army, Women Veterans Support Services, Women Veterans, Women Army Corps Veterans Association, and American Veterans for Equal Rights group pages. It was estimated that in 2015, three billion individuals will have some form of social networking accounts (Child, Mentes, Pavlish, & Phillips, 2014). FB was launched in 2004 and is a global social networking platform used to connect groups of like-minded individuals based on specific interests (Child et al., 2014).

FB provides users with a sense of belonging to like-minded social groups (Childs et al., 2014). FB offers researchers the ability to recruit diverse numbers of participants. FB users are younger and educated (Popov, Gosling, Kosinski, Matz, & Stillwell, 2015).

However, the use of FB by adults 65 and older has increased by 35% since 2014 (Popov et al., 2015). An advantage of using FB is that group users may take a personal interest in participating in the study due to a common desire for a positive change in their group rather than personal monetary gain (Popov et al., 2015). In addition, according to Popov et al. (2015), FB biases are reduced due to such a large and diverse population.

FB offers a wealth of information on each individual who has a FB account. For example, the Popov et al. (2015) study used individuals' profile information (e.g. academic history, employment status, age, and gender). For this study, no profile information was obtained on any FB participant. According to King, O'Rourke, and DeLongis, (2014), internet studies should consist of no more than 200 questions, taking no more than 30 to 35 minutes for completion. It should take approximately 35 minutes for participants to complete 121 survey questions. This study was anonymous. There was no personal identifying information linking the survey to the participant; therefore, there was no follow-up for incomplete surveys. For this study, no monetary compensation was given for participating.

Before posting invitations to participate in the research onto various women veterans' organization sites for this study, FB page administrators were contacted to obtain permission. Participants were advised that they could exit the study at anytime for any reason without judgment. Web-based research offers some advantages. The data can be collected quickly; the researcher will never meet the participants and therefore cannot influence the participant responses (Crump, McDonnell & Gureckis, 2013).

Some disadvantages of web-based research are participants are completely anonymous, making it difficult to ensure the accuracy of the demographic information and lack of environmental controls during the study (Crump, McDonnell & Gureckis, 2013).

Instrumentation and Materials

For this study, surveys were used to collect data from research participants to measure resilience, thinking styles, and PTSD scores. In this section, the researcher will provide a description of the survey and any materials used. The instruments used were: the CD-RISC (Connor & Davidson, 2003), TSI-R2, and PCL-5. A brief demographic questionnaire was given to participants first. The demographic questionnaire covered age, highest rank achieved, race, number of years of service, branch of service, highest level of education, and OIF and OEF deployments (see Appendix A).

Connor-Davidson Resilience Scale

The CD-RISC is a 25-item 5-point self-report scale used to measure resilience (Connor & Davidson, 2003). The higher the score the participant obtains, the greater the resilience (Connor & Davidson, 2003). This scale is also sensitive to the effects of treatment in participants with PTSD symptoms (Connor & Davidson, 2003). The Cronbach's alpha is 0.89, and the test-retest reliability demonstrated a high level of agreement 0.87 (Connor & Davidson, 2003).

Connor and Davidson (2003) suggested that the resilience scale may be useful to examine resilience in patients who have experienced extreme trauma. The CD-RISC consists of a 5-point response range. The response range is (0) not true at all, (1) rarely

true, (2) sometimes true, (3) often true, and (4) true nearly all of the time (Connor & Davidson, 2003). The total score ranges from 0 to 100. The CD-RISC demonstrates convergent validity; the Stress Vulnerability Scale was negatively correlated to the CD-RISC and Kobasa Hardiness instrument positively correlated CD-RISC (Connor & Davidson, 2003).

The correlations ranged from .30 to .70 (Conner & Davidson, 2003). For example, some of the CD-RISC items in the scale are "Item 1, Able to adapt to change," "Item 2, Close and secure relationships," and "Item 3, Sometimes fate or God can help" (Connor & Davidson, 2003, p. 3). The CD-RISC has been used in various resilience studies with a variety of populations. For example, this scale was tested on primary care outpatient, generalized anxiety disorder, and PTSD patients (Conner & Davidson, 2003). Pietrzak et al. (2009) used the CD-RISC to determine the level of resilience in OIF/OEF veterans. Pietrzak et al.'s (2009) findings suggested that the CD-RISC scale scores for the PTSD groups were consistent with previous studies' findings that revealed military personnel with PTSD had lower levels of resilience compared to the group with no PTSD.

The findings of McNally et al. (2011) conflict with those of Pietrzak et al. (2009) though both used the CD-RISC. McNally et al. (2011) suggested that the CD-RISC was not useful for predicting resilience in a military population. One vital difference in both studies may be the population being examined. McNally et al. (2011) stated their study examined health care providers. Pietrzak et al. (2009) examined 272 Army National

Guard, and this population may have been exposed to a combat environment for a greater period of time.

Thinking Styles Inventory–Revised 2

When an individual uses different strategies to solve problems to complete a task or make a decision, this is considered to be a thinking style (Zhang & Sternberg, 2005). Sternberg and Wagner (1992) created the first thinking style inventory that consisted of 104 self-reported items to examine 13 thinking styles (Black & McCoach, 2008). Individuals with a Type I style prefer complex cognitive tasks demanding creativity and little to no structure.

Type II individuals prefer tasks that are less cognitively demanding, require more structure, and include conventional tasks. Type III may demonstrate characteristics of Type I or Type II, depending on the demands of the task and the individual's interest (Cheng & Zhang, 2014). According to Zhang (2009), these characteristics are based on several empirical studies.

The revised thinking styles inventory consists of 65 items with a 7-point Likert self-report scale. An example of sample questions are: (a) "When faced with a problem, I use my own ideas and strategies to solve it," and (b) "I like to figure out how to solve a problem following certain rules" (Zhang & He, 2011, p. 3). The Cronbach's alphas for the 13 TSI-R2 scales consist of Legislative .75, Executive .73, Judicial .70, Global .64, Local .65, Liberal .84, Conservative .76, Hierarchical .80, Monarchic .70, Oligarchic .77, Anarchic .70, Internal .75, and External .81 (Zhang, & He, 2011, p. 4).

A factor analysis for construct validity on the TSI-R2 revealed that all 13 scales had a factor loading above .40 (Zhu & Zhang, 2011). The Cronbach's alphas ranged from .56 to .81, and these results were comparable with previous studies (Zhu &Zhang, 2011). Previous research using the Thinking Styles inventory was done on American women. Hommerding (2002) used the 104-item Thinking Styles inventory on 112 American women to examine thinking styles in Florida Library Directors.

In this study I examined five Type I intellectual thinking styles. These criterion variables were legislative, judicial, hierarchical, global, and liberal. Each has five items per variable. The possible range of scores for each item are 1.0 to 7.0. The total TSI-R2 consists of adding each style response and then dividing the result by five. The scores are then grouped into percentiles for men and women (Sternberg & Wagner, 1991). For example, if the participant scores are very high on the TSI-R2 for legislative style, this would indicate that the participant would have characteristics of the legislative thinking style. There have been several studies that have examined the relationships between mental health and thinking styles in an adult population. Zhang (2009) studied anxiety and thinking styles in 378 Chinese students in Shanghai, China. Zhang's (2009) results revealed that four of the five Type I thinking styles were found to be negatively associated with anxiety. Zhang (2009) also conducted a hierarchical multiple regression in the study to determine if thinking styles could predict anxiety.

The results from the hierarchical multiple regression revealed that hierarchical Type I thinking style contributed to state and trait anxiety (Zhang, 2009). Chen and Liu (2012) examined gelotophobia, an individual's fear of being laughed at, and thinking

styles in 431 university students. Chen and Liu (2012) conducted a Pearson's correlation between gelotophobia and thinking style; their findings suggest that four of the five Type I of thinking styles, specifically legislative, judicial, liberal and hierarchical, were significantly associated with gelotophobia.

Chen and Zhang (2010) studied the relationship between mental health and thinking styles with 583 university students, as well as a Pearson correlation between the SCL-90 and the GSI. The findings suggest that hierarchical a Type I thinking style was negatively correlated to the SCL-90 and the GSI (Chen & Zhang, 2010).

Furthermore, Chen and Zhang (2010) conducted a stepwise hierarchical regression, and the results revealed that two of the five Type I thinking styles, judicial and hierarchal, significantly predicted scores on the SCL-90 (Chen & Zhang, 2010). Finally, Sagone and De Caroli (2013) studied the relationship between resilience and thinking styles in 130 Italian middle school adolescents. Their results suggest that adolescents with higher levels of resilience used four of the five Type I thinking styles (Sagone & De Caroli, 2013).

Posttraumatic Stress Disorder Checklist-5

The original PTSD Checklist (PCL) had 17 items, included a 5-point Likert scale with 1 representing “not at all” to 5 representing “extremely”, and used the DSM-IV criteria for PTSD symptoms (Contractor, Armour, Wang, Forbes, & Elhai, 2015). The new PTSD Checklist (PCL-5) is a 20-item self report assessment tool, and the scores range from 0 to 80 (Contractor et al., 2015; Keane et al., 2014). The PCL-5 has a Likert scale of 0, not at all, to 4, extremely (Keane et al., 2014). The PTSD checklist PCL-5 can

be used to monitor a patient's symptoms before and after treatment to screen for PTSD and to make a provisional PTSD diagnosis (Contractor et al., 2015). One sample question is “In the past month, how much were you been bothered by repeated, disturbing, and unwanted memories of the stressful experience?" (U.S. Department of Veteran Affairs Health Care, PTSD: National Center for PTSD, 2014).

The PCL-5 demonstrated internal consistency reliability of .94 and .97 (Keane et al., 2014). The PCL-5 also demonstrated the convergent validity of .81 with the Clinician Administered PTSD Scale using a veteran population (Keane et al. 2014 The PCL-5 has been normalized using men and women in the veteran population (Keane et al., 2014). The PCL-5 was updated to reflect the changes in the DSM-V (Bovin et al., 2015).

Brief Combat Exposure Scale

There are several studies that have used the Combat Experience Scale of the Deployment Risk and Resilience Inventory to study combat exposure in veterans (Brief et al., 2013; Godfrey et al., 2015; Hahn, Tirabassi, Simons, & Simons, 2015).The CES-DRRI consists of a 15-item, yes or no self report response scale used to measure combat exposure in veterans. The CES-DRRI is the preferred survey to use when examining combat exposure, specifically in veterans. Women veterans may have less combat exposure diversity compared to their male counterparts due to the ban on combat roles for women during the Iraq and Afghanistan wars (Brief et al., 2013). Therefore, for this study Luxton et al., (2010) brief combat exposure screening tool will be used to determine CE.

The brief CE screening tool uses four yes or no questions to substantiate combat exposure. Sample questions are:

1. During combat operations, did you become wounded or injured?
2. During combat operations, did you personally witness anyone being killed?
3. During combat operations, did you see bodies of dead soldiers or civilians?
4. During combat operations, did you kill others in combat (or have reason to believe others were killed as a result of your actions)?

The scores for this screening tool range from 0 to 4 and higher scores indicate CE.

The RQs for this study were:

RQ1: Is there a relationship between resilience score and PTSD symptom scores in women veterans with CE?

$H_0$1: There is no relationship between resilience score and PTSD symptom scores in women veterans with CE.

$H_1$1: There is a relationship between resilience score and PTSD symptom scores in women veterans with CE.

RQ2: Is there a relationship between legislative thinking style and PTSD symptom scores in women veterans with CE?

$H_0$2: There is no relationship between legislative thinking style and PTSD symptom scores in women veterans with CE.

$H_1$2: There is a relationship between legislative thinking style and PTSD symptom scores in women veterans with CE.

RQ3: Is there a relationship between judicial thinking style and PTSD symptom scores in women veterans with CE?

$H_0$3: There is no relationship between judicial thinking style and PTSD symptom scores in women veterans with CE

$H_1$3: There is a relationship between judicial thinking style and PTSD symptom scores in women veterans with CE.

RQ4: Is there a relationship between hierarchic thinking style and PTSD symptom scores in women veterans with CE?

$H_0$4: There is no relationship between hierarchic thinking style and PTSD symptom scores in women veterans with CE?

$H_1$4: There is a relationship between hierarchic thinking style and PTSD symptom scores in women veterans with CE.

RQ5: Is there a relationship between global thinking style and PTSD symptom scores in women veterans with CE?

$H_0$5: There is no relationship between global thinking style and PTSD symptom scores in women veterans with CE.

$H_1$5: There is a relationship between global thinking style and PTSD symptom scores in women veterans with CE.

RQ6: Is there a relationship between liberal thinking style and PTSD symptom scores in women veterans with CE?

$H_0$6: There is no relationship between liberal thinking style and PTSD symptom scores in women veterans with CE.

$H_1$6: There is a relationship between liberal thinking style and PTSD symptom scores in women veterans with CE.

RQ7: How well do resilience and thinking styles predict PTSD symptom scores in women veterans with CE?

$H_0$7: Resilience and thinking style scores do not predict PTSD symptom scores in women veterans with CE.

$H_1$7: Resilience and thinking style scores do predict PTSD symptom scores in women veterans with CE.

Data Collection

Once Walden University's Internal Review Board (IRB) has approved the researcher's study, a demographic questionnaire, CD-RISC, TSI-R2, and PCL-5 assessments was uploaded into Survey Monkey. The demographic questionnaire will ask for age, highest rank achieved, race, years of service completed, branch of service, level of education completed, and deployed to OIF or OEF. Each organization was given a brief letter requesting to post the recruitment letter on their FB page.

Organizations FB group pages will have access to informed consent in Survey Monkey upon approval of request for recruitment letter posting. The informed consent form will have information regarding the purpose of the research, the benefits of the research, and procedures for opting out of the research for any reason at any time. The participants were directed to read the instructions above the Surveymonkey link advising participants that no signature is required once they click the "Begin or Start" box.

Once participants have completed the demographic questionnaire, brief CE questionnaire, and the three surveys, the participants were thanked for their time and instructed to click the "submit" button. All research information and SPSS 21.0 analysis

was kept on the researcher's password protected personal laptop and a thumb drive as a precautionary measure in case of hard drive malfunction. Furthermore, there were no names and/or identifying information to connect the data to the participants. Therefore, there was no follow-up for missing or incomplete surveys. Each participant was given a record number to keep track of the number of records during data collection.

Analysis

Frequency analysis and a descriptive analysis were used to screen the data for any errors. A Pearson's product-moment correlation bivariate analysis was used to answer RQ-1to RQ-6. A multiple regression analysis will examine the multiple predictor variables and answer RQ-7. Pearson correlation analysis and multiple regression analysis was conducted with a 95% confidence interval. Assumptions must be tested to eliminate bias from the data (Field, 2013). Several statistical tests were conducted to test assumptions. A bivariate scatterplot was created to test linearity and outliers. Normality was tested in the same manner as well as testing for skewness and kurtosis. Homoscedasticity was tested using a Box test. For the multiple regressions, a multicollinearity analysis was conducted to ensure that the predictor variables are not highly correlated with each other (Field, 2013). A correlation analysis was used to examine the relationship between age (continuous descriptive variable) and PTSD scores (continuous dependent variable).

An ANOVA analysis was used in this study to examine significant differences in mean PTSD scores compared to groups of races (categorical descriptive variables) in women. A t-test analysis will examine significant differences in mean PTSD scores

between women deployed to OIF and OEF (categorical descriptive variables). To eliminate possible confounds, upon completion of the descriptive analysis two or three descriptive variables with the strongest, significant relationship to the dependent variable (PTSD scores) was used as control variables in the multiple regression analysis. The mean and standard deviation were used to describe the continuous descriptive data and frequencies to describe categorical data.

SPSS 21.0 was the software used for the statistical analysis. Participants were excluded from the study if: the participant did not meet the inclusion criteria, did not experience combat exposure, or did not answer demographic and combat exposure questions. The scores were calculated if no more than two questions are missing from any of the three surveys.

Threats to Validity

In this study, there are some threats to validity. The researcher was unable to verify the authenticity of participants. A control for this threat is to recruit participants from exclusive group sites (Child et al., 2014). A threat to internal validity when using internet-based research was the inability to control the testing environment. For example, the researcher will not be able to control noise, distractions and or conversations with others when participants are taking the survey (Child et al., 2014).

Ethical Procedures

This study used human adult participants. Therefore, I have an ethical responsibility to ensure that each participant's rights are not violated. Participants' confidentiality and anonymity was protected throughout this study. Furthermore, I am

responsible for following the American Psychological Association's (APA) general ethical principles to ensure that the highest ethical standards pertaining to this research are met. Informed consent is the premier means to ensure that research participants' rights are not violated and to ensure that each participant is treated humanely (Fisher, 2013).

Informed consent for this study provided participants with information regarding the premise of the study and the purpose of the study. Explanation of confidentiality and the definition of confidentiality was provided to participants. An ethical concern for this study during data collection was participants' recall of traumatic life events. Participants were advised of the possibility of experiencing fatigue, emotional discomfort, and stress when responding to survey questions. To handle this concern the VA Crisis Line toll-free number was provided for assistance. Participants' right to withdraw from the study at any time without penalty or reprisal and the security of personal information was provided. Participants were informed of inclusion and exclusion criteria. A personal laptop computer was used to analyze the data collected. The information on the laptop was password protected.

Summary

In summary, the purpose of this quantitative study and the goals were discussed. This chapter has discussed the rationale for this quantitative research design, provided a rationale for sample and the power analysis to be used. The study's procedures on data collection and materials used were provided in detail for future research on this topic. Chapter 4 will discuss the study's data analysis results in detail.

Chapter 4: Results

Introduction

The purpose of this study was to explore the relationships between resilience, thinking styles, and PTSD scores in women veterans with combat exposure. The following research questions were addressed in this study:

RQ1: Is there a relationship between the resilience scores and PTSD symptom scores in women veterans with CE?

RQ2: Is there a relationship between legislative thinking style and PTSD symptom scores in women veterans with CE?

RQ3: Is there a relationship between judicial thinking style and PTSD symptom scores in women veterans with CE?

RQ4: Is there a relationship between hierarchical thinking style and PTSD symptom scores in women veterans with CE?

RQ5: Is there a relationship between global thinking style and PTSD symptom scores in women veterans with CE?

RQ6: Is there a relationship between liberal thinking style and PTSD symptom scores in women veterans with CE?

RQ7: How well do resilience and thinking styles predict PTSD symptom scores in women veterans with CE?

Chapter 4 provides answers to the research questions and presents data collection, description of the sample, demographics, data analysis results, and summary of findings from the data analysis.

Whether the inclusion criteria for this study were met was determined by requesting participants to identify their age, their branch of service, and the war they participated in (OIF or OEF) and to answer yes to one of the four combat exposure (CE) questions: Were you deployed to a combat zone? Were you injured or severely wounded during a combat deployment? Did you see or handle human remains in a combat zone? Did you experience light or heavy explosives or small arms fire in a combat zone? Additionally, participants had to be within the ages of 30 to 55 and had to have participated in either OIF or OEF in one of the four branches of service (Army, Navy, Air Force, or Marines) to be included in this study.

The instruments that were used for this study were three self-reporting scales. The first, the CD-RISC, consists of 25 items. This instrument was used to assess the level of resilience in participants, and the scores ranged from 0 to 100. TSI-R2 comprises 65 items with a range of scores from 1.0 to 7.0 for each item. This inventory was used to assess the different strategies participants used to carry out tasks and make decisions. Finally, the PCL-5 is a 20-item checklist that I used to assess PTSD symptoms with scores that range from 0 to 80.

Data Collection Procedures

Walden University IRB approved this study on November 18, 2016 (approval no. 11-18-16-0200666). The Luxton et al. (2010) combat screening assessment was initially proposed but was not used for this study due to the IRB feedback regarding the legal liability of the questions. Therefore, the four combat exposure questions outlined above were used to avoid legal liability.

I began data collection on 14 December 2016 ; a description of the study, inclusion criteria, and a link was provided to the study's website on Surveymonkey to seven women veterans who function as FB group administrators. The purpose of this action was to request authorization to post an invitation to participate in this study. Once authorization was granted, data collection for this study started. To have sufficient power for this study, I needed to obtain 105 participants. Data collection started on December 15, 2016; by December 28, 2016, seven participants completed the surveys. Although it was initially thought reaching out to seven FB groups would be sufficient, it soon became clear more groups would need to be contacted to yield a sufficient response.

Due to the low survey responses, four additional FB women veterans groups were contacted for this study. Walden University IRB was given a request for change on December 23, 2016. The request for change was approved by the IRB on January 6, 2017. By January 31, 2017, 17 of the 41 participants did not complete the surveys. A request for change was submitted to the IRB on January 23, 2017 for an additional seven FB women veterans groups to assist with responses. On February 20, 2017, another request for change was submitted to the IRB for an additional 17 women veterans FB groups to participate in this study. By March, 2017, an additional 92 participants responded to the request to participate in this study for a total of 133.

This new and larger sample size exceeded the sample size of 105. Another request for change was submitted in March, 2017, to increase the sample size from 105 to 160 and to request additional women veterans FB groups to be contacted. Seven additional FB groups were invited to participate in this study. This action significantly

increased the number of participants responding to the invitation to participate in the survey.

Another request for change was submitted to the IRB to increase the sample size from 160 to 172 in Apri,l 2017. By the end of May, 2017, an additional 104 participants responded to the request for participation. A final sample size request for change was submitted to increase the sample from 172 to 237. The final request for change was approved on June 8, 2017. Due to the use of social media as the recruitment tool for this study a specific response rate could not be computed.

Data Screening and Missing Data

A total of 237 potential subjects responded to the request for participation in this study. Participants were excluded for failure to answer the required items. As a result, 90 participants were excluded for not completing the PCL-5 in its entirety and not meeting the inclusion criteria (Table 1). Eight participants were removed for being outside the age range of interest. An additional nine participants were removed for not responding yes to at least one of the four inclusions questions regarding exposure to combat. These participants were removed before all analyses. The final sample consisted of 130 participants (54.9%), which was determined to be sufficient based on a priori power analyses using G* Power software 3.1.9.2 to estimate adequate sample size.

Table 1

Summary of Participants Excluded and Included

Variable	Excluded	Included
	N = 107	*N* = 130
Age		

23-29	13 (12.1%)	
30-39	48 (44.8%)	72 (55.4%)
40-49	24 (22.4%)	47 (36.2%)
50-55	15 (14%)	11 (8.5%)
56-63	7 (6.4%)	
Race-ethnicity		
White/European American	61 (57%)	89 (68.5%)
Black/ African American	18 (16.8%)	15 (11.5%)
Hispanic, Non-White	5 (4.7%)	8 (6.2%)
Hispanic, White	14 (13.1%)	8 (6.2%)
Other	9 (8.4%)	10 (7.7%)
Branch of service		
Army	33 (30.8%)	48 (36.9%)
Marine Corps	46 (43%)	46 (35.4%)
Navy	11 (10.3%)	17 (13.1%)
Air Force	17 (15.9%)	19 (14.6%)
War in which participated		
OIF	61 (57%)	93 (71.5%)
OEF	46 (42%)	37 (28.5%)
4 combat exposure inclusion questions		
Were you deployed to a combat zone?		
Yes	83 (77.6%)	129 (99.2%)
No	24 (22.4%)	1 (.8%)
Were you injured or severely wounded during a combat deployment?		
Yes	16 (14.9%)	25 (19.2%)
No	91 (85%)	105 (80.8%)
Did you see or handle human remains in a combat zone?		
Yes	33 (30.8%)	65 (50%)
No	74 (69.1%)	65 (50%)
Did you experience light or heavy explosive or small arms fire in a combat zone?		
Yes	58 (54.2%)	102 (78.5%)
No	49 (45.8%)	28 (21.5%)

Note. (*N*=237).

Description of the Sample

The participants ranged in age from 30 to 55. The mean age was 39.3 (*SD* = 6.31). As indicated in Table 2, the majority of the participants self-reported as White/European American 68.5% (*n* = 89). The next largest group for this study was Black/African

American representing 11.5% (*n* = 15). More than half of the participants in this study reported their branch of service as Army, 36.9% (*n* = 48), or Marine Corps, 35.4% (*n* = 46). The Navy and Air Force represented approximately one-third of the sample. The demographic results revealed that 31.5% (*n* = 41) of participants graduated from college and 28.5% (*n* =37) completed graduate school.

Table 2

Demographic Characteristics

Variable	*n*	%
Age		
Range = 30-55		
Mean = 39.28 (SD = 6.31)		
30-39	72	55.4%
40-49	47	36.2%
50-55	11	8.5%
Racial-ethnic background		
Caucasian or White	89	68.5%
Black/African American	15	11.5%
Hispanic, Non-White	8	6.2%
Hispanic, White	8	6.2%
Other	10	7.7%
Branch of service		
Army	48	36.9%
Marine Corps	46	35.4%
Navy	17	13.1%
Air Force	19	14.6%
Level of Education		
Graduated from high school	3	2.3%
1 year of college	7	5.4 %
2 year of college	16	12.3%
3 year of college	8	6.2%
Graduated from college	41	31.5%
Some graduate school	18	13.8%
Completed graduate school	37	28.5%

Note. N = 130.

Results

Data Scoring and Descriptive Statistics

Before scoring, a frequency analysis revealed that some of the instruments used in this study had missing scores. The PCL-5 had 6.9% (n = 9) missing scores, whereas the CD-RISC-25 had no items missing. The PCL-5 items that had responses missing were replaced with mean substitution within participant data sets. For the TSI-R2, judicial, 1.5% (n =2); global, .8% (n = 1); and liberal, 1.5% (n = 2), missing responses were also replaced using mean substitution. According to George and Mallery (2009), it is acceptable to replace 15% of missing values using the mean. If a variable is missing more than 15% of its data, then that variable should be excluded from the analysis (George & Mallery, 2009).

Descriptive statistics including means, standard deviations, skewness, and kurtosis values were calculated for all continuous variables in the study (Table 3). I analyzed each continuous variable using "explore" in SPSS for skewness and kurtosis. Critical values for skewness were considered -1.0 and +1.0, and critical values for kurtosis were considered -2.0 to +2.0 (Tabachnick, & Fidell, 2013). The results indicated a slight skewness caused by a cluster of high scores in the sample. Using the same explore function, extreme outliers were examined. There were no extreme outliers identified in key outcome measures.

Kurtosis results indicated that three (judicial, liberal, PCL-5) of the seven variables had values below zero, which revealed a flat distribution due to extreme scores. When further considering the mean to standard deviation and observed metrics of

skewness and kurtosis, there was no evidence to suggest a significant deviation from normality. Also, due to the large sample size, the normality of the data was not an issue for this study (Field, 2013; Pallant, 2010). Any deviation from true normality could be tolerated by the robust nature of parametric analyses.

Table 3

Descriptive Statistics Among Continuous Variables

Variable	Mean	SD	Skewness	Kurtosis
Resilience	69.77	14.71	-.555	.041
PCL-5	41.10	20.40	-.140	-.935
Legislative	4.96	1.06	-.621	.769
Global	3.94	.961	-.087	.268
Judicial	4.34	1.15	-.496	-.062
Liberal	4.59	1.34	-.483	-.439
Hierarchical	5.07	1.11	-.596	.045

Note. $N = 130$, except for liberal, $n = 128$. Resilience = Connor Davidson Resilience Scale, Legislative Thinking Style= TSI-65, Global Thinking Style = TSI-65, Judicial Thinking Style =TSI-65, Liberal Thinking Style =TSI-65, Hierarchical Thinking Style =TSI-65, PCL-5 = PTSD Checklist.

Tests of Hypotheses. All correlational analyses were run with 95% confidence intervals.

$H_0$1: There is no relationship between resilience score and PTSD symptom scores in women veterans with CE.

$H_1$1: There is a relationship between resilience score and PTSD symptom scores in women veterans with CE.

A bivariate, two-tailed correlational analysis revealed resilience was significantly associated with PTSD severity scores ($r = -.514$, $p < .01$) indicating that individuals who

had higher resilience scores tended to have lower PTSD scores (see Table 4). The first null hypothesis was rejected.

$H_0$2: There is no relationship between legislative thinking style and PTSD symptom scores in women veterans with CE.

$H_1$2: There is a relationship between legislative thinking style and PTSD symptom scores in women veterans with CE.

A bivariate, two-tailed correlational analysis revealed no significant relationship between scores on the Legislative thinking styles and the PTSD symptom scores: r = -.169, p = .055. These results suggest that legislative has no significant relationship with PTSD symptom scores. In this case, one fails to reject the null hypothesis.

Table 4

Bivariate Correlations Among Continuous Variables

Variables	Resilience	PCL-5	Legislative	Global	Judicial	Liberal	Hierarchical
1. Resilience	-						
2. PCL-5	-.514**	-					
3. Legislative	.464*	-.169	-				
4. Global	.223*	-.020	204*	-			
5. Judicial	.390*	-.105	.461**	.311**	-		
6. Liberal	.524**	-.254**	.735**	.307**	.592**	-	
7. Hierarchical	.683**	-.323**	.544**	.312**	.497**	.563**	-

Note. N = 130, except for liberal, n = 128. Resilience = Connor Davidson Resilience Scale, PCL-5 = PTSD Checklist. Legislative Thinking Style= TSI-65, Global Thinking Style = TSI-65, Judicial Thinking Style =TSI-65, Liberal Thinking Style =TSI-65, Hierarchical Thinking Style =TSI-65

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

$H_0$3: There is no relationship between judicial thinking style and PTSD symptom scores in women veterans with CE

$H_1$3: There is a relationship between judicial thinking style and PTSD symptom scores in women veterans with CE.

A bivariate, two-tailed correlational analysis revealed no significant relationship between scores on the Judicial thinking styles and the PTSD symptom scores: r= -.105, p = .232. This suggests that judicial thinking style has no significant relationship with PTSD symptom scores. Thus, one fails to reject the third null hypothesis.

$H_0$4: There is no relationship between hierarchic thinking style and PTSD symptom scores in women veterans with CE?

$H_1$4: There is a relationship between hierarchic thinking style and PTSD symptom scores in women veterans with CE.

A bivariate, two-tailed correlation analysis revealed a significant relationship between scores on the hierarchical thinking styles and the PTSD symptom scores: r = -.323, p < .01. These results indicated that individuals who tended to have higher levels of Hierarchical Thinking style also tended to report lower PTSD symptoms. This result suggests that hierarchical thinking styles have a relationship with PTSD symptom scores. The fourth null hypothesis is rejected.

$H_0$5: There is no relationship between global thinking style and PTSD symptom scores in women veterans with CE.

$H_1$5: There is a relationship between global thinking style and PTSD symptom scores in women veterans with CE.

A bivariate, two-tailed correlational analysis revealed no significant relationship between scores on the Global thinking style and the PTSD symptom scores: r= -.020, p = .818. This result suggests that global thinking style has no significant relationship with PTSD symptom scores. Therefore, I fail to reject the fifth null hypothesis.

$H_0$6: There is no relationship between liberal thinking style and PTSD symptom scores in women veterans with CE.

$H_1$6: There is a relationship between liberal thinking style and PTSD symptom scores in women veterans with CE.

A bivariate, two-tailed correlational analysis revealed a significant relationship between scores on the Liberal thinking style and the PTSD symptom scores: r= -.254, p < .01. These results indicated that individuals who tended to have higher levels of liberal thinking styles have lower PTSD symptom scores. The sixth null hypothesis is rejected.

The relationship between resilience and Type I thinking styles was not a hypothesis tested in this study, however, the results identified several significant negative correlations. The correlation results revealed all five Type I thinking styles had significant correlations. The strongest correlations were resilience, liberal, and hierarchical (r =-.514, r = .524, r =.683, p <.01) Type I thinking styles. The results suggest that as resilience increased so did liberal and hierarchical thinking styles.

Assumption Testing. Prior to conducting primary analyses, a series of preliminary analyses were conducted to assess the assumptions of multiple linear regressions. Statistical assumptions of linear regression include linearity, multicollinearity, and normality. Normality was assessed by examining the mean to

standard deviation, skewness, and kurtosis, which all indicated no significant violations of normality. Furthermore, the Normal P-P plot results revealed a straight line from left to right indicating normality for the criterion variable (see Figure 1).

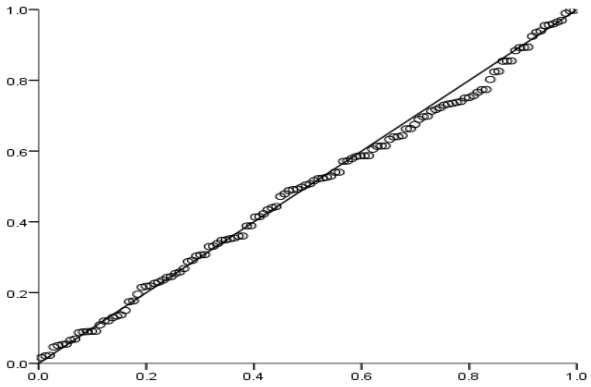

Figure 1. Normal P-P plot multiple regression residual for PCL-5.

Linearity and multicollinearity were assessed by using Pearson's product moment correlations (see Table 4). Linearity was established with significant relationships between PTSD and hypothesized predictors. Linearity was assessed from a residual scatterplot produced from conducting a multiple regression analysis. The results revealed a scatterplot with a majority of scores forming a rectangular shape. Also, the correlations have shown a lack of bivariate outliers.

Multicollinearity was determined not to be problematic so long as values were < .850 among predictors (Tabachnick, & Fidell, 2013). Multicollinearity was further assessed in primary analyses by examining the observed VIF and tolerance values (see Table 5). Additional preliminary analyses were conducted to test the relationships between demographics (OIF and OEF) and PTSD scores, to determine which, if any,

needed to be included in primary regression models as covariates. The results of a t-test revealed no significant differences in scores for OIF (*M*=41.17, *SD*=21.49) and OEF (*M*=40.94, *SD*=17.67; *t* (128) = .057, *p* =.073 two tailed.

The magnitude of the differences in the mean PCL scores (mean difference = 22.61, 95% *CI*: -7.65 to 89.10 was small effect (eta squared =. 01). An additional ANOVA with a Tukey HSD post-hoc test was conducted to compare the mean PTSD symptom scores and women veteran ethnicities. The relationship was significant: *F* (4, 125) = 4.33, *p* = .003.

The post-hoc comparison using the Tukey HSD indicated that the mean PCL scores for Caucasian or white group (*M*=36.41, *SD*=19.46) was significantly different from Hispanic White group (*M* =56.87, *SD*=15.02). The effect size, calculated using the eta squared was .12, indicating a medium effect for ethnicity on PTSD scores.

Tests of Hypotheses

$H_0$7: Resilience and thinking style scores do not predict PTSD symptom scores in women veterans with CE.

$H_1$7: Resilience and thinking style scores do predict PTSD symptom scores in women veterans with CE.

This research question examined the predictive relationship between PTSD symptom scores and resilience, legislative, judicial, global, liberal, and hierarchical thinking styles. Based on the preliminary analyses presented above, an ethnicity of White Hispanic was included in the model compared to other ethnicities to account for potential differences in PTSD scores.

To assess this question, an enter method multiple linear regression was conducted. All predictors were entered into the model in a single step. The results are presented in Table 5. The overall model was significant, F (7, 120) = 7.87, $p < .001$, $R^2 = .315$, indicating that the set of predictors used could account for a significant amount of variance in PTSD symptom scores. As a set of predictors, a total of only 31.5% of the variance in PTSD symptom scores could be accounted for by the predictors included in the model. Examination of the individual predictors indicated that only resilience was a significant predictor of PTSD symptoms, *beta* = -.555, $p < .001$.

As resilience scores increased, PTSD scores tended to decrease. Additionally, as expected based on preliminary analyses, those who identified as White Hispanic were associated with higher levels of PTSD compared to those of other ethnicities (*beta* = .167, $p = .034$). When entered into the same model as resiliency, the results suggested that none of the thinking styles significantly predict PTSD symptom scores in this sample.

Table 5

Multiple Regression Analysis Summary for Predictor Variables

	Unstandardized		Standardize			Collinearity statistics	
	B	*SE*	*β*	*t*	*p*	Tolerance	VIF
(Constant)	77.09	10.16		7.59	.00		
Resilience	-.77	.15	-.555	-.5.18	.000	.498	2.008
Legislative	1.85	2.19	.097	.84	.400	.435	2.300
Global	1.47	1.74	.069	.84	.400	.856	1.168
Judicial	2.46	1.72	.140	1.43	.155	.594	1.683
Liberal	-1.30	1.93	-.086	-.67	.502	.351	2.853
Hierarchical	-.57	2.12	-.031	-.27	.788	.428	2.339
White Hispanic	13.94	6.50	.167	2.14	.034	.947	1.056

Note. F (7, 120) = 7.87, $p < .001$, $R^2 = .315$

Summary

A correlation bivariate analysis provided significant evidence to reject the null hypothesis for research questions 1, 4, and 6 for this study. Research questions, 2, 3, and 5 results failed to provide evidence to support rejecting the null hypothesis. As such, the null hypothesis for research questions 2, 3, and 5 will be retained due to the lack of a clear relationship between legislative thinking style, judicial thinking style, and global thinking style on the severity of PTSD symptoms as measured by the PCL-5. For research question 7, results indicated that only resilience was a significant predictor of PTSD symptom scores, *beta* = -.555, $p < .001$. As resilience scores increased, PTSD scores tended to decrease.

In the multiple regression analysis, there were significant effects when examining bivariate correlations when controlling for resilience; none of the thinking styles included were significantly associated with PTSD scores, all $p > .05$, indicating that PTSD symptom scores could not be significantly predicted from thinking style. These results

provide partial support for the research hypothesis by linking resilience to lower levels of PTSD symptom scores; however, the current study failed to find evidence to link thinking styles to PTSD symptom scores when controlling for resilience. The results with the interpretation of the finding, limitations, recommendations, and implication of this study will be discussed in chapter 5.

Chapter 5: Discussion

Introduction

This chapter covers the purpose of the study, the interpretation of the findings, limitations of the study, recommendations, implications, and conclusions for this study. The purpose of this study was to examine the relationship between resilience, thinking styles, and PTSD symptom scores in women veterans with CE. The design approach for this study was a quantitative cross-sectional survey design. The data were collected using self-report assessment tools and FB women veterans group sites. Resilience was measured by the CD-RISC). Type I thinking styles were measured by the TSI-R2. PTSD symptom scores were measured by the PCL-5, and combat exposure was defined as the participant answering yes to one of four questions.

The final sample consisted of 130 women ranging in age from 30 to 55 who were enlisted in one of the four main branches of service (Army, Marine Corps, Navy, or Air Force) and deployed to OIF or OEF. The majority of the sample was deployed to OIF, and more than half of the sample were enlisted in the Army or Marine Corps. The demographics for this study revealed that 69% (n = 89) of the sample identified as White or Caucasian. This finding was consistent with the VA National Center for Veteran Analysis and Statistic Report (VA National Center for Veterans Analysis and Statistics: 2016, veteran population section). Education demographics for this study revealed that 31.5% (n = 41) of the sample completed college or completed graduate school 28.5 % (n = 37). According to USA.gov website, joining the military section; education requirements to enlist in the military consist of a high school diploma or GED.

To become a commissioned officer in the United States, the applicant should have some college (USA.gov, n.d., military and veteran: joining the military). Other studies supported this demographic result as well. For example, Mankowski, Tower, Brandt, and Mattock's (2015) qualitative study on 18 women in the military revealed that all of the women studied had graduated from high school or obtained a bachelor's or higher degree. Campbell and Raja's (2005) quantitative study on sexual assault and victimization of female veterans findings revealed that 70% (n =268) of women veterans completed high school or higher levels of education.

Interpretation of Findings

Of the total number of participants (N= 237) collected for this study, 38% (n = 90) of the participants were excluded from the study for not completing the PCL-5 in its entirety. This result suggests that the web-based surveys may have been perceived as too long and have prompted unwanted emotions regarding trauma for this population. It is recommended that web-based surveys be no less than 131 and no more than 200 questions to reduce the tediousness (Deutskens, Ruyter, Wetzels, & Oosterveld, 2004; King et al., 2014). For example, this web-based study consisted of 121 questions that are considered short. However, according to Deutskens, et al. (2004), participants may discontinue responding on shorter text surveys if the response time is perceived as long on a web-based survey.

Although participants who were included in this study were similar to those who were excluded from this study, there are still some slight differences to note between the groups in this study. First, those who were included in this study tended to respond "No"

to being severely wounded during a combat deployment compared to participants who were excluded (Table 1). This result may suggest that participants who were included and responded "No" did not experience enemy fire or improvised explosive devices while deployed to combat theatres. Also, participants who were excluded tended to reply "No" to handling human remains compared to the group that responded "Yes" to light to heavy explosion. These results may suggest that participants experienced higher levels of enemy fire, but did not have any casualties (Table 1). These results are important to this study because it suggests differences in combat exposure experiences among these participants and suggests a need for future exploration in this area.

Three of the six bivariate correlation results revealed significant evidence to reject the null hypothesis for research questions 1, 4, and 6. The results of this study suggest that there are significant negative relationships between resilience, liberal, and hierarchical thinking styles and PTSD symptoms scores in this sample. These results revealed that as resilience and these two thinking styles increased, PTSD symptom scores decreased.

The negative association between resilience and PTSD symptoms suggests that women veterans with PTSD symptoms exposed to combat may have impaired cognitive control and resistance to change compared to women veterans with resilience. Individuals who are resilient tend to demonstrate resilience in their behavior and thought (Agaibi &Wilson (2005).

For example, resilient behavior is demonstrated by an individual's ability to overcome adversity by accepting change and a positive mental attitude. This type of

behavior may also suggest that resilient women veterans can detach themselves from their negative thoughts compared to women veterans who experience reliving the trauma. The ability to detach from negative ruminating thoughts may foster the ability to improve performance when completing tasks and improve creativity when solving problems.

Previous research supports the negative association between resilience and PTSD symptoms found in this study. For example, a study of 272 National Guard OEF/OIF veterans revealed that resilience was negatively associated with PTSD, and veterans' levels of resilience were comparable to civilian outpatient primary care patients (Pietrzak et al., 2009). Furthermore, participants with high levels of resilience accepted change and personal control (Piertrzak et al., 2009). Additionally, the cross section study by Tsai, Harpaz-Rotem, Pietrzak, and Southwick (2012) examined 164 veterans seeking VA mental or medical services one year after returning from Iraq and Afghanistan; using the PTSD Checklist-Military version and CD-RISC to measure resilience suggested a negative association between resilience and PTSD symptoms. According to Tsai, Harpaz-Rotem et al. (2012), participants with PTSD symptoms had impaired control of their thoughts and diminished acceptance of change.

The characteristics of resilience are counter to the symptoms of PTSD. For example, the DSM-5 provides a diagnostic criterion for PTSD symptoms that consist of the patient repeatedly experiencing the traumatic event, recurring dreams of the trauma, negative thoughts of the trauma of the event, negative shifts in mood, and hyperarousal (APA, 2013).

Similarly, resilience is a construct that is counter to the characteristics of PTSD. According to Agaibi and Wilson (2005), protective factors of resilience consist of ability to handle stress with positive responses, social and family support, positive feelings, positive thinking, feeling in control over life, acceptance of change, and self-confidence. The results of this study support previous findings examining mental health and Type I thinking styles. Hierarchal and liberal Type I thinking styles and mental health have been studied by several researchers (Chen & Liu, 2012; Chen & Zhang, 2010; Zhang, 2009). For example, a Chen and Zhang (2010) study on 583 Chinese university students' revealed that hierarchal Type I thinking style was negatively correlated to nine of the Symptom Checklist-90 subscales and the General Severity Index.

Zhang's (2009) research on anxiety and thinking styles also supports the findings of this study. For example, Zhang's (2009) research findings suggest that anxiety has a significant negative correlation between four (legislative, judicial, hierarchal, liberal) of the five Type I thinking styles and anxiety. Chen and Liu's (2012) research on the relationship between thinking styles and gelotophobia, (a fear of being laughed at, which is a form of anxiety) supports Zhang's (2009) research on anxiety and thinking styles. Chen's and Liu's (2012) research on gelotophobia also suggests a significant negative correlation of four (legislative, judicial, liberal, and hierarchical; rs = −.13, −.11, −.16, and −.18, $p < .05$) of the five Type I thinking styles.

Participants with hierarchical Type I thinking styles may tend to prioritize their task. They prioritize tasks with the understanding that not all of their tasks will be completed to meet their goals. Hierarchical participants are flexible and can make

adjustments when confronted with adversity. Participants with liberal Type I thinking styles tend not to accept the business as usual agenda, instead they tend to want change and are comfortable with receiving other points of view and unique ideas.

Participants who preferred hierarchical and liberal Type I thinking styles tended to accept changes in life as they occurred and this may foster a sense of control or governance over activities in life. This view is counter to PTSD symptomology, which subscribes to having a lack of control over recurring negative thoughts of the trauma. The lack of significant association between legislative, global, and judicial Type I thinking styles and PTSD symptoms in women veterans with CE was unexpected. This finding was inconsistent with results in previous thinking style and mental health studies. For example, in previous studies, four (legislative, judicial, liberal, and hierarchical) of the five Type I thinking styles had a significant negative association with PTSD symptoms (Zhang, 2009; Chen & Liu, 2012).

In another previous study, one (hierarchical) of the five Type I thinking styles was negatively associated with the Symptom Checklist-90 and the General Severity Index (Chen & Zhang, 2010). This unexpected lack of association between legislative, global, and judicial Type I thinking styles and PTSD symptoms may suggest that variations in participant's age, socioeconomic status, birth order, or work experiences may influence thinking styles (Zhang & Sternberg, 2005).

Research question 7 results revealed resilience as a significant predictor of PTSD symptom scores in this sample of participants. The multiple regression results suggested only resilience was a significant predictor of PTSD symptom scores, *beta* = -.555, $p <$

.001 in this sample. The multiple regression results revealed that as resiliency increases PTSD symptom scores appear to decrease as measured by the PCL-5. The results of the multiple regression revealed thinking styles are not significant predictors of PTSD symptom scores.

The results of this study revealed that resilience was the only significant negative predictor of PTSD symptoms in women veterans. The multiple regression results were unexpected due to previous studies supporting the predictive power of Type I thinking styles in mental health (Chen & Zhang, 2010; Chen & Liu, 2012). While there was some significance between thinking styles and PTSD symptoms in the multivariate analyses, this relationship tended to become nonsignificant. This suggests that when the differences in PTSD symptoms are accounted for by multiple variables in the regression models, thinking styles mostly became nonsignificant. This may suggest that resilience protective factors' characteristics such as internal locus of control, social and family support, resourcefulness and problem solving skills are positive factors necessary to mediate PTSD symptoms (Agaibi &Wilson, 2005). However, it is important to understand that thinking styles are neither good nor bad but are preferences to styles of thinking.

Revisiting the Theoretical Frameworks

This study's findings support Sternberg's MSG. Sternberg's MSG theory postulates that there are different preferred ways individuals govern their activities (Chen &Yong 2010). Sternberg's MSG theory uses different levels of government metaphorically to suggest that people choose different ways to organize or govern their daily activities (Chen &Yong 2010; Zhang, 2009; Zhang & Sternberg, 2005).

Sternberg's MSG theory is based on 13 thinking styles broken into three types: Type I, Type II, and Type III. Type I thinking style characteristics consist of creativity and higher levels of cognitive functioning, which were examined in this study (Zhang, 2009). In this study, the results revealed that PTSD symptoms had a significant negative association between two of the five Type I thinking styles (liberal and hierarchal) and resilience. Lower levels of PTSD symptoms indicated participants preferred to be flexible, prioritize tasks to achieve their goal, and welcomed changes when organizing activities. This evidence supports Sternberg's theory regarding preferences individuals have to organize or govern their lives through their way of thinking (Zhang, 2009).

Limitations of the Study

There are several limitations identified in this study. First, the time between CE and when the survey was given may be a factor that needs to be considered. Previous research suggests that time is a factor to consider in PTSD symptomatology. According to Orcutt Erickson and Wolfe (2004), veterans returning from combat deployment had higher levels of initial PTSD, and their symptoms increased over time. This study acquired data exclusively from self report surveys and FB. There are several disadvantages for using FB for data collection. Some of the disadvantages are: the researcher has little control over who is taking the survey and how they are taking the survey.

For example, a respondent could be a thirteen-year-old female with access to a FB veterans' group page participating in the study. Some participants might become distracted or bored and respond to questions without devoting their attention.

Participants' lack of interaction with the researcher may create a lack of accountability to complete the surveys. Additionally, FB's diverse population and level of participants' comprehension may create barriers to complete the surveys (Popov et al., 2015).

Combat exposure may not have been a principal stressor for women deployed to OIF and OEF in this study. For example, researchers suggested that MST may be the most prevalent factor contributing to PTSD in military women (Carter-Visscher et al., 2010; Vogt et al., 2011). Generalizing the results of this study to all women veterans exposed to combat with PTSD symptoms based on the demographics of this study is ill advised. To determine the CE in this study, the four-question Combat Exposure Screening Tool (Luxton et al., 2010) could not be used due to the IRB feedback pointing out the legal liability of the questions. This may have limited how each participant responded to the inclusion questions regarding CE.

Trustworthiness, Validity, and Reliability

For this study, there were several threats to internal validity. The assessment tools were self-report measures exclusively. The researcher did not have control over administering the surveys. Therefore, there was no way to ensure the person who was participating in the survey was who they say they were. Additionally, participants may not have taken the surveys in a quiet place and a comfortable location and may have skipped survey questions due to distractions.

Recommendations

There are several recommendations that are pertinent to the future examination of resilience, thinking styles, and PTSD symptom scores in women veterans with CE. As the

women veteran population grows, the VA should consider increasing future research on PTSD symptoms and combat exposure in female veterans. After six months of detachment from active duty or post combat deployment, DOD and the VA may consider mailing women veterans a PTSD screening assessment (i.e., PCL-5) to assist in determining if further assessments are necessary to reduce PTSD symptoms in women veterans.

Future research is needed to compare the impact that MST and CE have on PTSD symptoms in women veterans. The correlation between resilience and Type I thinking styles should be examined further. Type II and Type III thinking styles should be included in future studies to gain an understanding of how thinking styles moderates PTSD symptoms scores in this sample. Additional research on the differences between enlisted and officer could be examined in future research. These variables could be studied to identify the relationships in thinking styles and resilience in enlisted and officer women veterans exposed to combat. Further examination about the relationship between thinking styles and resilience in officer and enlisted women veterans may provide a better understanding on the symptoms of PTSD.

Clinicians may consider developing psycho-education classes on positive emotions to increase veterans' resilience. Positive emotions are associated with increased well being and positive thoughts about self (Mak, Ng, & Wong, 2011). Additional recommendations identified during the study to be considered are the development of a CE assessment with less than four questions. Additional studies should be pursued to examine thinking styles in a variety of mental health disorders in the veteran population.

Implications

An understanding of these findings may assist senior VA leadership and clinicians to develop specialized PTSD training groups focused on resilience and thinking styles in women veterans. The U.S. Army has endorsed and implemented resilience training for active duty personnel. This training could be augmented with thinking styles curriculum for this population. Clinicians could create pre and post assessment tools for women deployed into combat environments to better understand resilience, thinking styles, and PTSD symptoms. This gender-based knowledge may assist with reducing barriers to treatment that some women veterans experience at the VA (Washington et al., 2011).

Reducing barriers to VA treatment for women veterans may increase the use of services (i.e., mental health crisis line) to women veterans that may be less likely to seek treatment from the VA. This knowledge may prompt studies on why some women veterans are less likely to screen positive for PTSD symptoms than other women veterans.

Conclusions

This research is the first of its kind to study resilience, Type I thinking styles, and PTSD symptom scores in women veterans with CE. Women have a long history of medical and support roles during American conflicts and wars. Women have served in the Revolutionary War, Civil War, Vietnam, and recently OIF and OEF wars, to name a few (Dutra et al., 2011). During the OIF and OEF wars, the U.S. military deployed approximately half of the active duty female population to support these wars. In January 2013, the U.S. military lifted the ban on women participating in direct combat. Due to

these changes in history, it is important to create gender-specific mental health treatment, increase gender-specific studies as well as psycho-education training curriculum in resilience and thinking styles for this population.

Women in the military are expected to perform at the very highest levels of excellence to protect and defend the country. These expectations require women to be able to concentrate under adverse conditions, possess high levels of stamina, devise tactical strategies, and problem solve with clarity under enormous amounts of stress in a variety of environments. As women veterans and active duty women population increases due to the lifting of the ban on combat roles for women in the military, it is paramount to implement resilience and thinking styles training for this population.

An important take away of this study to consider is that resilience and thinking styles are malleable (Zhang & Sternberg, 2005). This means that resilience and thinking styles can be taught; therefore, it will be vital to develop resilience and thinking styles programs for all branches of service. The U.S. Army has taken steps to implement resilience into their training. Thinking styles are not a part of the U.S. Army's resilience training. However, thinking styles could be implemented into their training program to improve upon the existing resilience curriculum.

The female population is growing in the military, and they are an important part of the nation's defense. Women veterans deserve to receive the very best mental health services that the VA can offer. This study supports the need to increase resilience training and further research on thinking styles in this population to mitigate PTSD symptoms in women veterans after exposure to combat. Reducing the adverse effects of PTSD

symptoms may foster positive well being and healthy thinking styles in women veterans. Women veterans have made sacrifices for the nation, and the nation should support promoting better forms of treatment that foster positive well being in women veterans returning from combat.

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Appendix A: Demographic Questions

What is your age?
What is the highest rank that you have achieved?
What is your race? Check one that applies
1 White or Caucasian
2 Black or African American
3 Hispanic Non White
4. Hispanic White
5 Other
How many years did you serve in the military?
What branch of service did you serve in?
What is the highest level of education you have completed?
Did you serve in Operation Iraqi Freedom (Iraq) or Operation Enduring Freedom (Afghanistan)?