COMBAT EXPOSURE AND MENTAL HEALTH OUTCOMES: THE INCREMENTAL IMPACT OF GENDER HARASSMENT ON WOMEN VETERANS

A Dissertation

by

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ABSTRACT

The present study investigated the incremental impact of gender harassment on the association between combat exposure and posttraumatic stress disorder (PTSD), depression, and problem drinking in 134 female veterans who deployed to Iraq and Afghanistan. The participant pool consisted of 600 randomly selected women who had deployed to Afghanistan or Iraq and were residing in Veterans Integrated Service Network 1 (VISN 1; New England). Participants received an invitation letter by mail with information about the study, a document describing the informed consent, and a link to a survey website provided by the secure, nonsearchable survey provider PsychData. Participants visited the link, indicated their informed consent, and completed a 30-minute survey. The data collected were anonymous.

Logistic regression analyses revealed that combat exposure significantly predicted PTSD and problem drinking. For every one unit increase in combat exposure, the odds ratios of PTSD and problem drinking were 2.00 times and 1.88 times more likely to be coded as present. These findings remained significant after controlling for gender harassment, resulting in odds ratios of 1.83 and 1.76, respectively. Gender harassment significantly predicted PTSD and depression. For every one unit increase in gender harassment, the odds ratios of PTSD and depression were 1.77 times and 1.80 times more likely to be coded as present. These findings remained significant after controlling for combat exposure, resulting in odds ratios of 1.55 and 5.90, respectively. Subsequent relative risk analyses indicated that experiencing both gender harassment and combat exposure was associated with an increased risk of PTSD, problem drinking, and depression 3.56, 3.81, and 6.19 times higher, respectively, compared to those who reported only combat exposure. As a concurrent risk factor to combat exposure, gender
harassment appears to increase the likelihood of meeting at least minimum threshold for PTSD, depression, and problem drinking. These findings assist in understanding and contextualizing the impact of gender harassment on female veterans’ psychological well-being.
Accomplishments mean nothing without the love and support of loved ones. I dedicate this work to my mother and father, Dalia and Kevin, who have encouraged me to reach for the stars and pursue my dreams from the moment I came into this world. You have been a constant source of support, guidance, inspiration, and above all, unconditional love. I am forever indebted to you. I love you with all my heart. To my partner, Justin, your curiosity, support, and love have both challenged me and encouraged me to continue to grow as a partner and as a person. Thank you for the sacrifices you have made for us. To my dear friends and family members both near and far, thank you for reminding me of what truly matters in life and for always being so willing to lend your comfort and laughter. Finally, this work is dedicated to all of the honorable men and women who serve this great country. Your commitment and sacrifice are exceptional.
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The data analyzed in this study were provided by Dr. Creech. All other work conducted for the dissertation was completed by the student independently.

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TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>ii</td>
</tr>
<tr>
<td>DEDICATION</td>
<td>iv</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENT</td>
<td>v</td>
</tr>
<tr>
<td>CONTRIBUTORS AND FUNDING SOURCES</td>
<td>vi</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>vii</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>I INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Today’s Women Service Members and Veterans</td>
<td>2</td>
</tr>
<tr>
<td>Women Veterans’ Mental Health Outcomes</td>
<td>4</td>
</tr>
<tr>
<td>Unique Stressors Impacting Women in the Military</td>
<td>8</td>
</tr>
<tr>
<td>Gender Harassment</td>
<td>12</td>
</tr>
<tr>
<td>Present Study</td>
<td>15</td>
</tr>
<tr>
<td>II METHOD</td>
<td>16</td>
</tr>
<tr>
<td>Participants</td>
<td>16</td>
</tr>
<tr>
<td>Procedure</td>
<td>17</td>
</tr>
<tr>
<td>Measures</td>
<td>17</td>
</tr>
<tr>
<td>Demographics</td>
<td>17</td>
</tr>
<tr>
<td>Combat Exposure</td>
<td>17</td>
</tr>
<tr>
<td>Gender Harassment</td>
<td>18</td>
</tr>
<tr>
<td>PTSD</td>
<td>19</td>
</tr>
<tr>
<td>Depression</td>
<td>20</td>
</tr>
<tr>
<td>Problem Drinking</td>
<td>21</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>21</td>
</tr>
<tr>
<td>III RESULTS</td>
<td>23</td>
</tr>
<tr>
<td>Univariate Logistic Regression</td>
<td>23</td>
</tr>
<tr>
<td>Relative Risk Estimates</td>
<td>23</td>
</tr>
<tr>
<td>Multivariate Logistic Regression</td>
<td>25</td>
</tr>
<tr>
<td>Relative Risk Estimates</td>
<td>26</td>
</tr>
</tbody>
</table>
CHAPTER I
INTRODUCTION

Since the inception of the U.S. military, women have formally and informally served their country. From disguising as male soldiers during the American Revolution and Civil War, to caring for injured soldiers as nurses in World Wars I and II, and flying helicopters as combat pilots in Afghanistan, women’s roles in the military have undergone numerous changes, marked by increasing responsibilities and involvement as service members (U.S. Department of Veterans Affairs, 2011). The recent rescinding of the 1994 Direct Ground Combat Definition and Assignment Rule that prohibited women from serving in combat or combat roles (Dempsey & Panetta, 2013) further expanded women’s access to all military occupational specialties (MOS) and resulted in the full and equal opportunity for women to serve. These changes in policy have resulted in fundamental changes in what it means to be a female in the military and, consequently, changes in the needs and outcomes of female service members and veterans.

Women currently represent nearly 15% of active duty military, 18% of Guard and Reserve forces (U.S. Department of Veterans Affairs, 2013), and 20% of new recruits (Bean-Mayberry et al., 2010). With over 213,000 women in the Active component of the U.S. Armed Forces, and about 190,000 women in the Reserves and National Guard (U.S. Department of Veterans Health Affairs, 2011), the military has seen an unexpected increase in the number of women serving over the past two decades. Although these numbers are still small in comparison to their male counterparts, they are projected to continue increasing in the future (U.S. Department of Veterans Health Affairs, 2011).
Today’s Women Service Members and Veterans

The steady increase in the number of female service members accompanied by their evolving roles in the military, multiple deployments, and involvement in combat has resulted in increased efforts to understand women’s identity in the military. From their participation in recent conflicts, to ways in which they are similar to or different from their male counterparts, a number of studies have focused on who these women are and what their life, military, and postmilitary experiences are like.

Since September 11, 2001, female soldiers have regularly deployed in support of Operations Enduring Freedom (OEF), Iraqi Freedom (OIF), and New Dawn (OND), with over half of female enlisted and officer service members having deployed at least once to Afghanistan and Iraq (U.S. Department of Veterans Affairs, 2011). To date, it is estimated that more than 15% of deployed service members in Iraq and Afghanistan are women (U.S. Department of Defense, 2013). Similar to their male counterparts, female service members are likely to undergo lengthy and multiple tours of duty, with shorter periods of rest between deployments (Deployment Health and Family Readiness Library, 2006; Mankowksi & Everett, 2016).

Female service members are also increasingly being called into battle during deployment (Street, Vogt, & Dutra, 2009; Vogt et al., 2011a). Unique to women serving in the conflicts in Afghanistan and Iraq is that levels of combat exposure are minimally lower than those reported by men (Vogt et al., 2011b). Moreover, given the prevalence of insurgency warfare and the lack of clear front lines during the OEF/OIF conflicts, enemy attacks can occur unexpectedly, resulting in new levels of combat exposure for women (Street et al., 2009). Female service members are likely to encounter events such as being attacked or ambushed, coming under direct fire or firing on enemies, and witnessing combat-related injury or death of other military troops,
enemies, and civilians (La Bash, Vogt, King, & King, 2009; Street et al., 2009). It is estimated that females comprise 1.9% and 2.4% of all OIF/OEF injuries and deaths, respectively (Cross, Johnson, Wenke, Bosse, & Ficke, 2011). Indeed, OEF/OIF female veterans currently represent the largest cohort of women in history who were actively involved in combat operations, with 2.2 million women making up approximately 8% of the veteran population (U.S. Department of Veterans Affairs, 2011; U.S. Department of Veterans Affairs, 2013). By 2035, women are expected to make up 35% of all veterans (U.S. Department of Veterans Affairs, 2011).

One recent study comparing veterans \( (N = 19,386,589) \) to non-veterans \( (N = 231,986,987) \), and female veterans \( (N = 1,595,614) \) to male veterans \( (N = 17,790,975) \), revealed that compared to male veterans, whose median age is 64, female veterans tend to be younger, with a median age of 49 (Maguen, Ren, Bosch, Marmar, & Seal, 2010; U.S. Department of Veterans Affairs, 2016). Moreover, female veterans are more likely to belong to a racial/ethnic minority group compared to non-veteran women, whereas male veterans are more likely to be White not Hispanic than male non-veterans (Maguen et al., 2010; U.S. Department of Veterans Affairs, 2016). Female veterans are also more likely to be widowed than non-veteran women, whereas male veterans are more likely to be married and less likely to have never married compared with non-veteran men. In terms of education, compared to male veterans, female veterans have a higher percentage of completing some college, a Bachelor’s degree or an advanced degree. Despite recent findings from qualitative studies indicating that motivating factors for women enlisting in the military often include seeking opportunities (e.g., education and career development), pursuing adventure (e.g., travel and new experiences), or seeking safety (e.g., from poverty or abuse) (Burkhart & Hogan, 2015; Mankowski, Tower, Brandt, &
Mattocks, 2015), female veterans are also more likely to have no earnings or income, and live in poverty, compared to their male counterparts (U.S. Department of Veterans Affairs, 2016).

Despite a growth in female military research, however, there remain important gaps in the literature regarding the unique experiences and mental healthcare needs of female service members and veterans, particularly of those who have served in recent OEF/OIF/OND conflicts. Moreover, women’s experiences before, during, and after the military are often different from those of men, and can impact their mental health and mental healthcare needs. As such, research on military women’s unique life and military experiences is imperative.

**Women Veterans’ Mental Health Outcomes**

Women service members’ increased and evolving involvement in the OEF/OIF/OND conflicts has resulted in a number of studies designed to further the understanding of the association between women’s military experiences and specific indicators of mental health following deployment (Creech, Swift, Zlotnick, Taft, & Street, 2015; Street, Gradus, Giasson, Vogt, & Resick, 2013; Vogt et al., 2011a). Consistent with male military research, these studies have revealed a significant and positive association between deployment and mental health outcomes. Studies indicate that women service members are 1.6 to 3 times more likely to be diagnosed with a mental health disorder upon returning from deployment (Wojcik, Akhtar, & Hassell, 2009), exhibiting a higher prevalence of mental health problems compared to women in the general population. Compared to women civilians, female veterans have higher rates of alcohol misuse (Wallace, Sheehan, & Young-Xu, 2009), eating disorders (Kimerling, Gima, Smith, Street, & Frayne, 2007), depression (Haskell et al., 2010), exposure to domestic violence (Dobie et al., 2004), and suicide (Kaplan, McFarland, & Huguet, 2009).
Posttraumatic stress disorder (PTSD), depression, and problem drinking are notably among the most commonly studied mental health problems following deployment. PTSD has historically been examined in the context of male service members and veterans, and is increasingly being studied in female service members and veterans as well. Overall, among OEF/OIF veterans of both genders, it is estimated that the prevalence of PTSD is as high as 19.1% of service members returning from OIF, 11.3% from OEF, and 8.5% from other conflict areas (Bean-Mayberry et al., 2010; Hoge, Auchterlonie, & Milliken, 2006). The literature comparing the prevalence of PTSD in female and male service members and veterans, however, has provided somewhat conflicting findings. One longitudinal study of service members who deployed to Iraq and Afghanistan indicated that new-onset PTSD symptoms are higher among women (Smith et al., 2008).

Other studies have also revealed that female OEF/OIF veterans are more likely than their male counterparts to screen positive for symptoms of PTSD and depression (Tanielian & Jaycox, 2008), with female veterans reporting PTSD symptoms outnumbering their male counterparts 2 to 1 (Fisher, 2008). Another study examining mental health outcomes in Soldiers returning from combat operations in Iraq and Afghanistan found that although female service members are more likely than male service members to report symptoms of depression, they are equally likely to report symptoms of PTSD (Lapierre, Schwegler, & LaBauve, 2007). Additional studies, however, have found few, if any, differences in PTSD symptoms, indicating that the rate of PTSD among female service members and veterans involved in OEF/OEF is similar to their male counterparts (12% and 13%; LaPierre et al., 2007; MHAT-IV, 2006; Seal, Bertenthal, Miner, Sen, & Marmar, 2007), and that both exposure to combat-related stressors and their impact on
postdeployment mental health are more similar than different for female and male OEF/OIF veterans (Vogt et al., 2011b).

Depression, another common mental health outcome observed in service members who have returned from deployment, has also been studied in depth, with recent studies indicating that as many as 23% of female OIF/OEF veterans screen positive for depression (Maguen et al., 2010). Similar to PTSD, however, the literature comparing the prevalence of depression among female and male service members and veterans has also provided conflicting findings, although there appears to be a more consistent trend towards women more frequently reporting depression symptomatology than their male counterparts. Whereas some studies indicate that male and female OEF/OIF veterans share similar rates of depression (Tanielian & Jaycox, 2008; Vogt et al., 2011a), others conclude that female OEF/OIF veterans have a higher prevalence of depression (Haskell et al., 2010), that deployment involving high combat exposure in Iraq and Afghanistan is associated with higher rates of new-onset depression in female OEF/OIF veterans compared to their male counterparts (15.7% versus 5.7%; Wells et al., 2010), and that depression diagnoses are more frequent among female OEF/OIF veterans (Lapierre et al., 2007; Maguen et al., 2010). Previous studies also indicate that suicide rates among female veterans are higher than in male veterans (1.87 versus 1.66, respectively; McCarthy et al., 2009).

Substance use, more specifically alcohol misuse, has also been identified as a problem in female service member and veteran populations. In addition to being at higher risk of reporting substance use disorders than their civilian counterparts (Cucciare, Simpson, Hoggatt, Gifford, & Timko, 2013), a recent literature review of substance misuse, abuse, and dependence in female veterans reported that as many as 37% of female veterans engage in alcohol misuse, and 25% in binge drinking (Hoggatt et al., 2015). Among active duty female service members, these
numbers are fairly similar, with studies indicating that approximately 32% report binge drinking, 8% report heavy weekly drinking, and 7% report alcohol-related problems (Jacobson et al., 2008). These two sets of findings are consistent with previous studies indicating that female veterans engage in binge drinking and other high risk drinking behaviors at rates ranging from 23% to 47% (Bradley et al., 2003; Davis, Bush, Kivlahan, Dobie, & Bradley, 2003; Nunnink et al., 2010). Studies specifically examining the association between combat exposure and alcohol misuse also indicate a significant and positive association in women veterans involved in Gulf War and OEF/OIF/OND missions to Afghanistan and Iraq (Creech et al., 2015; Hassija, Jakupcak, Maguen, & Shipherd, 2012). As would be expected, PTSD and depression symptom severity have been found to be associated with alcohol misuse as well among female veterans (Gobin, Green, & Iverson, 2015; McDevitt-Murphy et al., 2010; Nunnink et al., 2010), and higher rates of drinking problems have been identified in female veterans with PTSD compared to those without PTSD (Scott et al., 2013).

Similar to research examining gender differences in PTSD and depression in OEF/OIF veterans, research examining how rates of alcohol misuse for female service members and veterans compare to their male counterparts reveal inconsistencies. Whereas earlier studies indicate that women service members’ rate of heavy weekly and unsafe drinking are higher than those of men (Lande, Marin, Chang, & Lande, 2007), a recent review of the literature concluded that alcohol misuse rates are generally lower among women than male veterans (Hoggatt et al., 2015). The literature has consistently indicated, however, that female veterans are less likely than their male counterparts to seek substance abuse services, including intensive outpatient programs (Creech & Borsari, 2014; Davis et al., 2003).
The contradictory nature of findings within the literature regarding gender differences in the prevalence rates of PTSD, depression, and substance misuse complicate understanding more precisely how women are impacted by their experiences in the military. Possible explanations as to why the literature is conflicting might include biases in diagnoses or seeking mental healthcare, failing to take into account additional traumatic experiences outside of their military experience, or inherent differences in the types of experiences women have faced during military service depending on which conflicts they have served in. Nonetheless, all studies seem to indicate that female service members and veterans are likely to experience similar or higher rates of mental health problems compared to their male counterparts. Even if these differences are relatively small, the evolving role of women in the military compared to their previous cohorts render mental health outcomes in military women an important area of study.

**Unique Stressors Impacting Women in the Military**

Beyond combat exposure and other stressors associated with deployment, research has repeatedly indicated that females are exposed to unique and additional stressors, both before and during their military careers, as compared to their male and civilian counterparts. The literature has consistently identified three types of prewar experiences likely encountered by female service members and veterans, including childhood trauma, nonmilitary sexual assault, and intimate partner violence (Carlson, Stromwall, & Lietz, 2013). Studies indicate that at least one third of all female veterans endorse a history of childhood sexual abuse, with a similar proportion endorsing adulthood sexual assault (Zinzow, Grubaugh, Monnier, Suffoletta-Marie, & Frueh, 2007). Indeed, a study evaluating the relationships among childhood maltreatment, sexual trauma in adulthood, PTSD, and health functioning in female veterans found that 33% and 35% of
women entering the military report a history of adult sexual abuse and child physical/emotional abuse, respectively (Lang et al., 2008).

Additional studies on history of childhood sexual abuse in women veterans reveal similar findings, indicating childhood sexual abuse rates ranging between 22 and 49% (Schultz, Bell, Naugle, & Polusny, 2006; Turchik & Wilson, 2010). These findings, compared to civilian counterparts of whom 17% to 32% report childhood sexual abuse and 13% to 22% endorse adulthood sexual assault (Briere & Elliot, 2003), suggest that female veterans are more likely to report nonmilitary sexual trauma that their civilian counterparts (Carlson et al., 2013; Zinzow et al., 2007). In addition to being more likely to have a history of premilitary sexual abuse, research has also indicated that approximately one fourth of female recruits report physical intimate partner violence prior to entering the military (Bean-Mayberry et al., 2010; Merrill, Stander, Thomsen, Crouch, & Milner, 2006). Because these interpersonal traumas are associated with several adverse mental health outcomes, including PTSD, depression, and substance misuse, experiencing these types of prewar experiences may serve as risk factors for women independent of their military experiences.

Women’s experiences during their military service are also often qualitatively different from those of men’s, primarily in terms of interpersonal stressors. In addition to experiencing perceived threats, traumatic experiences, deployment and war zone stressors, and concerns about family disruptions (Street et al., 2009; Vogt, Pless, King, & King, 2005), women in the military often report less social support from peers and superiors during deployment than their male counterparts (Street et al., 2009; Vogt et al., 2005). Moreover, in addition to being less likely to be married than their male counterparts, female veterans are less likely than male veterans to receive social support from their partners even if married (Frayne et al., 2006). As has been well
established in the literature (Lehavot, Der-Martirosian, Simpson, Shipherd, & Washington, 2013), low social support is often associated with poorer mental health outcomes, whereas high social support might serve as a protective factor against traumatic experiences, rendering women at a disadvantage when it comes to sources of support.

Of particular prominence in the literature is that female service members have alarmingly high rates of sexual assault and harassment during their time in the military. Studies vary widely, reporting rates between 4% and 78% in percentages of women who experience military sexual trauma (MST), or sexually threatening behavior, sexual coercion, and sexual assault while in the military (Johnson, Robinett, Smith, & Cardin, 2015). Although the wide variation in reported prevalence of MST is notable and has been attributed to factors such as data collection, research methods, and inconsistencies in the operationalization of MST (Johnson et al., 2015), recent findings from a VHA study of centralized electronic medical records coded for military sexual trauma suggest that as many as 15% of women veterans report MST during their military careers, resulting in increased likelihood of a mental disorder diagnosis, including PTSD, other anxiety disorders, depression, and substance use disorders (Kimerling et al., 2010). A broader study indicated, however, that in just one year, 9% of active duty female service members reported experiencing some form of sexual coercion (e.g., feeling threatened with retaliation for not being sexually cooperative), 31% reported experiencing some other form of unwanted sexual attention (e.g., unwanted attempts to establish a romantic sexual relationship despite the service member's efforts to discourage it or being touched in a way that made the service member feel uncomfortable), and 52% reported experiencing other offensive sexual behaviors (e.g., repeatedly being told offensive sexual stories or jokes or experiencing unwelcome attempts to be
drawn into a discussion of sexual matters) (Bean-Mayberry, 2010; Lipari, Cook, Rock, & Matos, 2008).

Given the prevalence of sexual harassment and assault in the military, several studies have examined the impact of these traumatic experiences, particularly as they relate to mental health. Indeed, PTSD, depression, substance abuse, and eating disorders, are more likely to develop in women OEF/OIF veterans who have a history of MST as compared to women who do not (Hahn, Tirabassi, Simons, & Simons, 2015; Kimerling et al., 2007). Studies indicate that women veterans with a history of MST require more healthcare (Sadler, Booth, Mengeling, & Doebling, 2004; Zinzow et al., 2007). For women veterans who have been exposed to MST, the risk of reporting mental health issues has been found to increase by 59% (Mulhall, 2009). Moreover, women who experience MST during a combat deployment are likely to experience these events along with additional types of trauma, including combat trauma. Among OEF/OIF female veterans with combat exposure, the likelihood of reporting PTSD symptoms is also higher (Hahn, Tirabassi, Simons, & Simons, 2015). One study revealed that the relative risk of female veterans with a history of MST exhibiting symptoms of PTSD was almost 2.5 times that of women without a history of MST (Bean-Mayberry et al., 2010; Himmelfarb, Yaeger, & Mintz, 2006). MST has also been associated with a higher prevalence of other mental health diagnoses beyond PTSD and with an increased prevalence of comorbid disorders among female veterans (Maguen, Luxton, Skupp, & Madden, 2012), including depression (Kimerling et al., 2007; Vogt et al., 2005), eating disorders (Rowe, Gradus, Pineles, Batten, & Davison, 2009), and substance abuse (Gobin et al., 2015).

After serving in the military, women veterans are disproportionately more likely to contend with lower socioeconomic status, experience lower employment status relative to
educational levels, and report a number of physical health problems after serving in the military (Frayne et al., 2006; Mattocks et al., 2012). Despite citing occupational and vocational training opportunities as primary reasons for enlisting in the military (Burkhart & Hogan, 2015; Mankowski et al., 2015), compared to their civilian counterparts, women veterans have a higher unemployment rate (9.6% versus 6.8%); young women veterans (17 to 24 years old) are at a 50% higher risk of unemployment than non-veteran women in the same age group in 2009 (U.S. Department of Veterans Affairs, 2011). Compared to their male counterparts, female veterans are also more likely to be homeless (Montgomery & Byrne, 2014). In just four years, homelessness among female veterans doubled from 1,380 (2006) to 3,328 (2010) (National Coalition for Homeless Veterans, 2012), likely due to barriers to accessing gender-specific and safe transitional housing, such as sexual harassment and assault towards women residents of transitional housing for homeless veterans. On average, the homeless female veteran is 25 years old and more likely to be of color (Blackstock, Haskell, Brandt, & Desai, 2012). In addition to the stressors associated with homelessness, research indicates that 77% of homeless female veterans are unemployed, and homeless female veterans are more likely to be single mothers and to experience symptoms of PTSD, depression, and problem drinking (National Coalition for Homeless Veterans, 2012).

**Gender Harassment**

An additional yet understudied military stressor unique to women is gender harassment. In contrast to sexual harassment, gender harassment is characterized by nonsexualized verbal and nonverbal behaviors that convey hostile, degrading, discriminating, or objectifying attitudes towards one gender that are often used to reinforce traditional gender roles. Gender harassment includes insulting or singling out someone based on their gender, or treating members of one
gender as being inferior and as needing to prove themselves to others. Examples include deliberate sabotage, indirect threat, constant scrutiny, and gossip (King, King, Vogt, Knight, & Samper, 2006). Although both males and females may be subjected to gender harassment in the military, studies indicate that women are more likely than men to become targets of gender harassment, particularly within predominantly male work settings (Kabat-Farr & Cortina, 2014; Street, Vogt, & Dutra, 2009). Despite the steady increase in women in the military, female service members remain outnumbered by their male counterparts. Military culture remains a highly male dominated environment, in which “institutionalized gender norms” characterized by notions of male dominance have been accepted and perpetuated (Koeszegi, Zedlacher, & Hudribusch, 2014). Indeed, such attitudes can facilitate an environment that generally accepts gender harassment towards women – who are often, if not always, the minority within their unit.

Qualitative studies examining women’s experience in the military have consistently revealed a theme of gender harassment towards female service members. One study using content analysis to analyze individual, semi-structured interviews of 42 women deployed to combat areas in and around Iraq and Afghanistan found that being female often resulted in facing daily reminders of their gender and harassment due to their gender, regardless of military experience (Kelly, Nilsson, & Berkel, 2014). In another study in which 17 women veterans were interviewed about their military experience, women described facing stressors beyond those of being a service member, and specific to being a female service member. In addition to learning military policies, experiencing the violence of war, and adopting the values of camaraderie and work ethic fostered by the military, women veterans described being treated differently for being women during their service. Women who served outside of military healthcare described being treated as inferior, demeaned, and singled out through harassment and verbal abuse by fellow
male service members, officers, and senior officials because of their gender. Women described these experiences as a chronic stressor that was allowed and even maintained by male peers and superiors during their military careers (Burkhart & Hogan, 2015).

Although quantitative studies examining gender harassment in the military remain few, one study indicated that as many as 35% of female Soldiers may experience gender harassment while in the military (Kabat-Farr & Cortina, 2014). Previous studies indicate this number may actually be higher, reporting that approximately 54% of active duty military women experience some form of gender harassment annually by military coworkers from both higher and lower ranks (Lipari et al., 2008). This same study found that among active duty women service members, 17% reported experiencing gender-related discriminatory behaviors, compared to only 6% of active duty male service members (Lipari et al., 2008). Assuming there may be fear of repercussions associated with disclosing such experiences, the actual rates of gender harassment may be much higher.

Despite the likelihood of co-occurring with sexual harassment, even fewer studies have examined gender harassment as a potential predictor of mental health outcomes, particularly within women deployed to Iraq and Afghanistan. Studies with Gulf War female veterans do suggest, however, that gender harassment has a unique negative impact on mental health beyond that of sexual harassment. In a study of risk and resilience factors during deployment in a sample of male and female veterans, findings revealed that among interpersonal deployment factors (social support, sexual harassment, and gender harassment), gender harassment demonstrated the strongest associations with PTSD, depression, and anxiety (King, King, Vogt, Knight, & Samper, 2006). Indeed, gender harassment is unlikely to occur in isolated incidents, and instead is likely to represent a chronic stressor. Within the context of lengthy and multiple deployments,
and compounded by combat exposure, low social support, and premilitary risk factors, experiencing gender harassment may comprise an additional and substantial threat, jeopardizing women’s feelings of physical and emotional safety with the rest of their unit (Street, Vogt, & Dutra, 2009) during deployment. Female veterans who experience gender harassment alongside combat exposure may feel alienated and be less likely to seek social support from peers, all factors which have been linked to resilience in military samples.

**Present Study**

Given previous findings in the civilian community documenting the detrimental impact of gender harassment on women’s psychological well-being (Sojo, Wood, & Genat, 2015), the current study investigated the impact of gender harassment on the association between combat exposure and mental health functioning (PTSD, depression, and problem drinking) in female veterans who were involved in missions in and around Afghanistan and Iraq (Creech et al., 2015). It was hypothesized that combat exposure would be directly related to mental health functioning. It was also predicted that the effect of combat exposure on mental health functioning would be incrementally impacted by the number of gender harassment experiences, such that a greater number of gender harassment experiences would strengthen the associations between combat exposure and symptoms of PTSD, depression, and problem drinking.
CHAPTER II

METHOD

Participants

Potential participants were obtained through a database of service members involved in the recent U.S. conflicts in and around Iraq and Afghanistan maintained by the VHA Office of Public Health, Postdeployment Epidemiology Program. The participant pool consisted of 600 randomly selected women who had deployed to Afghanistan or Iraq and were residing in Veterans Integrated Service Network 1 (VISN 1; New England) at the time of the study. Of the 600 invitations to participate, 109 came back as incorrect addresses. Of the remaining 491 eligible participants, 134 completed some portion of the survey, resulting in a survey response rate of 27%. This response rate was smaller than that of other surveys of returning veterans (32.5% to 39.1%; Di Leone et al., 2013; Vogt et al., 2011a); however, the levels of combat exposure and PTSD symptomatology were comparable to those in previous research (e.g., $M = 20.89$ and $30.16$ for combat exposure and PTSD, respectively; Vogt et al., 2011a). Previous large-scale surveys were mailed to participants in paper form, potentially enhancing their response rate (Di Leone et al., 2013; Smith et al., 2008; Vogt et al., 2011a).

The total sample ($N = 134$) was largely Caucasian (81.3%), followed by Black (9%), Asian (1.5%), Multiracial (1.5%), Native American (2.2%), and Other (4.5%). Of the total sample, 7.5% ($n = 10$) identified as Hispanic or Latino. The average age of participants was 37 years ($SD = 8.74$, range = 23-61). On average, participants reported 16 years of education ($SD = 2.61$, range = 12-28). A majority (82%) of participants were currently residing with a partner or other close family member such as a child or parent. Of those who indicated they were in a romantic
relationship, most described their relationship status as married or partnered (62%), with the remaining selecting their status as dating (20%) or engaged/other (18%). The sample was evenly distributed between women who completed a deployment within the last 6 years (49%) and those whose most recent deployment occurred between 6 and 12 years ago (51%). The average duration of all prior deployments combined was 2.32 years ($SD = 1.02$, range $= 1$-$4$), with a mean of 6.68 years since the last deployment.

**Procedure**

Procedures were approved by the VA Institutional Review Board. Participants received an invitation letter by mail with information about the study, a document describing the informed consent, and a $5$ bill. Invitations contained a link to a survey website provided by the secure, nonsearchable survey provider PsychData. Reminders were sent 2 and 4 weeks after the initial invitation letter. Participants visited the website link, indicated their informed consent, and completed a 30-minute survey. The data collected were anonymous.

**Measures**

**Demographics**

Participants provided demographic information including age, gender, race/ethnicity, education, relationship status, and military service history.

**Combat Exposure**

The Combat Experiences scale from the Deployment Risk and Resilience Inventory-2 (DRRI-2) was used to assess exposure to combat-related experiences during participants’ most recent deployment (Vogt et al., 2013). The scale contains 17 items reflecting exposure to combat (e.g., being exposed to hostile fire, witnessing a member of the unit be seriously wounded or killed) on a 6-point Likert scale ranging from 1 (never) to 6 (daily or almost daily). Items in this
scale inquire about objective events and circumstances and do not reflect personal or subjective interpretations of such events or circumstances (Vogt et al., 2013). Items are summed to create a total score, ranging from 17 to 102, with higher scores indicating greater exposure to combat. The Combat Experiences scale from the DRRI-2 was the result of a multi-year project involving an extensive literature and assessment of content validity of the scale based on focus groups with male and female OEF/OIF veterans, a national mail survey of male and female OEF/OIF veterans to assess item and scale characteristics, and lastly, the administration of the scale to a national sample of male and female OEF/OIF veterans to confirm the scale’s psychometric properties. Psychometric data for the DRRI-2 provide good evidence of criterion-related and discriminant validity and internal consistency reliability (Vogt et al., 2013). Women in the sample reported similar levels of combat exposure as women in the DRRI-2 standardization sample, reporting an average of 22.27 (SD = 8.94, range = 17 – 69), and 25.66 (SD = 11.60, range = 17 – 85; Vogt et al., 2013), respectively. Cronbach’s alpha in the current and standardization samples was .85 and .91, respectively.

Gender Harassment

The General Harassment scale from the Deployment Risk and Resilience Inventory-2 (DRRI-2) was used to assess exposure to gender harassment (e.g., threats of physical safety, condescending or overly critical behavior) during each participant’s most recent deployment (Vogt et al., 2013). Although the scale is termed “General” as opposed to “gender” harassment, Vogt et al. (2013) describe this scale as being intended to “measure exposure to harassment that is non-sexual but that may occur on the basis of one's biological sex or minority.” The scale contains eight items rated on a 4-point Likert scale ranging from 0 (never) to 3 (many times). Items are summed, with scores ranging from 0 to 24. Higher scores reflect more exposure to
gender harassment. Like the Combat Experiences scale from the DRRI-2, the General Harassment scale from the DRRI-2 was the result of a multi-year, three-phase scale development process. Items on this scale were initially derived from an extensive literature review and focus groups with OEF/OIF veterans. Item and scale characteristic were then assessed using a national mail survey of male and female OEF/OIF veterans, and later using a second national sample of male and female OEF/OIF veterans to confirm the scale’s psychometric properties. Unlike previous measures of deployment experiences, this scale was created with the increasing deployment of larger proportions of women in mind and was intended to call attention to additional stressors more recent cohorts of veterans are likely to experience that were not considered of research or clinical importance for previous cohorts of veterans.

To date, the General Harassment scale from the DRRI-2 is the only validated scale intended to assess for categories of gender harassment, including harassment as “constant scrutiny, questioning one's ability and commitment, and threats to safety” within a military sample (Vogt et al., 2013). Analyses comparing all DRRI-2 scales between men and women in the original standardization sample revealed that whereas men generally report higher levels of combat experiences, preparedness, unit social support, women report more exposure to general and sexual harassment. Women in this sample reported similar levels of “general” harassment as women in the standardization sample for the DRRI-2, reporting an average of 5.79 (SD = 6.30, range = 0 – 22), and 6.74 (SD = 6.51, range = 0 – 24; Vogt et al., 2013), respectively. Cronbach’s alpha in both the current and standardization samples was .94 and .93, respectively.

**PTSD**

The PTSD Checklist (PCL) was used to measure symptoms of PTSD experienced in the last month (Weathers, Litz, Herman, Huska, & Keane, 1993), based on the Diagnostic and
The PCL contains 17 items on a 5-point Likert scale ranging from 1 (not at all) to 5 (extremely). The civilian version was used to capture symptoms in response to both military and civilian traumas. Items are summed to create a total score. Scored range from 17 to 85, and higher scores reflect greater symptomatology in the past month. The civilian version was used to capture current symptoms in response to both military and civilian traumas. Participants were asked to endorse symptoms based on “the most stressful event that happened to you, that you witnessed, or you learned about” in the last month. In the current study, a cut score of 36 was chosen as an indicator of PTSD symptomatology in the past month at a level that might warrant a diagnosis based on suggested cut scores ranging from 31 (Yeager, Magruder, Knapp, Nicholas, & Frueh, 2007) to 38 (Dobie et al., 2002) for samples of women veterans who are not seeking mental health treatment. Psychometric data indicate the PCL has acceptable test–retest reliability and internal consistency (Wilkins, Lang, & Norman, 2011). Cronbach’s alpha in this sample was .92.

**Depression**

The Centers for Epidemiological Studies—Depression scale (CES–D; Andresen, Malmgren, Carter, & Patrick, 1994) was used to measure symptoms of depression experienced in the last week. The CES-D contains 10 items rated on a 4-point Likert scale ranging from 0 (rarely/none of the time/less than 1 day) to 3 (most or all the time/5–7 days). Items are summed, and scores range from 0 to 30, with higher scores indicating greater depression symptoms in the past week. In the present study, a cut score of 11 was used as it is commonly used to identify an individual with mild depressive symptomatology and at risk for clinical depression (Andresen et al., 1994). The CES-D has adequate psychometric properties (Andresen et al., 1994). In this sample, Cronbach’s alpha was .97.
Problem Drinking

The Alcohol Use Disorders Identification Test (AUDIT) was used to assess problem drinking behavior in the past 30 days (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). The AUDIT is a 10-item screening questionnaire, consisting of three questions about the amount and frequency of drinking, three questions about alcohol dependence, and four questions about problems caused by alcohol use. Items are scored on a 0 to 4-point scale and summed to create a total score, with higher scores reflecting greater levels of alcohol misuse. In the current study, a recommended cut score of 8 was used as an indicator of hazardous and harmful alcohol use (Conigrave, Hall, & Saunders, 1995). The measure has a reported median reliability coefficient of .83, and adequate construct and criterion related validity (Reinert & Allen, 2007). In this sample, Cronbach’s alpha was .85.

Data Analysis

Binary logistic regression analyses were used to evaluate hypothesized linkages between combat exposure and gender harassment with postdeployment mental health outcomes. Binary logistic regression, often also referred to simply as logistic regression, predicts the probability that an outcome falls into one of two categories of a dichotomous dependent variable based on one or more either continuous or categorical independent variables. Binary logistic regression models require that three basic assumptions be met: (1) the dependent variable is dichotomous, (2) the independent variable is continuous or categorical, and (3) the observations are independent of one another, such that categories of the dependent variables are mutually exclusive.

The predictors, combat exposure and gender harassment, were evaluated as continuous variables and transformed into z scores for all logistic regression analyses. To understand the
relative strength of significant predictors, a post hoc multivariate logistic regression analysis was conducted. The overall model significance for the logistic regressions was examined by the \( \chi^2 \) coefficient. Individual predictors were assessed by the Wald coefficient. Predicted probabilities for postdeployment symptoms of PTSD, depression, and problem drinking occurring were determined by \( \exp(B) \). For significant predictors, an \( \exp(B) \) value greater than 1 indicated that for a one unit increase in the independent variable, the dependent variable was \( X \) times more likely to be coded as 1 (present). An \( \exp(B) \) value less than 1 indicated that a one unit increase in the independent variable was \( X \) times more likely to be coded 0 (not present). An \( \exp(B) \) value represents the odds ratio, or effect size, for the predictor variables.

The first model assessed significant independent predictors of postdeployment symptoms of PTSD, depression, and problem drinking determined through univariate binary logistic regression analyses. A second multivariate logistic regression model evaluated the comparative predictive power of combat exposure and gender harassment. Subsequent relative risk analyses were conducted to enhance clinical utility. The predictors, combat exposure and gender harassment, were dichotomized as not present or present (0 and 1). The outcome variables, symptoms of PTSD, depression, and problem drinking, were dichotomized using clinically relevant cut scores. The predictors were dichotomized at a low cut score to enhance sensitivity and to better identify the odds of symptoms of PTSD, depression, and problem drinking even when few combat exposure or gender harassment experiences were reported. All analyses were conducted using SPSS v.23.
CHAPTER III
RESULTS

Means and standard deviations of the predictors and outcome variables are presented in Table 1. Of the participants, 64.7% \( (n = 79/122) \) reported combat exposure (scores \( \geq 18 \)), and 75.8% \( (n = 91/120) \) reported experiencing gender harassment (scores \( \geq 1 \)) during deployment. Overall, participants reported moderately high rates of adverse mental health outcomes, similar to findings from previous studies, with 30.3% \( (n = 37/122) \) meeting screening criteria for PTSD (scores \( \geq 36 \)), 28.5% \( (n = 35/123) \) meeting screening criteria for depression (scores \( \geq 11 \)), and 14.2% \( (n = 19/122) \) meeting screening criteria for harmful alcohol use (scores \( \geq 8 \)).

**Univariate Logistic Regression**

Combat exposure and gender harassment each served as a risk factor for adverse post-deployment mental health symptoms. Combat exposure was a significant predictor of symptoms of PTSD \( (B = .69, \text{Wald} = 8.33, p = .004, \exp(B) = 2.00) \), depression \( (B = .48, \text{Wald} = 5.32, p = .021, \exp(B) = 1.61) \), and problem drinking \( (B = .63, \text{Wald} = 8.12, p = .004, \exp(B) = 1.88) \). Gender harassment also served as a strong predictor of symptoms of PTSD \( (B = .57, \text{Wald} = 8.13, p = .004, \exp(B) = 1.77) \) and depression \( (B = .59, \text{Wald} = 8.57, p = .003, \exp(B) = 1.80) \). Gender harassment approached but did not reach statistical significance in predicting problem drinking \( (B = .43, \text{Wald} = 3.44, p = .064, \exp(B) = 1.54) \). Univariate logistic regression results are shown in Table 2.

**Relative Risk Estimates**

Relative risk estimates can be thought of as the effect size of the association between two conditions (condition A and condition B). Thus, the relative risk reflects the proportion of
individuals with condition A (e.g., combat exposure) who experience symptoms of PTSD, depression, and problem drinking, divided by the proportion of individuals without condition A who experience symptoms of PTSD, depression, and problem drinking, respectively. Relative risk analyses results are summarized in Table 3.

Combat exposure and gender harassment were dichotomized as present or not present (1 or 0). Scores of 17 on the Combat Experiences Scale were coded as indicating no combat exposure (not present = 0), and scores 18 or above were coded as indicating at least some combat exposure (present = 1). Scores of 0 on the General Harassment Scale were coded as indicating no gender harassment (not present = 0), and scores 1 or above were coded as indicating at least some gender harassment (present = 1). PTSD symptoms were dichotomized using a cut score of 36 based on suggested cut scores ranging from 31 (Yeager et al., 2007) to 38 (Dobie et al., 2002) for samples of women veterans who are not seeking mental health treatment. There was a significant association between combat exposure and PTSD symptoms ($\chi^2 (1, N = 122) = 6.20, p = .013$). Female veterans who reported combat experiences were 2.33 times more likely to report at least moderate levels of PTSD symptoms in the last month than those who reported no combat experiences. Likewise, there was a significant association between gender harassment and PTSD symptoms ($\chi^2 (1, N = 120) = 7.04, p = .008$). Female veterans who reported gender harassment during deployment were 3.51 times more likely to report at least moderate levels of PTSD symptoms in the last month than those who did not report experiencing gender harassment.

Depressive symptoms were dichotomized using a cut score of 11, which identifies mild depressive symptoms and risk for clinical depression (Andresen et al., 1994). Combat exposure and depressive symptoms were not significantly related ($\chi^2 (1, N = 121) = 1.04, p = .307$). There was, however, a significant association between gender harassment and depressive symptoms ($\chi^2$...
Female veterans who reported gender harassment during deployment were 3.44 times more likely to report at least mild symptoms of depression in the last week than those who did not report experiencing gender harassment.

Finally, problem drinking was dichotomized using a cut score of 8, which indicates at least a moderate level of hazardous and risky drinking (Conigrave, Hall, & Saunders, 1995; Kroenke, Spitzer, & Williams, 2001). Combat exposure and problem drinking were not significantly related ($\chi^2 (1, N = 120) = 3.39, p = .066$). There was, however, a significant association between gender harassment and problem drinking ($\chi^2 (1, N = 120) = 4.40, p = .036$). Female veterans who reported gender harassment during deployment were 5.74 times more likely to report at least moderate levels of problem drinking in the last month than those who did not report experiencing gender harassment.

**Multivariate Logistic Regression**

Although univariate analyses identified experiences of combat exposure and gender harassment as important individual predictors of mental health outcomes, clinicians are likely to work with a female veteran with comorbid traumatic experiences. To determine the relative effect of these predictors of postdeployment mental health outcomes and evaluate the comparative predictive power of combat exposure and gender harassment, a multivariate logistic regression model was evaluated. Both predictors were entered into the model simultaneously to allow for this comparative analysis. A summary of significant multivariate standardized results is presented in Table 2.

Both combat exposure and gender harassment reached statistical significance when evaluated simultaneously as predictors of PTSD symptoms ($B = .61$, Wald = 5.87, exp(B) = 1.83, $p = .015$, and $B = .44$, Wald = 4.41, exp(B) = 1.55, $p = .036$, respectively). Gender harassment
remained a significant predictor of depressive symptoms after controlling for combat exposure ($B = .50$, Wald = 5.90, $p = .015$, exp(B) = 5.90). Combat exposure remained a significant predictor of problem drinking after controlling for gender harassment ($B = .56$, Wald = 6.06, $p = .014$, exp(B) = 1.76).

Relative Risk Estimates

Based on multivariate logistic regression results, a final concurrent compound relative risk ratio analysis was conducted evaluating combat exposure and gender harassment. Compound relative risk analyses results are summarized in Table 3. In the absence of combat exposure or gender harassment, the risk of reporting PTSD symptoms in the last month was very low (one veteran). If combat exposure was present but there was no report of gender harassment, the risk of reporting PTSD symptoms in the last month was also low (two veterans). However, among female veterans with combat exposure, there was a significant association between gender harassment and PTSD symptoms ($\chi^2 (2, N = 120) = 13.20, p = .001$). For female veterans with combat exposure, gender harassment during deployment increased the probability of reporting PTSD symptoms in the last month by 3.56 times greater than those who experienced combat exposure alone.

In the absence of combat exposure or gender harassment, the risk of reporting depressive symptoms in the last week was low (two veterans). If combat exposure was present but there was no endorsement of gender harassment, the risk of reporting depressive symptoms in the last week was also very low (one veteran). However, among female veterans with combat exposure, there was a significant association between gender harassment and depressive symptoms ($\chi^2 (2, N = 199) = 7.21, p = .027$). For female veterans with combat exposure, a history of gender
harassment during deployment increased the probability of reporting depressive symptoms in the last week by 6.19 times greater than those who only experienced combat exposure.

Lastly, in the absence of combat exposure or gender harassment, the risk of reporting problem drinking in the last month was very low (no veterans). If combat exposure was present but there was no history of gender harassment, then the risk of reporting problem drinking in the last month was also very low (one female veteran). However, among female veterans with combat exposure, there was a significant association between gender harassment and problem drinking ($\chi^2 (2, N = 120) = 6.34, p = .042$). For veterans with combat exposure, gender harassment during deployment increased the probability of reporting problems with drinking in the last month by 3.81 times greater than those who experienced only combat exposure.
CHAPTER IV

CONCLUSIONS

Summary of Findings

This study is the first to examine gender harassment in a sample of female veterans involved in Operations Enduring Freedom (OEF), Iraqi Freedom (OIF), or New Dawn (OND) missions in Afghanistan and Iraq. When examined individually, combat exposure and gender harassment were significant predictors of postdeployment postraumatic, depressive, and problem drinking symptoms. Relative risk analyses further revealed a significant association between combat exposure and PTSD symptoms, such that the relative risk of PTSD symptoms as almost two and a half times higher for veterans who reported combat exposure when compared to those who did not. Relative risk analyses also revealed a significant association between gender harassment and posttraumatic, depressive, and problem drinking symptoms. The relative risks of symptoms of PTSD and depression were nearly three and a half times higher for veterans who reported gender harassment when compared to those who did not. The relative risk of problem drinking was nearly six times higher for veterans who reported gender harassment compared to those who did not.

When combat exposure and gender harassment were analyzed together, combat exposure and gender harassment retained significance when predicting postdeployment mental health outcomes. Combat exposure predicted symptoms of PTSD and problem drinking in the univariate analyses, and remained significant even after controlling for gender harassment. Gender harassment similarly predicted symptoms of PTSD and depression in the univariate analyses, and remained significant even after controlling for combat exposure. Follow-up
relative risk analyses revealed that experiencing gender harassment in addition to combat exposure was associated with a risk of symptoms of PTSD and problem drinking nearly four times higher for veterans who reported both stressors compared to those who reported only combat exposure. The risk of depressive symptoms was nearly six times higher for veterans who reported both stressors compared to those who reported only combat exposure.

Hence, gender harassment appears to play an important role in increasing the occurrence of postdeployment mental health functioning in this sample of female veterans. As a concurrent risk factor to combat exposure, experiencing gender harassment may increase the likelihood of exhibiting symptoms of PTSD, depression, and problem drinking that meet at least minimum threshold for clinical diagnoses. Female veterans who experience gender harassment in addition to combat exposure may find themselves feeling more alienated and isolated, and less likely to seek social support from peers, all factors which have been linked to coping mechanisms and resilience, particularly in military samples.

**Findings Through a Gendered Lens**

Understanding the implications of these findings first requires consideration of how men’s and women’s identities in the military may be conceptualized and why gender may play an important role in the well-being of female veterans. Aggression and war have often been associated with masculinity, whereas weakness and peace have often been associated with femininity (Koeszegi, Zedlacher, & Hudribusch, 2014). Indeed, men’s identity in the military has been clearly defined since the inception of the military and constructed by stereotypes consistent with these associations with masculinity, strength, and aggression (Koeszegi, Zedlacher, & Hudribusch, 2014). Despite progressive changes in the occupations women are permitted to fill and the responsibilities they are allowed to carry out in the military (Dempsey & Panetta, 2013;
U.S. Department of Veterans Affairs, 2011), women continue to battle against stereotypes of weakness and peace that are inherently contradictory to stereotypical schema of a service member. These stereotypes may be compounded within military culture by a longstanding idealization of masculinity as a requirement for success in combat (Pawelczyk, 2014), and facilitate women’s roles as “outgroup” members among primarily men.

These stereotypes may increase the probability of female veterans experiencing gender harassment, a product of a highly-masculinized environment. As opposed to combat exposure, which today is more likely to impact men and women in the military equally, gender harassment serves as an additional threat to women, increasing their risk of being at the frontline of social microaggressions (Pawelczyk, 2014; Vogt et al., 2013). Although gender harassment does not pose the same physical threat as missile attacks, gunshots, or ambushes, our findings suggest that it does pose an invisible threat to mental health as it is often characterized by socially alienating, isolating, and degrading behaviors based on gender. Moreover, our findings indicate that the impact of gender harassment is substantially greater when experienced alongside combat exposure, resulting in a higher risk for negative mental health outcomes – almost at least 4 times greater for PTSD symptoms and problem drinking and up to 6 times greater for depressive symptoms. Considering the strong empirical support for existing associations between problem drinking and depressive symptoms and suicide (Cigrang, et al., 2015), and studies indicating that suicide rates among female veterans are higher than in male veterans (1.87 versus 1.66, respectively; McCarthy et al., 2009) and are increasing (American Foundation for Suicide Prevention, 2016), it is imperative that gender harassment is examined more closely. Identifying ways to prevent gender harassment and intervene when it occurs within the military might be a new and valuable form of ensuring that our female veterans are cared for.
Some might argue that the military culture’s emphasis on values of obedience, trust, loyalty, social cohesion, and self-sacrifice should serve as a protective buffer against gender stereotyping and discrimination in the military. However, in the context of women’s experiences in the military, it is important to note that women are likely to be outnumbered by their male counterparts. That being said, it is possible that while these values are true for most men in the military, the degree to which women feel “trust, loyalty, social cohesion” from their male counterparts may not be on par with male service members. Indeed, research has found that traditional gender beliefs negatively impact how male service members evaluate their female colleagues (Boldry et al., 2001). Moreover, it has been shown repeatedly that within particularly challenging and taxing environments, such as deployment, women need to conform to a male standard in order to be accepted (Sasson-Levy, 2003).

Fortunately, with the increase in women in the military has come an increase in the number of studies dedicated to understanding the experience of women in the military. However, it is undeniable that there remains an imbalance between the amount of literature dedicated to examining the experiences and outcomes of male versus female veterans. Indeed, this disparate focus of attention within the scientific community is just a small example of how men and women are viewed within the military and, more broadly, in society. There remain several unanswered questions regarding the experiences of female service members —experiences that although not exclusively unique to women, are more likely to occur to women. Several studies have focused on sexual harassment and assault in the military —and while these lines of research are informative both in terms of clinical impact and policy changes, studies on lower level yet frequent incidences of microaggressions towards women, such as gender harassment, remain scant.
Clinical Implications and Future Directions

From a diathesis-stress model perspective, one could conceptualize combat exposure as the “diathesis” and experiences of gender harassment in an environment compounded by the reality of facing constant threat for long periods of time as the added “stress.” From an even broader perspective beyond the findings of this study, one might also conceptualize the “diathesis” as including premilitary experiences of childhood sexual abuse and adulthood sexual assault. Considering additional stressors, such as social isolation and low unit support from peers and superiors (Street et al., 2009) as one or two females out of a dozen men in a foreign country, one can hypothesize how these factors might lead to the “perfect storm,” placing women at risk of experiencing adverse mental health outcomes due to stressors beyond combat exposure.

From a clinical standpoint, awareness of the unique stressors women are likely to face throughout their military careers may be helpful in developing a comprehensive understanding of each female veteran’s experience. Clinicians can easily assess exposure to such unique stressors by asking each veteran whether they experienced exposure to combat and gender harassment during their deployment. If the answer to one or both questions is “yes,” the clinician would then be cued to follow-up with a brief assessment of symptoms of PTSD, depression, and problem drinking experienced in the last month. Beyond helping with the traditional case conceptualization process, this awareness will serve as an indicator of provider understanding and care towards the veteran and, in turn, strengthen the therapeutic alliance.

These findings may also shed light on potential areas of change or intervention before the veteran reports symptoms of mental health disorders. Given the number of traumatic experiences females in the military are likely to experience at multiple times of their lives, beginning from childhood, there are numerous areas for potential intervention. One of particular interest,
however, might be within the military culture itself. Although research on stereotyping, prejudice and discrimination repeatedly point to the presence and impact of “in-” versus “outgroup,” it might be beneficial to consider buffering this “us” versus “them” perspective in the context of males versus females in the military by reducing the amount of stereotyped gender language used in the military on behalf of higher ranking personnel, strengthening the relations between men and women, and shattering the image of a “Soldier” as merely being a stereotypical physically and emotionally strong and violent male, and replacing that image with gender neutral traits such as intelligent, committed, supportive, resilient, and communicative.

The present study is not without its limitations. For one, the nature of the sample did not permit group comparisons among branches in the military or service member rankings. Moreover, given the focus of original data collection on identifying barriers to healthcare for women, it was not possible to examine the prevalence and potential incremental impact of gender harassment on mental health functioning in men as well. Thus, the generalizability of the results may be limited when considering male service members or differences among branches and ranks. In addition to addressing these sample-related issues, future studies might consider replicating and extending these findings by examining protective psychosocial factors, and including additional measures of feelings of belongingness or burdensomeness (Bryan & Corso, 2011) and unit cohesion or support (Mitchell, Gallaway, Millikan, & Bell, 2012). Given the protective nature of social support and feelings of belonging, one might hypothesize that experiencing high levels in these domains might buffer the impact of gender harassment, whereas experiencing low levels might increase the impact of gender harassment. Examining the potential for suicidality as an additional adverse mental health outcome would further extend these results in future studies.
The present study is one of few designed to examine the prevalence of gender harassment, and the only study as of yet to examine its incremental impact on the likelihood of experiencing mental health disorders in female veterans involved in recent conflicts. In addition to replicating previous findings indicating the role of combat exposure in postdeployment mental health, this study identifies and contextualizes gender harassment as a potential target for early intervention to reduce the likelihood of experiencing mental health problems following deployment. This study also illuminates the compound risk of experiencing combat exposure and gender harassment, alerting primary care providers and clinicians alike to the potential threat of these comorbid experiences in female veterans.
REFERENCES


The role of military social support in understanding the relationship between PTSD, physical health, and healthcare utilization in women veterans. *Journal of Traumatic Stress, 26*, 772–775.


### APPENDIX A

**DESCRIPTIVES OF PREDICTORS AND MENTAL HEALTH OUTCOMES**

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
<th>M</th>
<th>SD</th>
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<tr>
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<td>79</td>
<td>64.7</td>
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<tr>
<td>Gender harassment (≥ 1)</td>
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<td>PTSD (≥ 36)</td>
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<td>31.98</td>
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<tr>
<td>Depression (≥11)</td>
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<td>28.5</td>
<td>7.48</td>
<td>6.36</td>
</tr>
<tr>
<td>Problem drinking (≥ 8)</td>
<td>19</td>
<td>14.2</td>
<td>4.78</td>
<td>5.50</td>
</tr>
</tbody>
</table>

*Note. M = mean; SD = standard deviation. Percentages based on total sample of 134.*
APPENDIX B

UNIVARIATE AND MULTIVARIATE PREDICTORS OF POSTDEPLOYMENT MENTAL HEALTH OUTCOMES

<table>
<thead>
<tr>
<th>Univariate predictors</th>
<th>PTSD (yes/no)</th>
<th>Depression (yes/no)</th>
<th>Problem drinking (yes/no)</th>
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<tr>
<td></td>
<td>( B )</td>
<td>( SE )</td>
<td>Wald</td>
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<tr>
<td>Combat exposure</td>
<td>.69</td>
<td>.24**</td>
<td>8.33</td>
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<tr>
<td>Gender harassment</td>
<td>.57</td>
<td>.20**</td>
<td>8.13</td>
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<table>
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<th>Multivariate predictors</th>
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<th>Depression (yes/no)</th>
<th>Problem drinking (yes/no)</th>
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</thead>
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<td></td>
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<td>( SE )</td>
<td>Wald</td>
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<td>Combat exposure</td>
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<td>Gender harassment</td>
<td>.44</td>
<td>.21*</td>
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</table>

*Note. SE = standard error. The Wald statistic is a chi-square value of significance. Exp(B) represents the odds ratio associated with one unit change in the predictor.

*p < .05. **p < .01
### APPENDIX C

**RELATIVE RISK ANALYSES WITH POSTDEPLOYMENT MENTAL HEALTH OUTCOMES**

<table>
<thead>
<tr>
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<th>Relative Risks</th>
<th>Compound Relative Risks</th>
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<tr>
<td><strong>RR</strong></td>
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</tr>
<tr>
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*p < .05 for predictors with significant chi-square results