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# The Interactive Effects of Deployment and Other Organizational Dynamics on Sexual Harassment in the Military

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The Interactive Effects of Deployment and Other Organizational Dynamics on Sexual  
Harassment in the Military

Clinton Dean Kelly

A dissertation submitted to the faculty of  
Brigham Young University  
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

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## ABSTRACT

### The Interactive Effects of Deployment and Other Organizational Dynamics on Sexual Harassment in the Military

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Doctor of Philosophy

Higher rates of sexual harassment in the military have been well documented in the existing literature. However, not much is known about how the deployment of women affects the odds of sexual harassment of females. This study used three public use datasets collected by the Defense Manpower Data Center (DMDC) in 2006, 2010, and 2012 from active duty soldiers in the Air Force, Army, Marines, and Navy to evaluate the effect of deployment on five different types of sexual harassment. Organizational factors such as sex-ratio, paygrade, masculinity, and organizational climate were also evaluated in relation to sexual harassment. Lastly, the interaction effects of organizational factors and deployment were evaluated in regards to sexual harassment. Females who had been deployed were more likely to experience all types of sexual harassment compared to non-deployed females. All organizational climate variables also had significant effects on odds of sexual harassment. The interactive effects of deployment and organizational factors on sexual harassment were less clear, with the only reliable interaction being paygrade with deployment. Future research should further evaluate the relationship between deployment and sexual harassment, especially for women serving in combat zones. The organizational factors that can mitigate sexual harassment in deployment situations need further investigation so that female soldiers can become more integrated into traditionally masculine combat roles without a corresponding increase in sexual harassment.

Keywords: sexual harassment, military, deployment, masculinity

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## TABLE OF CONTENTS

LIST OF TABLES .....	vi
LIST OF FIGURES .....	vii
The Interactive Effects of Deployment and Other Organizational Dynamics on Sexual Harassment in the Military.....	1
The Prevalence of Sexual Harassment .....	1
Defining Sexual Harassment.....	3
Theories of Sexual Harassment.....	6
Sex-role spillover.....	6
Protecting social status .....	8
Organizational climate.....	9
Factors Unique to the Military that Affect Sexual Harassment .....	11
Deployment status .....	11
Culture of masculinity .....	12
Present Study .....	13
Hypotheses .....	15
Method .....	18
Participants .....	19
Survey for 2006 .....	19
Survey for 2010 .....	20
Survey for 2012 .....	20
Procedure.....	21
Dependent Variable Measures .....	22
Sexist hostility: DV1 .....	22
Sexual hostility: DV2 .....	22
Unwanted sexual attention: DV3.....	23
Sexual coercion: DV4.....	24
Unwanted sexual contact: DV5 .....	24
Independent Variable Measures .....	25
Deployment: IV1 .....	25
Sex-ratio: IV2 .....	25
Paygrade: IV3 .....	25

Culture of masculinity: IV4.....	26
Organizational climate: IV5 .....	26
Results.....	29
Analysis Plan.....	29
Descriptive Statistics .....	31
Hypothesis 1 .....	33
Hypothesis 2a .....	34
Hypothesis 3a .....	35
Hypothesis 4a .....	36
Hypothesis 5a .....	37
Interpreting Interactions in Logistic Regression .....	42
Hypothesis 2b.....	42
Hypothesis 3b.....	43
Hypothesis 4b.....	44
Hypothesis 5b.....	44
Discussion.....	61
Main Effect of Deployment.....	61
Main Effect of Sex Ratio.....	62
Main Effect of Paygrade .....	64
Main Effect of Organizational Climate.....	64
Main Effect of Masculinity .....	65
Interactive Effects of Deployment and Other Organizational Dynamics .....	66
Study Limitations and Future Research.....	68
References.....	71
Appendix A.....	82
Appendix B.....	83
Appendix C .....	86
Appendix D.....	91
Appendix E .....	92

## LIST OF TABLES

Table 1 .....	17
Table 2 .....	32
Table 3 .....	39
Table 4 .....	41
Table 5 .....	46
Table 6 .....	48
Table 7 .....	50
Table 8 .....	53
Table 9 .....	55
Table 10 .....	57
Table 11 .....	59

## LIST OF FIGURES

Figure 1. Percentage of male employees in military organizations .....	8
Figure 2. Operation Enduring Freedom and Operation Iraqi Freedom: Killed and Wounded in Action Data from September 2001 to December 2011 .....	17
Figure 3. Interactive effects of percent male and deployment on sexual harassment in 2010 and 2012.....	47
Figure 4. Interactive effects of gender uncommon and deployment on sexual harassment in 2010 and 2012.....	49
Figure 5. Interactive effects of paygrade and deployment on sexual harassment in 2010. ....	51
Figure 6. Interactive effects of paygrade and deployment on sexual harassment in 2012. ....	52
Figure 7. Interactive effects of organizational tolerance of sexual harassment and deployment on sexual harassment in 2010 and 2012. ....	54
Figure 8. Interactive effects of coworker dissatisfaction and deployment on sexual harassment in 2010 and 2012.....	56
Figure 9. Interactive effects of masculinity in advertising on sexual harassment in 2010 and 2012.....	58
Figure 10. Interactive effects of combat masculinity and deployment on sexual harassment in 2010 and 2012.....	60



## The Interactive Effects of Deployment and Other Organizational Dynamics on Sexual Harassment in the Military

### **The Prevalence of Sexual Harassment**

Sexual harassment continues to be an important issue in the United States with the Equal Employment Opportunity Commission (EEOC, 2017) reporting that over 6,700 sexual harassment claims were made in the year 2016. These claims filed with the EEOC resulted in \$40.7 million paid out in monetary benefits. The total dollar amount reported by the EEOC vastly underestimates the true financial cost of sexual harassment because it does not include any money obtained through litigation, nor the associated organizational costs (e.g., reduction in productivity, absenteeism, turnover, job transfers). Faley, Knapp, Kustis, and Dubois (1999) estimated the organizational costs associated with sexual harassment for the U.S. Army to be over \$250 million in 1988 alone. This amount equates to over half a billion dollars in annual organizational costs to the U.S. Army in 2017 dollars (Bureau of Labor Statistics, 2017). In addition to the enormous financial consequences, sexual harassment can lead to a number of even more serious life consequences for the harassed individuals such as depression, anxiety, fear, and social isolation (see Dansky & Kilpatrick, 1997; Pryor & Fitzgerald, 2003 for reviews). Given these data, organizations and individuals will both greatly benefit from understanding and preventing sexual harassment.

This is especially true for the U.S. military where historically, sexual harassment and sexual assault have been major problems. Since 2004, the total number of sexual assault reports in the U.S. armed forces have increased from 1,700 annually (United States Commission on Civil Rights, 2013) to 6,083 in 2015 (Department of Defense [DoD], 2016). To put this increase on a different metric, there has been a 257% increase in sexual assault reports in the U.S. armed

forces from 2011 to 2015. During this same period, the number of active duty members of the four major military organizations in the DoD (Air Force, Army, Marines, Navy) has remained relatively constant (Defense Manpower Data Center [DMDC], 2017). Evaluating only reported cases does not provide a complete account of the amount of sexual harassment because researchers estimate that most sexual harassment and sexual assault in the military go unreported (Bergman, Langhout, Palmieri, Cortina, & Fitzgerald, 2002; Culbertson & Rosenfield, 1994). Therefore, reported cases of sexual harassment typically grossly underestimate the total amount of sexual harassment in any given organization. In fact, the DoD (2016) had 6,083 reported cases of sexual assault in 2015, but estimates that 20,300 individuals had an experience that met the definition of sexual assault. This represented 4.9% of all active duty women and 1.0% of all active duty men in the year 2015.

With the higher rates of sexual harassment in the military and the government's recent decision to allow women into frontline combat, preventing sexual harassment is likely to garner increasing attention. Some are critical of the decision to include women into frontline combat and believe it may subject women to both more frequent and more severe forms of sexual harassment, resulting in an overall increase of sexual assault in the military (Murline, 2013). Providing some support for this position, a longitudinal study found that women who were deployed to combat zones in Iraq and Afghanistan between 2003 and 2006 were approximately twice as likely to experience sexual harassment as women who were not deployed during the same period (LeardMann et al., 2013). In a separate study, 22 women who had been deployed overseas were asked about the factors they believe contribute to the sexual trauma of women during deployment (Burns, Grindlay, Holt, Manski & Grossman 2014). The women in this study attributed the higher rates of sexual trauma to deployment dynamics (e.g., high stress levels,

risky behavior, change in what is considered “normal” behavior), military culture (e.g., low ratio of women to men, men outranking women), and lack of consequences.

Others, however, believe that giving women access to frontline roles (e.g., deployment) will decrease the amount of sexual harassment and sexual assault in the military. David Segal, a military sociologist who studies gender roles in the U.S. military, states, "I believe in the long run, as we define for our military professionals women are their equals, I think we're going to see a reduction in harassment... I don't think it'll change overnight, but I think that change will take place" (CBS News, 2013). Regardless of whether women will experience more sexual harassment when they are deployed to frontline combat areas or if it will eventually serve to decrease sexual harassment, it is critical to understand the contextual factors that contribute to sexual harassment in order to reduce its prevalence.

### **Defining Sexual Harassment**

To reduce sexual harassment, first it is important to define exactly what sexual harassment is. In the United States, sexual harassment is legally defined as “unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature.” (EEOC, 2016). The EEOC also specifies that sexual harassment is behavior which “explicitly or implicitly affects an individual's employment, unreasonably interferes with an individual's work performance, or creates an intimidating, hostile, or offensive work environment.” (2016). On the academic front, sexual harassment was first defined by Farley (1978) as “unsolicited nonreciprocal male behavior that asserts a woman’s sex role over her function as a worker” (p. 14). Over the years the academic definition has broadened to include nonreciprocal behavior by females as well, behavior that is directed toward the same or opposite gender as the perpetrator, and moved beyond just behaviors to include verbal comments as well (European Commission,

1998; Fitzgerald, 1996; Fitzgerald & Shullman, 1993; Gruber, Smith & Kauppinen-Toropainen, 1996).

From a research perspective, it is useful to have a classification system of sexual harassment that maps the conceptual domain in a reliable and valid manner. Using a valid and standardized classification system allows researchers to investigate sexual harassment from the same frame of reference, using the same operational definition. The existence of a valid and reliable classification system has been very helpful to the field of personality assessment. The introduction of the five-factor model of personality (McCrae & Costa, 1987) provided a common classification system for measuring normal personality that has allowed research to be conducted by different individuals and organizations that is easily comparable and replicable (Hogan, 2007). Similar to the field of personality, a common classification system for sexual harassment would likewise prove beneficial to research. An example of the problems caused by a lack of a common definition of sexual harassment can be seen in the research conducted by Suris and Lind (2008). They reviewed research on military sexual trauma published from 1996 to 2007, and found prevalence rates of sexual trauma ranging from 0.4% to 71%. The authors attributed the vast differences in prevalence rates to differences in the samples used (e.g., recent veterans, veterans who served decades ago, veterans receiving treatment for PTSD), different methods for data collection (e.g., in-person interviews, self-report surveys), and varying definitions of sexual assault used by the researchers (e.g., defining sexual assault as the legal definition of rape, using a definition that included sexual intercourse, and in some instances failing to provide a definition of sexual assault at all). Suris and Lind (2008) stated that different “definitions of sexual assault in the military context likely results in measuring different constructs as well as accounts for different prevalence rates” (p. 258). A common classification system or definition of sexual

harassment would, at the very least, allow for the comparison of prevalence rates between studies and over time.

Fitzgerald et al. (1988) made one of the first attempts at such a classification system when they created a 28-item survey called the Sexual Experiences Questionnaire (SEQ) based on the five levels of sexual harassment enumerated by Till (1980). The five levels Till identified were gender harassment, seductive behavior, sexual bribery, sexual coercion, and sexual assault. While the results of the Fitzgerald et al. (1988) study did not provide support for Till's five levels, they provided support for a three-factor structure of sexual harassment, which included (a) gender harassment, (b) unwanted sexual attention (a combination of seductive behavior and sexual assault), and (c) sexual coercion (a combination of sexual coercion and sexual bribery). The gender harassment factor involves behaviors related to gender roles in the workplace and includes such things as teasing, joking, or espousing stereotypes that denigrate the contributions of working women. Unwanted sexual attention occurs when verbal and nonverbal behaviors conveying sexual interests that are unwelcome, offensive, and unreciprocated are aimed at a particular individual. Sexual coercion involves extortion of sexual cooperation in return for job-related considerations.

Additional research maintained the multidimensional structure of sexual harassment, finding the same three factors (Fitzgerald & Hesson-McInnis, 1989) while reducing the total number of items in the SEQ to 19 (Fitzgerald, Gelfand & Drasgow, 1995). In 1999, Fitzgerald, Magley, Drasgow, and Waldo created a 23-item version of the SEQ for use within the DoD (SEQ-DoD) and this factor analysis identified four factors instead of three. The factor of gender harassment was divided into sexist hostility and sexual hostility. Sexist hostility represents incidences that are discriminatory based on a person's gender (e.g., being put down because of

your gender) whereas sexual hostility are experiences that are explicitly sexual in nature (e.g., sexual jokes or stories). The most recent update of the SEQ-DoD maintained the four-factor solution while shortening the survey from 23 items to 16 using item response theory (Stark, Chernyshenko, Lancaster, Drasgow & Fitzgerald, 2002). The 16-item version is referred to as the SEQ-DoD-s and is the version that is currently used by the DoD to assess experiences of sexual harassment within military organizations.

### **Theories of Sexual Harassment**

The SEQ provides a common framework for defining and measuring the construct of sexual harassment, but it does not provide information on why people sexually harass others. Understanding why people sexually harass others is a vital component in reducing sexual harassment in the workplace. While there is no single agreed upon theory of sexual harassment (Skaine, 1996), there are some that are considered more prominent (Pina, Gannon & Saunders, 2009) and have received empirical support. Three of the more prominent theories of sexual harassment are described in further detail below.

**Sex-role spillover.** Sex-role spillover theory asserts that men and women have pre-existing beliefs about gender-based roles that are generally not applicable and are inappropriate that they bring into the workplace (Nieva & Gutek, 1981). Sex-role spillover occurs in the workplace because (1) a person's sex is the most salient characteristic, (2) people learn gender roles early in life long before entering the workforce, and (3) men and women interact naturally based on the pre-existing gender roles they possess, even when they are not relevant to job tasks (Gutek & Cohen, 1987). Consequently, gender roles can become the reference point by which men and women are judged and treated. Sex-role spillover theory explains why gender roles in the workplace are the most prevalent source for sexual harassment (Pina, Gannon, & Saunders,

2009). As employees carry their respective societal gender roles to the workplace, a “spillover” occurs where men and women interact in a stereotypical manner. Men are expected to be aggressive and dominant whereas women are to be passive and accepting (Gruber & Bjorn, 1986). Such expectations can facilitate the occurrence of sexual harassment because men play out the dominant role and women blame themselves for being harassed, playing out the stereotype of passivity and acceptance.

Sex-role spillover can occur in all types of organizations and work roles, but it is more likely to occur when there is a skewed sex ratio, that is, where being a member of the minority sex becomes more salient (Gutek, 1985; Kabat-Farr & Cortina, 2014). In an organization with a high male-to-female sex ratio, the work role takes on characteristics of the male sex role (Deaux, 1985), and women are more likely to be classified by their gender rather than their work role (Bem, 1981; Burgess & Borgida, 1997). There is some empirical support for sex-role spillover and the increased sexual harassment of women in male dominated organizations (Brown, 1998; European Commission, 1998; Gruber, 1992; Gutek, 1985; Gutek & Morasch, 1982; Kabat-Farr & Cortina, 2014; LaFontaine & Tredeau, 1986; Niebuhr & Boyles, 1991; Tangri, Burt & Johnson, 1982). Sexual harassment of women is also more common in male-dominated occupations that are associated with the masculine gender role (i.e., blue-collar jobs) (Gruber & Bjorn, 1982; McCabe & Hardman, 2005). The military is both highly male-dominated (see Figure 1) and associated with the masculine gender role. According to sex-role spillover theory, this should result in greater likelihood of sexual harassment.

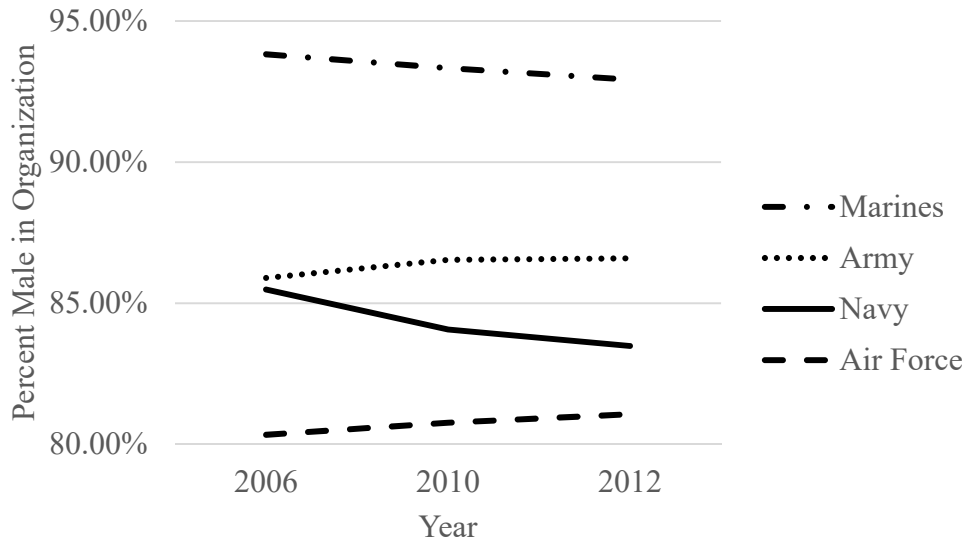


Figure 1. Percentage of male employees in military organizations

**Protecting social status.** A more recent theory of sexual harassment proposes that the underlying motive behind all sexual harassment is a desire to protect sex-based social status (Berdahl, 2007a). Human beings have always lived in groups in order to facilitate survival and receive social acceptance (Baumeister & Leary, 1995). Members of groups will engage in behaviors designed to preserve or advance their social status within the group (Hogan, 2007) and sex has historically been used to differentiate social status (van Knippenberg, van Twuyver & Pepels, 1994). In support of this view, males who score higher on male dominance and who endorse a philosophy of female subordination are more likely to sexually exploit a woman (Pryor, 1987; Pryor, La Vite & Stoller, 1993) and women who challenge male dominance are more likely to be victims of harassment (Berdahl, 2007b; Maass, Cadinu, Guarnieri & Grasselli, 2003). When an organization gives increased emphasis to the status differences of men and women (e.g., a military context and particularly men in combat), the motivations to adhere to gender-based norms increase as well (Berdahl, 2007a). These gender-based norms are more beneficial to men than to women (Connell, 1987) and therefore males should have a greater



incentive to defend their social status against threats posed by females. Providing some support for this is research showing that women who express interest in a male-dominated career (e.g., military) and believe that men and women are equal, are more likely to be sent pornography from men than are women who prefer more traditionally female career goals (Dall'Ara & Maass, 2000; Maass et al., 2003).

Additionally, when it comes to protecting social status, this theory states that males who are mid-level in their status (i.e., have not proven themselves to be exceptionally high or low on social status) should be more likely to engage in harassment. The rationale for this is that men who are mid-level in status have more to gain or lose from being seen as more or less masculine, “whereas men who have clearly proven themselves as men or who have no hope of doing so are probably more impervious to threats to their sex-based identity” (Berdahl, 2007a, p. 646). This is consistent with past research that has shown that males who are mid-level in status will work harder than males with top or bottom level status to improve their lot (Owens & Sutton, 2001). Lastly, harassment requires a power difference (perceived or actual) in order to exert control over the victim (Einharsen, 2000), and previous research has indeed found that harassers are more likely to target individuals who are less powerful (Bourgeois & Perkins, 2003). This may be especially important in the military where women have been historically underrepresented in regards to the number who hold positions of leadership.

**Organizational climate.** Fitzgerald, et al. (1997) proposed a theoretical model for explaining the antecedents and consequences of sexual harassment. In this model, organizational climate (i.e., characteristics that communicate tolerance of sexual harassment) and job gender context (i.e., sex ratio, gender-traditional job duties) influence the prevalence of sexual harassment, which in turn influence psychological and organizational outcomes (e.g., coworker

satisfaction, leader satisfaction, organizational commitment). Data obtained from a survey of 459 women working in a public utility company empirically supported the model. Specifically, the cross-sectional study supported the prediction that sexual harassment experiences are associated with increases in psychological distress. Fitzgerald, Drasgow, and Magley (1999) expanded the model to specify a variety of types of organizational outcomes associated with sexual harassment. The study found that as sexual harassment increased, there was decline in coworker satisfaction, supervisor satisfaction, work satisfaction, organizational commitment, and work productivity. A separate study by Williams, Fitzgerald, and Drasgow (1999) found very similar results, but offered reasons to be optimistic about the possibility of successful intervention. They reasoned that leadership in military organizations may be especially equipped to improve organizational climate variables that affect sexual harassment given the hierarchical system in which the military operates. In other words, leaders in the military are in an excellent position to set the tone regarding zero tolerance for sexual harassment. If military leaders demonstrate that sexual harassment is not tolerated, as evidenced by enforced consequences for such behavior, then organizational outcomes such as supervisor satisfaction, work satisfaction, organizational commitment, and work productivity should increase. Overall, the organizational climate regarding the tolerance of sexual harassment is the strongest predictor of sexual harassment of women in the literature to date (Fitzgerald et al., 1995; Pryor, 1995; Welsh, 1999), accounting for 14% of the variance (Williams, Fitzgerald & Drasgow, 1999). In summary, organizational climate theory focuses on the organizational context that facilitates or inhibits sexual harassment rather than on the individual characteristics of the harasser.

### **Factors Unique to the Military that Affect Sexual Harassment**

In addition to theories of sexual harassment, there are two factors applicable to the present study that merit further discussion due to their unique application to military organizations.

**Deployment status.** Deployment status does not fall clearly into any one of the three theories of sexual harassment previously mentioned, but may play a role in each of the three theories. According to sex-role spillover theory, sexual harassment is more likely to occur in skewed sex ratio situations where being a member of the minority sex becomes more salient (Kabat-Farr & Cortina, 2014). Women in the military are clearly in the minority and they are even a smaller relative minority among those in the military who are deployed (Brown, 2012; Burns et al., 2014; LeardMann et al., 2013). In addition to the extremely skewed sex ratios in deployment, the dynamics affecting social status may change during deployment. Being deployed has been historically a male role (Brown, 2012) and as women are deployed alongside men, it may threaten the status of men resulting in an increased likelihood of sexual harassment, especially among lower ranking men whose status is not well established (Berdahl, 2007a). The organizational climate experienced by members of the military will also often change during deployment, with the adoption of “battlemind” (Dunivin, 1994). The adoption of “battlemind” typically requires that soldiers disregard certain moral and mental norms applicable to civilian life (e.g., use of force, verbal aggression) (Greene, Buckman, Dandeker, and Greenberg, 2010) and distance themselves emotionally from the enemy in order to be willing to harm or kill the enemy (Grossman, 1996). While these behaviors may be a necessary part of wartime performance, it is likely that there are unintentional repercussions to being emotionally distant

and neglecting to adhere to certain civilian norms, such as an increase in sexual harassment among deployed soldiers.

Very little research has evaluated the impact of deployment on sexual harassment. One study that specifically compared odds of sexual harassment of deployed versus non-deployed females found that females who had been deployed were more than twice as likely to be sexually harassed when compared to non-deployed females (LeardMann et al., 2013). No other research has compared sexual harassment data of deployed and non-deployed females and this is an area where additional research is needed given the increasing number of females who are being deployed.

**Culture of masculinity.** While a culture of masculinity may not be unique to the military, it is perhaps the most salient example of an organization with a masculine culture. One researcher described the military as a “cult of masculinity” (Stewart, 1991, p. 89) and another stated that masculine unity is the “cementing principle” of military life (Harrison, 2003, p. 75). Creating a culture of masculinity begins before a person decides to join the military. Brown (2012) investigated the recruiting advertisements of the four military branches beginning with the end of male conscription and the creation of the all-volunteer force in 1973 and found that the four military branches have continued to link military service with masculinity up to this day. How each of the branches links military service to masculinity has depended upon their particular culture and requirements, with some of branches employing a more masculine approach than others do. For example, the Marines are more likely to use traditional warrior masculinity in their advertisements by displaying men in a combat situation or ceremonial displays, whereas the Air Force has put a greater focus on mastering advanced technology rather than physical dominance (Brown, 2012). The advertisements created by the Army, Air Force,

Marines, and Navy are specifically designed to attract the type of recruits they want, which reinforces the masculine culture conveyed in the advertisements (Brown, 2012). Once recruits enter a particular branch of the military they are then generally taught to shut down emotionally, which when combined with the aggressive nature of military occupations, could lead to violent outbursts (Braswell & Kushner, 2012).

The integration of more women in the military by itself may not necessarily change the masculine culture of the military as evidenced by the torturing of Iraqi prisoners in Abu Ghraib prison. Female soldiers joined in with male soldiers in feminizing the prisoners (e.g., making male prisoners wear female underwear), thus asserting their own masculinity (McKelvey, 2007). Research conducted with Israeli Defense Forces found that female soldiers in combat units were more similar to their male counterparts in their responses to state and trait personality questionnaires than they were to those of female soldiers in non-combat units (Tarrasch, Lurie, Yanovich, & Moran, 2010). While the merits of creating a culture of masculinity can be debated, what is certain is that culture helps to drive behavior within an organization (Tierney, 2008).

### **Present Study**

Based on previous research, it is reasonable to conclude that women in the military are likely to face non-trivial amounts of sexual harassment (Lipari, Cook, Rock, & Matos, 2008; Suris & Lind, 2008). A few theories of sexual harassment also provide an indication of the organizational dynamics that impact the amount of sexual harassment women will experience. Sexual harassment is likely to increase in the military when men have inappropriate beliefs about gender-based roles (Pina, Gannon, & Saunders, 2009) and there is a low percentage of females (Brown, 1998; European Commission, 1998; Gruber, 1992; Gutek, 1985; Gutek & Morasch,

1982; Kabat-Farr & Cortina, 2014; LaFontaine & Tredeau, 1986; Niebuhr & Boyles, 1991; Tangri, Burt & Johnson, 1982). Additionally, men have typically held a more prominent social status in the military and when women threaten that status, men are likely to respond by denigrating women through sexual harassment (Berdahl, 2007a). Lastly, organizational factors such as poor leadership, bad coworkers, low work satisfaction, and organizational tolerance of sexual harassment can all contribute toward higher amounts of sexual harassment (Fitzgerald et al., 1995; Pryor, 1995; Welsh, 1999). All of the factors just mentioned have received support in the literature on sexual harassment in the military. Another study solely focused on the factors previously mentioned would serve as additional support, but would still leave a gap in the analysis of sexual harassment in the military.

An area that is still lacking in empirical support is the relationship between the deployment of women in the military and sexual harassment. To date only one study has empirically compared sexual harassment of deployed versus non-deployed women, and it did find that deployed women are more likely to be sexually harassed (LeardMann et al., 2013). While this study provided a valuable contribution, a major drawback pointed out by the authors of the study is that sexual harassment was assessed using a one-item measure. Participants were asked if they “suffered forced sexual relations or assault or experienced sexual harassment in the past 3 years” (p. e216). This one question was used to cover the full spectrum of all types of sexual harassment, which did not allow for a more nuanced interpretation of the increased sexual harassment during deployment.

The present study aims to provide a unique contribution to the literature by investigating the main effects and also the interactive effects of deployment and organizational dynamics

across multiple types of sexual harassment that vary in severity, ranging from verbal jokes that are sexist in nature up to sexual intercourse.

### **Hypotheses**

Consistent with the previous study by LeardMann et al (2013), it is hypothesized that there will be a main effect of deployment. Specifically, females who have been deployed will have experienced more sexual harassment than females who have not been deployed (*Hypothesis 1*). In alignment with sex-role spillover theory (Pina, Gannon, & Saunders, 2009) and sex ratios (Gutek, 1985; Kabat-Farr & Cortina, 2014), females working in those branches of the military with a higher percentage of male employees will experience more sexual harassment (*Hypothesis 2a*). There will be joint effects of deployment and skewed sex ratio such that the higher incidence of sexual harassment in the more male-dominated workplaces will be exacerbated by deployment (*Hypothesis 2b*). Based on the theory that sexual harassment occurs when social status is threatened (Berdahl, 2007a) and that harassment requires a power difference (perceived or actual) in order to exert control over the victim (Einharsen, 2000), it is hypothesized that females with a lower paygrade (i.e., enlisted) will experience more sexual harassment than those of higher paygrades (i.e., officer) (*Hypothesis 3a*). Furthermore, deployment will differentially affect the amount of sexual harassment experienced by females, with a greater increase in sexual harassment experienced by lower paygrade females (i.e., enlisted) who have been deployed than higher paygrade females (i.e., officer) who have been deployed (*Hypothesis 3b*). Following the research findings of Williams, Fitzgerald and Drasgow (1999) it is also hypothesized that females working in DoD organizations with lower organizational climate ratings will experience more sexual harassment (*Hypothesis 4a*) and that the higher incidence of sexual harassment of

females in organizations with lower organizational climate ratings will be exacerbated by deployment (*Hypothesis 4b*).

The final two hypotheses relate to the culture of masculinity in the military. There is no existing measure of traditional masculinity within the various DoD organizations; however it may be possible to use historical military data as proxy. As previously mentioned, each branch of the military has developed its own unique culture of masculinity. Brown (2012) has evaluated the masculinity of DoD organizations based on the advertisements they have used to attract new recruits. In her analysis of the four major military branches, she concludes that the Marines is the branch that “fully depends on a traditional masculine form” (p. 176) and that “unlike the other services, the Air Force has not drawn as directly on martial forms of masculinity” (p. 178). The Army and Navy fall somewhere between the Marines and Air Force in advertising traditional martial forms of masculinity. The advertisements created by the DoD organizations attract a specific type of recruit, which reinforces the masculine culture conveyed in the advertisements (Brown, 2012).

The roles individuals fill once enlisted in the military can then further reinforce the traditional masculine culture. Morgan (1994) states that some of the most direct links to traditional masculinity are those “associated with war and the military” (p. 165). In other words, serving in combat or war roles is where one might expect to find the most traditionally masculine soldiers (Tarrasch et al., 2010). Consequently, it is likely that military organizations with a greater percentage of soldiers killed or wounded in action (i.e., war) are more likely to embody the traditional masculinity that has been so closely linked to war and combat. As can be seen in Table 1 and Figure 2, the Marines and the Army are clearly the two military organizations where soldiers are most likely to be wounded or killed in action. It appears that the two organizations

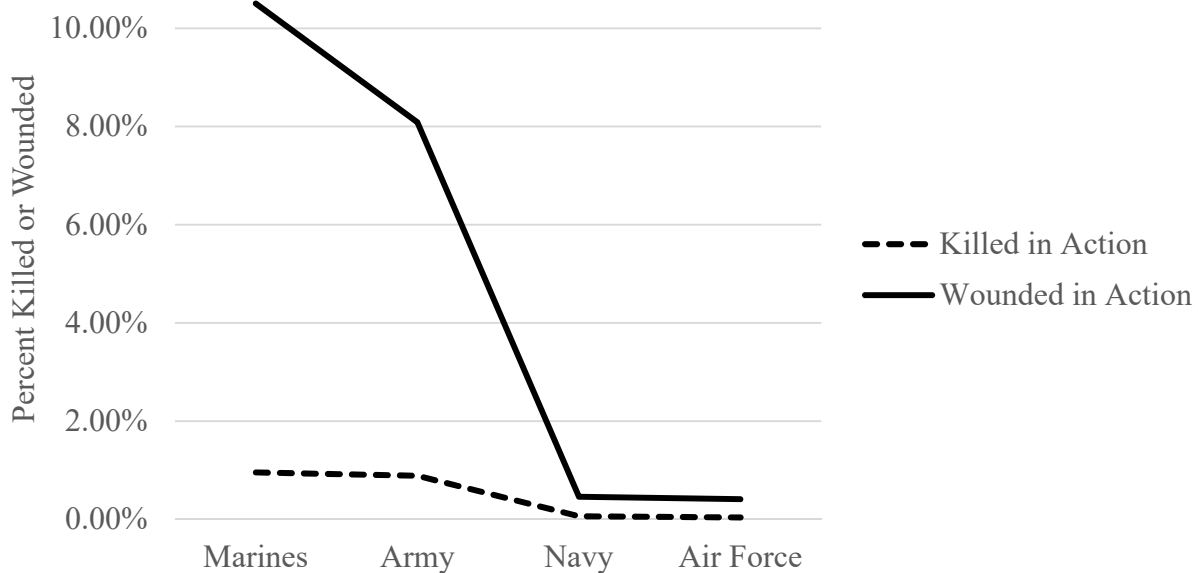


that portray a more traditional masculinity in their advertisements (Brown, 2012), are also the two organizations that are also the most closely associated with war dangers as indicated by soldiers who are wounded or killed in action.

Table 1

*Operation Enduring Freedom and Operation Iraqi Freedom: Killed and Wounded in Action Data from September 2001 to December 2011*

	Killed in Action		Wounded in Action	
	Number	Percent	Number	Percent
Marines	1,173	0.96%	12,891	10.50%
Army	3,574	0.89%	32,602	8.09%
Navy	133	0.06%	961	0.46%
Air Force	76	0.04%	792	0.41%



*Figure 2. Operation Enduring Freedom and Operation Iraqi Freedom: Killed and Wounded in Action Data from September 2001 to December 2011*

As one recruiter stated, “basically you have two branches at war, the Army and the Marines, and two branches more or less at peace, the Navy and the Air Force” (Jensen, 2005). If recruits know which branches of the military are more likely to experience war, then this may

also serve to create a clear distinction in traditional masculinity between the branches.

Specifically, the Marines and Army may be more likely to attract a smaller population of recruits seeking the most historically masculine experience available (i.e., combat). Recruitment data for the military organizations provides some tentative support for this, with data showing that the Army and Marines have struggled to meet recruitment numbers when compared with the Navy and Air Force (Moniz, 2005).

Based on this rationale, it appears that advertising and historical combat data (i.e., killed in action and wounded in action) may serve as adequate proxy measures of traditional masculinity within military organizations. It is therefore hypothesized that females in branches of the military with a greater focus on martial/traditional forms of masculinity, as measured by advertising and percent wounded in combat, will experience more sexual harassment (*Hypothesis 5a*). Lastly, it is hypothesized that the higher incidence of sexual harassment in the more traditionally masculine military organizations will be exacerbated by deployment (*Hypothesis 5b*).

### **Method**

This study used survey data collected by the Defense Manpower Data Center (DMDC), which conducts surveys for the Office of the Secretary of Defense to assess the attitudes of DoD employees on a variety of personnel issues. Specifically, respondent data from the public use survey datasets of the DMDC 2006, 2010, and 2012 Workplace and Gender Relations Survey of Active Duty Members were analyzed (DMDC, 2006a, 2010a, 2012a). The 2006 DMDC survey was designed to establish a standardized method for measuring sexual harassment in the DoD and provide information on potential antecedents and consequences of harassment (DMDC, 2006b). The 2010 and 2012 versions of the survey retained the majority of the 2006 survey

questions, but deleted and added a few questions as well (DMDC, 2006c, 2010b, 2012b). In 2014 the administration of the survey moved from DMDC to the RAND Corporation (Morral, Gore, & Schell, 2014); however, a public use dataset has not been released and was therefore not included in the present study.

### **Participants**

Participants consisted of active duty members of the Army, Navy, Marine Corps, and Air Force, from paygrade E-1 (Private, Seaman Recruit, or Airman Basic) to paygrade O-6 (Colonel or Captain). See Appendix A for a full list of the ranks included in the study. All participants were required to have at least six months of experience in the DoD by the date the survey was opened. In order to provide more accurate estimations of population values for each of the four DoD organizations and avoid biased results, a single-stage stratified random sampling design was used to make adjustments for selection probability, nonresponses, and known population values. To make the proper weighting adjustments, the samples were divided into strata based on the cross-classification of stratification variables. This approach attempts to ensure that smaller groups have adequate representation by having an analytical weight assigned to each stratum. Within each stratum members were sampled with equal conditional probabilities and without replacement (DMDC, 2006c, 2010b, 2012b). The stratification variables and total number of strata created each survey year are reported in the participant information by survey year below.

**Survey for 2006: N=76,709 (7,411).** Respondents consisted of 76,709 active-duty members of the Army, Navy, Marine Corps, and Air Force. Five stratification variables were used to create a total of 203 strata. The stratification variables were DoD organization (Army, Navy, Marine Corps, and Air Force), gender (male, female, and unknown), paygrade (E-1 to E-3,

E-4, E-5 to E-6, E-7 to E-9, W-1 to W-5, O-1 to O-3, and O-4 to O-6), ethnicity (minority, non-minority, unknown), and occupational tempo (.321 to 2.58 average months away per year, 2.59 to 4.86 average months away per year, and unknown). Survey data collection began on June 26, 2006 and ended on September 5, 2006. After eliminating non-responses and incomplete (i.e., completed less than half the survey questions or did not answer the sexual harassment questions) or ineligible responses (e.g., retired from active-duty, no longer employed by DoD), there were a total of 24,178 responses, for a total response rate of 31.5%. Male responses were eliminated for this study, resulting in a final sample size of 7,411 active-duty women for the 2006 survey.

**Survey for 2010: N=87,608 (10,034).** Respondents consisted of 87,608 active-duty members of the Army, Navy, Marine Corps, and Air Force. Four stratification variables were used to create a total of 252 strata. The stratification variables were DoD organization (Army, Navy, Marine Corps, and Air Force), gender (male/unknown and female), paygrade (E-1 to E-3/Unknown Enlisted, E-4, E-5 to E-6, E-7 to E-9, W-1 to W-5, O-1 to O-3 and Officers whose specific rank was unknown at the time of the survey, and O-4 to O-6), and ethnicity (minority and non-minority). Survey data collection began on March 8, 2010 and ended on June 3, 2010. After eliminating non-responses and incomplete (i.e., completed less than half the survey questions or did not answer the sexual harassment questions) or ineligible responses (e.g., retired from active-duty, no longer employed by DoD), there were a total of 24,029 responses, for a total response rate of 27.4%. Male responses were eliminated for this study, resulting in a final sample size of 10,034 active-duty women for the 2010 survey.

**Survey for 2012: N=108,478 (11,553).** Respondents consisted of 108,478 active-duty members of the Army, Navy, Marine Corps, and Air Force. Four stratification variables were used to create a total of 255 strata. The stratification variables were DoD organization (Army,

Navy, Marine Corps, and Air Force), gender (male/unknown and female), paygrade (E-1 to E-3/unknown enlisted, E-4, E-5 to E-6, E-7 to E-9, W-1 to W-5, O-1 to O-3/unknown officers, and O-4 to O-6), ethnicity (minority and non-minority/unknown), and deployment (never deployed, not deployed in the past 12 months, and deployed in the past 12 months). Survey data collection began on September 17, 2012 and ended on November 9, 2012. After eliminating non-responses and incomplete (i.e., completed less than half the survey questions or did not answer the sexual harassment questions) or ineligible responses (e.g., retired from active-duty, no longer employed by DoD), there were a total of 22,792 responses, for a total response rate of 21.0%. Male responses were eliminated for this study, resulting in a final sample size of 11,553 active-duty women for the 2012 survey.

### **Procedure**

The 2006, 2010, and 2012 surveys were all hosted on a secure website that allowed participants to complete the survey at a convenient time with the ability to return to previous pages of the survey, move forward to the next page, clear responses, change responses, and save and exit the survey and return to complete the survey at a later time. All participants were emailed (if the participant had a valid email address) and mailed notification letters alerting them to the survey. Additionally, reminder emails and notification letters were sent periodically to participants who had not yet completed the survey throughout the administration period. For the 2006 and 2010 surveys, participants were mailed a paper version of the survey for completion if they had not completed the survey within the first few weeks. The 2012 survey did not provide participants the option of a paper version.

Across the three survey years, the majority of survey questions were identical, with a few deletions and additions across the three surveys. The 2006 survey had a total of 96

questions (DMDC, 2006a), the 2010 survey had 83 questions (DMDC, 2010a), and the 2012 survey had 94 questions (DMDC, 2012a). Survey content was developed based on input from subject matter experts from academic institutions and the Office of the Under Secretary of Defense for Personnel and Readiness, focus group meetings, and when possible, existing scales from previous military and academic research studies were used and/or adapted for the surveys (DMDC, 2006b). Unless noted otherwise, all measures included in the study were identical across the three survey years. A brief overview of each of the variables included in the study is provided subsequently and detailed lists can be found in Appendices B and C.

### **Dependent Variable Measures**

**Sexist hostility: DV1.** Sexist hostility was measured using four items from the SEQ-DoD-s. Respondents were asked to indicate on a five-point scale how often they experienced each of the four items in the last 12 months ranging from never to very often. The public use dataset used for this study did not provide the raw responses to each of the four items. The raw responses for the four sexist hostility items were converted into one dichotomous variable only indicating if the respondent had or had not experienced sexist hostility. Respondents who answered never on each of the four items were given a rating of zero to indicate that they did not experience sexist hostility. Respondents who provided an answer other than never for any of the four items were given a rating of one to indicate that they experienced sexist hostility. An example statement for sexist hostility is, “Put you down or was condescending to you because of your gender.” The 4-item scale has a Cronbach’s alpha of .83 (Stark et al., 2002).

**Sexual hostility: DV2.** Sexual hostility was measured using four items from the SEQ-DoD-s. Respondents were asked to indicate on a five-point scale how often they experienced each of the four items in the last 12 months ranging from never to very often. The public use

dataset used for this study did not provide the raw responses to each of the four items. The raw responses for the four sexual hostility items were converted into one dichotomous variable only indicating if the respondent had or had not experienced sexual hostility. Respondents who answered never on each of the four items were given a rating of zero to indicate that they did not experience sexual hostility. Respondents who provided an answer other than never for any of the four items were given a rating of one to indicate that they experienced sexual hostility. An example statement for sexual hostility is, “Made offensive remarks about your appearance, body, or sexual activities.” The 4-item scale has a Cronbach’s alpha of .87 (Stark et al., 2002).

**Unwanted sexual attention: DV3.** This sexual harassment variable was measured using four items from the SEQ-DoD-s. Respondents were asked to indicate on a five-point scale how often they experienced each of the four items in the last 12 months ranging from never to very often. The public use dataset used for this study did not provide the raw responses to each of the four items. The raw responses for the four unwanted sexual attention items were converted into one dichotomous variable only indicating if the respondent had or had not experienced unwanted sexual attention. Respondents who answered never on each of the four items were given a rating of zero to indicate that they did not experience unwanted sexual attention. Respondents who provided an answer other than never for any of the four items were given a rating of one to indicate that they experienced unwanted sexual attention. The 2006 survey originally had five items assessing unwanted sexual attention; however, one of the five items was eliminated (see Appendix B) and not included in the analysis due to conceptual and psychometric problems (DMDC, 2006b). An example statement for unwanted sexual attention is, “Touched you in a way that made you feel uncomfortable.” The 4-item scale has a Cronbach’s alpha of .86 (Stark et al., 2002).

**Sexual coercion: DV4.** This sexual harassment variable was measured using four items from the SEQ-DoD-s. Respondents were asked to indicate on a five-point scale how often they experienced each of the four items in the last 12 months ranging from never to very often. The public use dataset used for this study did not provide the raw responses to each of the four items. The raw responses for the four sexual coercion items were converted into one dichotomous variable only indicating if the respondent had or had not experienced sexual coercion. Respondents who answered never on each of the four items were given a rating of zero to indicate that they did not experience sexual coercion. Respondents who provided an answer other than never for any of the four items were given a rating of one to indicate that they experienced sexual coercion. An example statement for sexual coercion is, “Treated you badly for refusing to have sex”. The 4-item scale has a Cronbach’s alpha of .92 (Stark et al., 2002).

**Unwanted sexual contact: DV5.** This variable was not part of the SEQ-DoD-s and was included to assess sexual assault in the military organizations. It is a more severe form of unwanted sexual attention (DV3). By definition, any respondent who experienced unwanted sexual contact also experienced unwanted sexual attention. Conversely, not all unwanted sexual attention meets the definition of unwanted sexual contact. Respondents were asked to indicate if they experienced any type of intentional sexual contact (e.g., touching of genitalia, attempted or completed sexual or oral intercourse) against their will in the last 12 months. This question provided a dichotomous yes/no as the response options. The 2006 survey was slightly different in that it provided three response options (Yes, once; Yes, multiple times; No); however, the public use data set reported the responses as a dichotomous yes/no just as the 2010 and 2012 surveys (DMDC, 2006a).



### **Independent Variable Measures**

**Deployment: IV1.** Deployment status was measured by asking respondents to indicate if they had been deployed during the past 12 months to an operation in Iraq, Afghanistan or other location. In order to maintain the privacy of the respondents, the public use dataset used for this study was converted into a dichotomous variable only indicating if the respondent had been deployed and did not provide information regarding the location of the deployment. The question about deployment was included in the 2006 survey but was not included in the public use dataset and therefore any analysis involving deployment will exclude the 2006 dataset.

**Sex-ratio: IV2.** Sex-ratio was measured using two different methods.

**Percent male.** For the first method, the overall organizational sex-ratio (percentage of male employees) in each of the four military branches was computed based on the military personnel data for the years 2006, 2010, and 2012 (DMDC, 2017). This provided an objective measure of sex ratio at the overall organizational level.

**Gender uncommon.** The second method evaluated sex-ratio more subjectively at the work group level using employee self-report data. Survey respondents were asked to respond yes or no to the question, “Do you currently work in an environment where members of your gender are uncommon?” While the Marines has the greatest percentage of male employees, it is possible that there are females who work in a group within the Marines where there are many other female employees. Additionally, individuals may differ in their subjective interpretation of what uncommon is. Evaluating both measures of sex-ratio allows for both a more organizational level rating and also a more personal workgroup level view.

**Paygrade: IV3.** For all three survey years paygrade of the respondent was determined by DMDC prior to sending the unique survey link or paper survey to each respondent. For the

2006 and 2010 surveys, the public use datasets collapsed the paygrade variable into two groups. Respondents were classified as enlisted military member or officer. The 2012 public use dataset collapsed the paygrade variable into three groups, with the first including enlisted military member paygrades E1 to E4, the second including the enlisted military member paygrades E5 to E9, and the third including the officer levels of W1 to W5 and O1 to O6. See Appendix A for a list of job titles associated with each paygrade.

**Culture of masculinity: IV4.** This variable was measured using two different methods.

***Masculinity: Advertising.*** For the first method, masculinity was established using Brown's (2012) evaluation of the advertisements utilized by the four DoD organizations to attract new recruits. Based on her evaluation, the organizations were rank ordered in advertising masculinity from one to four, with a rank of four indicating the most traditional culture of masculinity (i.e., a more masculine culture in the traditional sense). The same rank ordering was used across all three survey years with the most masculine culture in terms of advertising being the Marines, followed by the Army, then the Navy, and the Air Force with the lowest rank.

***Masculinity: Combat.*** The second method evaluated masculinity by calculating the percentage of deployed soldiers who were wounded in action from September 2001 to December 2011 in support of Operation Enduring Freedom (Afghanistan) or Operation Iraqi Freedom in each of the four DoD organizations. A higher percentage of wounded soldiers indicates a more traditional culture of masculinity. This variable resulted in four precise percentage values, one for each DoD organization, representing the combat masculinity of each organization (i.e., percentage of soldiers wounded in action).

**Organizational climate: IV5.** Organizational climate was measured with five different scales. Each of the five scales is described subsequently.

***Organizational tolerance of sexual harassment.*** This variable was measured in the 2006 and 2010 surveys by five items and is a composite that provides the average score by the respondent to the five items assessing organizational tolerance of sexual harassment. Participants used a five-point Likert-type scale (1 = *not at all* to 5 = *very large extent*) to respond to the following: “In your work group, to what extent...”. An example statement is, “would people be able to get away with sexual harassment if it were reported?”. The five-item scale has a Cronbach’s alpha of .81 (DMDC, 2006b). Higher scores indicate a greater individual perception of organizational tolerance of sexual harassment (i.e., sexual harassment is less likely to be reported and perpetrators are less likely to be punished).

In the 2012 survey the items used to measure organizational tolerance of sexual harassment were changed. The items however, were designed to assess the same construct as the 2006 and 2010 surveys. The variable was again measured by five items and is a composite that provides the average score by the respondent to the five items assessing organizational tolerance of sexual harassment. Participants used a five-point Likert-type scale (1 = *very poorly* to 5 = *very well*) to respond to the following: “In an effort to prevent sexual assault, please indicate how well your unit leadership...”. An example statement is, “makes it clear that sexual assault has no place in the military.” The five-item scale has a Cronbach’s alpha of .94. All items were reverse coded in order to provide an interpretation consistent with the 2006 and 2010 measure. That is, higher scores indicate a greater individual perception of organizational tolerance of sexual harassment (i.e., sexual harassment is less likely to be reported and perpetrators are less likely to be punished).

***Leadership dissatisfaction.*** This variable was measured by four items and is a composite that provides the average score by the respondent to the four items assessing leadership’s

commitment to a positive work environment and quality work. Participants used a five-point Likert-type scale (1 = “Strongly Disagree” to 5 = “Strongly Agree”) to respond to the following: “How much do you agree or disagree with the following statements about the people in your work group?” An example statement is, “You would go for help with a personal problem to people in your chain-of-command.” The four-item scale has a Cronbach’s alpha of .82 (DMDC, 2006b). The composite scores were reverse coded (0 to 4) in order to convert the scale from a satisfaction to dissatisfaction scale. That is, higher scores indicate a greater dissatisfaction with the work group leaders. The reverse coding was done in order to facilitate the interpretation of the logistic regression results based on the hypothesized relationship (e.g., higher scores in leadership dissatisfaction should result in odds ratios for sexual harassment that are greater than one)

***Supervisor dissatisfaction.*** This variable was measured by six items and is a composite that provides the average score by the respondent to the six items assessing the degree to which supervisors are perceived as being trustworthy, equitable, and fair in evaluations and delegating assignment. Participants used a five-point Likert-type scale (1 = “Strongly Disagree” to 5 = “Strongly Agree”) to respond to the following: “How much do you agree or disagree with the following statements about your supervisor?” An example statement is, “Your supervisor assigns work fairly in your work group.” The six-item scale has a Cronbach’s alpha of .96 (DMDC, 2006b). The composite scores were reverse coded (0 to 4) in order to convert the scale from a satisfaction to dissatisfaction scale. That is, higher scores indicate a greater dissatisfaction with the supervisor. The supervisor dissatisfaction scale was included in the 2006 survey but was not included in the public use dataset and therefore any analyses involving supervisor dissatisfaction will exclude the 2006 dataset.

***Coworker dissatisfaction.*** Coworker dissatisfaction was measured by five statements and is a composite that provides the average score by the respondent to the five items that assess the helpfulness and relationships with coworkers. Participants used a five-point Likert-type scale (1 = “Strongly Disagree” to 5 = “Strongly Agree”) to respond to the following: “How much do you agree or disagree with the following statements about the people in your work group?” An example statement is, “There is very little conflict among your coworkers.” The five-statement scale has a Cronbach’s alpha of .92 (DMDC, 2006b). The composite scores were reverse coded (0 to 4) in order to convert the scale from a satisfaction to dissatisfaction scale. That is, higher scores indicate a greater dissatisfaction with coworkers.

***Work dissatisfaction.*** Work dissatisfaction was measured by five items and is a composite that provides the average score by the respondent to the five items assessing the respondent’s sense of pride in work, use of skills, work enjoyment, and the opportunity to acquire valuable skills. Participants used a five-point Likert-type scale (1 = “Strongly Disagree” to 5 = “Strongly Agree”) to respond to the following: “How much do you agree or disagree with the following statements about the work you do at your workplace?” An example statement is, “Your work provides you with a sense of pride.” The five-item scale has a Cronbach’s alpha of .93 (DMDC, 2006b). The composite scores were reverse coded (0 to 4) in order to convert the scale from a satisfaction to dissatisfaction scale. That is, higher scores indicate a greater dissatisfaction with work.

## **Results**

### **Analysis Plan**

All of the hypotheses were tested against the five sexual harassment measures (sexist hostility, sexual hostility, unwanted sexual attention, sexual coercion, unwanted sexual contact) using logistic regression. In this study the occurrence of any of the types of sexual harassment is

a binary event (that is, sexual harassment was experienced or not experienced) and is therefore appropriately suited for logistic regression. In logistic regression, the odds of an event occurring (that is, of experienced sexual harassment versus did not experience sexual harassment) are calculated for each level or group of the independent or predictor variable and then the odds ratio (i.e., ratio of the odds) between the levels or groups are compared to determine if they are significantly different from one another. When the independent variable is categorical (e.g., deployed versus not deployed), the odds ratio indicates the ratio of the increase or decrease in odds of sexual harassment in the response group (deployed) to the odds of sexual harassment in the reference or referent group (not deployed). When the independent variable is continuous (e.g., five-point Likert-type scale), the odds ratio indicates the ratio of the increase or decrease in the odds of sexual harassment for every one point increase in the independent variable.

Due to the number of independent and dependent variables in the current study, many individual logistic regressions are conducted. Running many logistic regression analyses inflates the probability of making a Type I error, therefore a sequentially-modified Bonferroni correction was applied with an alpha of .05 for all hypotheses tested. In this study, the step-up Bonferroni correction described by Hochberg (1988) was utilized. In this method, the largest obtained  $p$ -value is compared to an alpha of .05. If the largest of the  $p$ -values obtained is equal to or less than .05 then all  $p$ -values are considered significant. If it is larger than .05 then the next largest  $p$ -value is compared to an alpha of .05 divided by two (.025). If this  $p$ -value is equal to or less than .025 it is considered significant, along with all the remaining smaller  $p$ -values. This process continues (i.e., the alpha of .05 is divided by three for the third largest, four for the fourth largest, and so forth) until a  $p$ -value meets the criterion for significance or until all  $p$ -values have failed

to reach significance. This step-up Bonferroni correction will be applied to all hypotheses tested in the current study.

### **Descriptive Statistics**

Table 2 provides an overview of the number of people in each branch of the military for the three survey years, the percentage of females in each branch, and the percentage of females who experienced each type of sexual harassment. During the three survey years, the total number of individuals in each branch of the military did not fluctuate widely, nor did the percentage of females in each branch. The percentage of female employees sexually harassed in each of the three years was also reasonably stable. Sexist and sexual hostility were the most common types of sexual harassment experienced by non-deployed females, ranging from 27.04% to 58.55% of females reporting an experience that met the definition of sexist or sexual hostility. These were also the most likely types of sexual harassment deployed females experienced, ranging from 31.62% to 64.90% of females reporting either of these types of sexual harassment. Unwanted sexual contact was the least likely type of sexual harassment, ranging from 2.12% to 10.08% in non-deployed women and from 2.83% to 10.08% in deployed women. The Air Force consistently had the lowest rates of sexual harassment among females while the Marines generally had the highest rates of sexual harassment over the three survey years.

Table 2

*Percentage of Female Employees Sexually Harassed in Each Military Organization in 2006, 2010, and 2012*

		Total N	Percent Female	Sexist Hostility		Sexual Hostility		Unwanted Sexual Attention		Sexual Coercion		Unwanted Sexual Contact	
				Not Deployed	Deployed	Not Deployed	Deployed	Not Deployed	Deployed	Not Deployed	Deployed	Not Deployed	Deployed
Air Force	2006	348,953	19.66%	42.75%		40.28%		18.00%		3.53%		3.66%	
	2010	334,196	19.23%	29.19%	34.58%	27.32%	31.62%	12.17%	15.00%	1.96%	3.62%	2.12%	2.83%
	2012	332,834	18.93%	32.39%	39.51%	27.04%	34.27%	13.21%	16.73%	2.93%	6.35%	3.08%	3.26%
Navy	2006	350,197	14.52%	58.11%		56.87%		35.59%		11.48%		7.08%	
	2010	328,303	15.93%	40.51%	61.13%	37.81%	57.05%	21.27%	33.46%	5.68%	9.47%	3.89%	5.70%
	2012	318,818	16.51%	48.16%	61.69%	45.98%	56.42%	23.02%	34.31%	7.56%	9.88%	6.75%	8.67%
Army	2006	505,402	14.10%	59.58%		58.48%		39.09%		13.61%		8.91%	
	2010	566,045	13.46%	42.65%	58.72%	39.26%	54.46%	21.67%	38.30%	8.27%	17.94%	5.33%	7.21%
	2012	550,063	13.41%	49.42%	59.24%	42.41%	54.08%	25.51%	34.49%	8.22%	16.07%	6.87%	7.63%
Marines	2006	180,416	6.18%	61.39%		63.29%		33.59%		10.45%		11.86%	
	2010	202,441	6.67%	55.98%	63.11%	50.54%	55.73%	29.51%	38.98%	11.52%	14.97%	7.00%	5.73%
	2012	198,820	7.07%	58.55%	64.90%	49.08%	52.05%	31.55%	34.54%	11.96%	14.19%	10.08%	10.08%
Total	2006	1,384,968	14.57%	53.54%		52.11%		30.66%		9.43%		6.82%	
	2010	1,430,985	14.41%	38.27%	53.64%	35.45%	49.55%	18.75%	31.41%	5.62%	12.14%	3.95%	5.67%
	2012	1,400,535	14.59%	44.20%	55.00%	38.81%	49.33%	21.29%	29.78%	6.59%	11.84%	5.83%	6.89%

*Note.* Deployment information was not included in the 2006 public use dataset. The percentages for 2006 represent the percentage of female employees (deployed and not deployed) who were sexually harassed in the organization.



### **Hypothesis 1**

Ten single-predictor logistic regressions were used to test the hypothesis that females who have been deployed will experience more sexual harassment than females who have not been deployed. As shown in the row labeled Deployment in Table 3, females who had been deployed in the last 12 months were more likely to experience all five types of sexual harassment in both 2010 and 2012 when compared to females who had not been deployed. These results support Hypothesis 1. Specifically, in 2010 females who had been deployed were 2.32 times (CI = 2.24, 2.40) more likely to experience sexual coercion than females who had not been deployed. In addition to the odds ratios, the odds of each type of sexual harassment is provided in the Deployment section of Table 3. The odds of a deployed female experiencing sexist hostility in 2010 was 1.16. This translates to an average of approximately 53.64 of every 100 females deployed in 2010 experiencing sexist hostility. The odds ratios of harassment for deployed females remain relatively high across both 2010 and 2012 and for all types of sexual harassment. While the odds ratios remain somewhat stable across the two years for all types of sexual harassment, the odds of experiencing each type of sexual harassment for deployment tends to decline when reading Table 3 left to right. This decline is expected as the as the severity of sexual harassment increases from left to right, with the verbal forms of sexual harassment on the left side of the table and the physical forms of sexual harassment on the right side of the table.

Ten additional logistic regressions were performed to test the effects of deployment on sexual harassment while controlling for all of the other independent variables in study<sup>1</sup>. The results of those analyses are provided in Table 4. Even when controlling for the additional

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<sup>1</sup> The independent variables Sex-ratio and Masculinity: Advertising were excluded from the multiple predictor regressions in 2010 and 2012 due to their high correlation with the independent variable, Masculinity: Combat.

independent variables, deployment remains a significant predictor of sexual harassment, providing additional support for Hypothesis 1. For example, the odds ratio for sexual coercion in 2010 was 2.32 (CI = 2.24, 2.40) when entered without the other independent variables. When entering the other independent variables, the odds ratio for sexual coercion in 2010 remains quite high at 1.95 (CI = 1.87, 2.03). Just as occurred in the single predictor model, we find that while controlling for the additional independent variables, females who had been deployed in the last 12 months were more likely to experience significantly more of all five types of sexual harassment in both 2010 and 2012 when compared to females who had not been deployed.

### **Hypothesis 2a**

Fifteen single predictor logistic regressions were used to test the hypothesis that females working in the military will experience more sexual harassment as the percentage of males within the organization is larger. The results are provided in Table 3 in the row labeled Percent Male. Odds ratios for continuous independent variables like percent male represent the increase in odds of sexual harassment for every one percent increase in males within the organization. While a one percent increase in males in the organization may result in a significant odds ratio, the value is likely to be very low and not meaningful. In order to make the odds ratios more meaningful, the percentage of males in the least male-dominated organization for each year (Air Force) was subtracted from the percentage of males in the most male-dominated organization for each year (Marines) to obtain a value indicating the difference in percentage of males between the highest and lowest sex-ratio. Each sex-ratio was then recoded so that a one unit increase in the sex-ratio variable was equal to 13.46% in 2006 (the difference in percent male between Air Force and Marines), 12.57% in 2010, and 11.86% in 2012. To illustrate the effect of recoding the sex ratios as described, Table 3 indicates that in 2006 females were 3.85 times more likely

(CI = 3.62, 4.10) to receive unwanted sexual contact for every 13.48% increase in males within the organization. In support of Hypothesis 2a, females were more likely to experience all five types of sexual harassment in 2006, 2010, and 2012 as the percentage of males in the organization increased (see Table 3).

Contrary to Hypothesis 1, additional logistic regressions were not performed to test the effects of percent male on sexual harassment while controlling for all of the other independent variables in study. This was due to the high correlations between the independent variables of percent male, masculinity as measured by advertising, and masculinity as measured by the percent wounded in combat (See Appendix D).

An additional test of Hypothesis 2a evaluated the subjective effect of working in an environment where other females are perceived as being uncommon. Fifteen single predictor logistic regressions were used to test the hypothesis that females working in an environment where other females are uncommon will experience more sexual harassment than females who work in an environment where other females are common. The results are provided in Table 3 in the row labeled Gender Uncommon. Hypothesis 2a was again supported, with females in an uncommon gender situation being more likely to experience all five types of sexual harassment in all three survey years when compared to females who work in an area where other females were perceived as being common. The effects remained significant even when controlling for the other independent variables (see Table 4).

### **Hypothesis 3a**

Fifteen single predictor logistic regressions were used to test the hypothesis that females in lower paygrades (e.g., enlisted) will experience more sexual harassment than those in higher paygrades (e.g., officer). The results are provided in Table 3 in the row labeled Paygrade.

Except for sexist hostility (no significant relationship for 2010, and mixed for the two paygrade comparisons in 2012), females in lower paygrades were more likely to experience all other types of sexual harassment than females who were officers. These results provide support for Hypothesis 3a, albeit not as convincing as the first two hypotheses. When controlling for all other independent variables, females in lower paygrades are still more likely to experience unwanted sexual attention, sexual coercion, and unwanted sexual contact. However, this relationship reverses for sexist hostility and sexual hostility. When controlling for the other independent variables, female officers are more likely to experience sexist and sexual hostility than females with an enlisted rank. This provides mixed support for Hypothesis 3a. Sexual harassment appears to occur more frequently among lower ranking females when it is unwanted sexual attention, sexual coercion, and unwanted sexual contact (i.e., the more severe and physical types of sexual harassment). Countering Hypothesis 3a, enlisted females were actually less likely to experience sexist and sexual hostility (i.e., verbal types of sexual harassment) than female officers when controlling for all other independent variables.

#### **Hypothesis 4a**

Thirty single predictor logistic regressions were used to test the hypothesis that females who provide lower organizational climate ratings will experience more sexual harassment. The results are provided in Table 3 in the rows labeled Org. Tolerance Sexual Harass. and Coworker Dissatisfaction. The independent variables Leader Dissatisfaction, Supervisor Dissatisfaction, and Work Dissatisfaction were all removed from the analyses due to a lack of practically significant unique contributions (i.e., incremental variance) made to the prediction of sexual harassment (see Appendix E). In support of Hypothesis 4a, females were more likely to experience all five types of sexual harassment in 2006, 2010, and 2012 as their ratings of

organizational tolerance of sexual harassment and coworker dissatisfaction increased. When controlling for the other independent variables, females were still more likely to experience all five types of sexual harassment in 2006, 2010, and 2012 as their ratings of organizational tolerance of sexual harassment and coworker dissatisfaction increased.

### **Hypothesis 5a**

Two different variables were used to test the hypothesis that females in branches of the military with a greater focus on martial/traditional forms of masculinity will experience more sexual harassment. The first test included evaluating whether females where more traditional forms of masculinity are espoused in the advertisements used to recruit new members are more likely to be sexually harassed. Fifteen single predictor logistic regressions were performed with Air Force set as the reference group (least traditionally masculine in advertising). Supporting Hypothesis 5a, across all three survey years, females in the Marines, Army, and Navy were more likely to experience all five types of sexual harassment than Females in the Air Force (see Table 3). Additional logistic regressions were not performed to test the effects of masculinity in advertising on sexual harassment while controlling for all of the other independent variables in study. This was due to the high correlations between the independent variables of sex-ratio, masculinity as measured by advertising, and masculinity as measured by the percent wounded in combat (See Appendix D).

An additional test of Hypothesis 5a evaluated the effect a traditional culture of masculinity has on sexual harassment as measured by the percent of soldiers wounded in combat within each military organization. In order to make the odds ratios more meaningful, a similar procedure was used with percent of soldiers wounded in combat as was done with percent male in the organization. The percentage of soldiers wounded in combat in the Air Force (least likely

to be wounded) was subtracted from the percentage of soldiers wounded in combat in the Marines (most likely to be wounded) to obtain a value indicating the difference in percentage of wounded soldiers between the highest and lowest in terms of wounded soldiers. Each wounded in combat percentage was then recoded so that a one unit increase in the percent wounded variable was equal to 10.09% in all three survey years (the difference in percent wounded between the Air Force and Marines). To illustrate the effect of recoding the variable of masculinity by percent wounded in combat as described, in 2010 females were 3.80 times more likely (CI = 3.64, 3.97) to be sexually coerced for every 10.09% increase in soldiers wounded in combat within the organization.

Fifteen single predictor logistic regressions were used to test the hypothesis that females will experience more sexual harassment as the likelihood of wartime injury increases (as measure by percent wounded in combat). This additional test also supported Hypothesis 5a, with all three survey years resulting in odds ratios indicating that as the likelihood of combat injury increases, females are more likely to experience all five types of sexual harassment (see Table 3). These effects remain even when controlling for all other independent variables (see Table 4).

Table 3

*One Hundred and Fifteen Single Predictor Logistic Regressions for Five Types of Sexual Harassment in the Military with Eight Independent Variables in 2006, 2010, and 2012*

			Sexist Hostility			Sexual Hostility			Unwanted Sexual Attention			Sexual Coercion			Unwanted Sexual Contact		
			Odds			Odds			Odds			Odds			Odds		
			Odds	Ratio	95% CI	Odds	Ratio	95% CI	Odds	Ratio	95% CI	Odds	Ratio	95% CI	Odds	Ratio	95% CI
Deployment	2010	Deployed	1.16	1.87 <sup>a</sup>	1.83-1.90	0.98	1.79 <sup>a</sup>	1.75-1.82	0.46	1.98 <sup>a</sup>	1.94-2.03	0.14	2.32 <sup>a</sup>	2.24-2.40	0.06	1.46 <sup>a</sup>	1.40-1.53
		Not Deployed	0.62	Reference		0.55	Reference		0.23	Reference		0.06	Reference		0.04	Reference	
	2012	Deployed	1.22	1.54 <sup>a</sup>	1.51-1.58	0.97	1.54 <sup>a</sup>	1.50-1.57	0.42	1.57 <sup>a</sup>	1.53-1.61	0.13	1.90 <sup>a</sup>	1.84-1.97	0.07	1.19 <sup>a</sup>	1.15-1.25
		Not Deployed	0.79	Reference		0.64	Reference		0.27	Reference		0.07	Reference		0.06	Reference	
Percent Male	2006		NA	3.07 <sup>a</sup>	2.96-3.18	NA	3.63 <sup>a</sup>	3.50-3.77	NA	3.76 <sup>a</sup>	3.63-3.91	NA	4.08 <sup>a</sup>	3.86-4.30	NA	3.85 <sup>a</sup>	3.62-4.10
	2010		NA	3.58 <sup>a</sup>	3.46-3.71	NA	3.10 <sup>a</sup>	2.99-3.21	NA	3.59 <sup>a</sup>	3.45-3.73	NA	5.63 <sup>a</sup>	5.32-5.96	NA	3.31 <sup>a</sup>	3.08-3.56
	2012		NA	3.13 <sup>a</sup>	3.03-3.24	NA	2.57 <sup>a</sup>	2.48-2.66	NA	3.01 <sup>a</sup>	2.90-3.12	NA	3.57 <sup>a</sup>	3.38-3.77	NA	2.91 <sup>a</sup>	2.73-3.09
Gender Uncommon	2006	Uncommon	2.39	2.66 <sup>a</sup>	2.61-2.72	2.13	2.48 <sup>a</sup>	2.42-2.53	0.67	1.80 <sup>a</sup>	1.76-1.84	0.15	1.66 <sup>a</sup>	1.61-1.71	0.10	1.50 <sup>a</sup>	1.45-1.56
		Common	0.90	Reference		0.86	Reference		0.37	Reference		0.09	Reference		0.06	Reference	
	2010	Uncommon	1.34	2.37 <sup>a</sup>	2.32-2.41	1.00	1.89 <sup>a</sup>	1.85-1.92	0.45	1.99 <sup>a</sup>	1.95-2.04	0.13	2.20 <sup>a</sup>	2.13-2.28	0.08	2.41 <sup>a</sup>	2.31-2.52
		Common	0.56	Reference		0.53	Reference		0.23	Reference		0.06	Reference		0.03	Reference	
2012	Uncommon	1.51	2.23 <sup>a</sup>	2.19-2.27	1.08	1.90 <sup>a</sup>	1.86-1.94	0.46	1.91 <sup>a</sup>	1.87-1.95	0.13	1.94 <sup>a</sup>	1.88-2.01	0.10	2.00 <sup>a</sup>	1.93-2.07	
	Common	0.68	Reference		0.57	Reference		0.24	Reference		0.07	Reference		0.05	Reference		
Paygrade	2006	Enlisted	1.16	1.02	1.00-1.05	1.14	1.27 <sup>a</sup>	1.24-1.30	0.49	1.76 <sup>a</sup>	1.72-1.81	0.12	3.52 <sup>a</sup>	3.31-3.73	0.08	2.95 <sup>a</sup>	2.76-3.15
		Officer	1.13	Reference		0.89	Reference		0.28	Reference		0.03	Reference		0.03	Reference	
	2010	Enlisted	0.75	1.02	0.99-1.04	0.67	1.20 <sup>a</sup>	1.17-1.23	0.32	1.83 <sup>a</sup>	1.77-1.89	0.09	3.30 <sup>a</sup>	3.09-3.53	0.05	2.59 <sup>a</sup>	2.39-2.80
		Officer	0.73	Reference		0.56	Reference		0.17	Reference		0.03	Reference		0.02	Reference	
	2012	E1 to E4	0.94	1.05 <sup>a</sup>	1.03-1.08	0.80	1.26 <sup>a</sup>	1.23-1.29	0.41	2.07 <sup>a</sup>	2.01-2.14	0.12	3.91 <sup>a</sup>	3.67-4.17	0.10	3.25 <sup>a</sup>	3.05-3.46
		E5 to E9 Officer	0.80	0.89 <sup>a</sup>	0.87-0.92	0.63	0.98	0.96-1.01	0.24	1.23 <sup>a</sup>	1.19-1.27	0.07	2.25 <sup>a</sup>	2.10-2.40	0.04	1.31 <sup>a</sup>	1.22-1.40
Masculinity: Advertising	2006	Marines	1.59	2.13 <sup>a</sup>	2.04-2.22	1.72	2.56 <sup>a</sup>	2.45-2.66	0.51	2.31 <sup>a</sup>	2.21-2.41	0.12	3.19 <sup>a</sup>	2.96-3.43	0.13	3.54 <sup>a</sup>	3.31-3.80
		Army	1.47	1.97 <sup>a</sup>	1.93-2.02	1.41	2.09 <sup>a</sup>	2.04-2.13	0.64	2.92 <sup>a</sup>	2.85-3.00	0.16	4.30 <sup>a</sup>	4.11-1.51	0.10	2.58 <sup>a</sup>	2.46-2.70
		Navy	1.39	1.86 <sup>a</sup>	1.82-1.90	1.32	1.96 <sup>a</sup>	1.91-2.00	0.55	2.52 <sup>a</sup>	2.45-2.59	0.13	3.54 <sup>a</sup>	3.37-3.72	0.08	2.01 <sup>a</sup>	1.90-2.11
		Air Force	0.75	Reference		0.67	Reference		0.22	Reference		0.04	Reference		0.04	Reference	
	2010	Marines	1.37	3.14 <sup>a</sup>	3.02-3.27	1.08	2.73 <sup>a</sup>	2.62-2.84	0.47	3.22 <sup>a</sup>	3.08-3.36	0.14	5.90 <sup>a</sup>	5.48-6.35	0.07	3.08 <sup>a</sup>	2.82-3.36
		Army	0.93	2.13 <sup>a</sup>	2.09-2.18	0.80	2.03 <sup>a</sup>	1.98-2.08	0.38	2.59 <sup>a</sup>	2.52-2.67	0.13	5.51 <sup>a</sup>	5.21-5.83	0.06	2.75 <sup>a</sup>	2.59-2.92
		Navy	0.86	1.98 <sup>a</sup>	1.93-2.03	0.76	1.93 <sup>a</sup>	1.88-1.97	0.33	2.25 <sup>a</sup>	2.18-2.32	0.07	3.04 <sup>a</sup>	2.85-3.23	0.05	1.99 <sup>a</sup>	1.86-2.13
		Air Force	0.44	Reference		0.40	Reference		0.15	Reference		0.02	Reference		0.02	Reference	

(Table 3 continues)

(Table 3 continued)

			Sexist Hostility			Sexual Hostility			Unwanted Sexual Attention			Sexual Coercion			Unwanted Sexual Contact		
			Odds			Odds			Odds			Odds			Odds		
			Odds	Ratio	95% CI	Odds	Ratio	95% CI	Odds	Ratio	95% CI	Odds	Ratio	95% CI	Odds	Ratio	95% CI
Masculinity: Advertising	2012	Marines	1.49	2.92 <sup>a</sup>	2.81-3.04	0.99	2.48 <sup>a</sup>	2.39-2.58	0.47	2.93 <sup>a</sup>	2.81-3.06	0.14	3.78 <sup>a</sup>	3.54-4.04	0.11	3.49 <sup>a</sup>	3.24-3.75
		Army	1.09	2.14 <sup>a</sup>	2.09-2.19	0.84	2.11 <sup>a</sup>	2.06-2.16	0.39	2.40 <sup>a</sup>	2.34-2.47	0.12	3.09 <sup>a</sup>	2.94-3.24	0.08	2.37 <sup>a</sup>	2.24-2.50
		Navy	1.05	2.06 <sup>a</sup>	2.01-2.11	0.93	2.34 <sup>a</sup>	2.29-2.40	0.34	2.12 <sup>a</sup>	2.06-2.19	0.09	2.34 <sup>a</sup>	2.22-2.47	0.08	2.41 <sup>a</sup>	2.27-2.54
		Air Force	0.51	Reference		0.40	Reference		0.16	Reference		0.04	Reference		0.03	Reference	
Masculinity: Combat	2006		NA	1.72 <sup>a</sup>	1.68-1.76	NA	1.84 <sup>a</sup>	1.80-1.89	NA	2.06 <sup>a</sup>	2.02-2.12	NA	2.36 <sup>a</sup>	2.27-2.45	NA	2.30 <sup>a</sup>	2.20-2.40
	2010		NA	1.93 <sup>a</sup>	1.89-1.98	NA	1.80 <sup>a</sup>	1.76-1.84	NA	2.09 <sup>a</sup>	2.04-2.15	NA	3.80 <sup>a</sup>	3.64-3.97	NA	2.31 <sup>a</sup>	2.19-2.44
	2012		NA	1.84 <sup>a</sup>	1.80-1.88	NA	1.59 <sup>a</sup>	1.55-1.63	NA	1.94 <sup>a</sup>	1.89-1.99	NA	2.40 <sup>a</sup>	2.30-2.50	NA	1.81 <sup>a</sup>	1.73-1.89
Org. Tolerance Sexual Harass.	2006		NA	2.27 <sup>a</sup>	2.25-2.30	NA	2.17 <sup>a</sup>	2.14-2.19	NA	2.15 <sup>a</sup>	2.13-2.18	NA	3.30 <sup>a</sup>	3.24-3.37	NA	2.48 <sup>a</sup>	2.43-2.53
	2010		NA	1.98 <sup>a</sup>	1.96-2.00	NA	1.93 <sup>a</sup>	1.91-1.95	NA	2.20 <sup>a</sup>	2.17-2.23	NA	3.13 <sup>a</sup>	3.07-3.20	NA	2.41 <sup>a</sup>	2.35-2.47
	2012		NA	2.87 <sup>a</sup>	2.83-2.90	NA	2.75 <sup>a</sup>	2.72-2.78	NA	2.26 <sup>a</sup>	2.23-2.29	NA	2.57 <sup>a</sup>	2.53-2.61	NA	1.97 <sup>a</sup>	1.94-2.01
Coworker Dissatisfaction	2006		NA	1.76 <sup>a</sup>	1.74-1.78	NA	1.80 <sup>a</sup>	1.78-1.82	NA	1.69 <sup>a</sup>	1.67-1.71	NA	2.05 <sup>a</sup>	2.02-2.08	NA	1.64 <sup>a</sup>	1.61-1.67
	2010		NA	1.87 <sup>a</sup>	1.85-1.90	NA	1.85 <sup>a</sup>	1.83-1.87	NA	1.80 <sup>a</sup>	1.78-1.83	NA	2.24 <sup>a</sup>	2.20-2.28	NA	1.66 <sup>a</sup>	1.63-1.70
	2012		NA	2.05 <sup>a</sup>	2.03-2.08	NA	2.04 <sup>a</sup>	2.01-2.06	NA	1.83 <sup>a</sup>	1.80-1.85	NA	2.16 <sup>a</sup>	2.12-2.20	NA	1.69 <sup>a</sup>	1.66-1.73

Note. Deployment information was not included in the 2006 public use dataset.

<sup>a</sup> $p < .0001$ .



Table 4

*Fifteen Multiple Predictor Logistic Regressions for Five Types of Sexual Harassment in the Military in 2006, 2010, and 2012*

		Sexist Hostility		Sexual Hostility		Unwanted Sexual Attention		Sexual Coercion		Unwanted Sexual Contact		
		Odds		Odds		Odds		Odds		Odds		
		Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	
2006	Gender Uncommon	2.43 <sup>a</sup>	2.37-2.48	2.23 <sup>a</sup>	2.18-2.28	1.59 <sup>a</sup>	1.55-1.63	1.27 <sup>a</sup>	1.23-1.32	1.07 <sup>c</sup>	1.03-1.11	
	Paygrade	0.73 <sup>a</sup>	0.72-0.75	0.96 <sup>c</sup>	0.94-0.99	1.37 <sup>a</sup>	1.33-1.41	2.40 <sup>a</sup>	2.25-2.56	2.21 <sup>a</sup>	2.06-2.37	
	Masculinity: Combat	1.47 <sup>a</sup>	1.43-1.51	1.62 <sup>a</sup>	1.58-1.66	1.84 <sup>a</sup>	1.79-1.89	1.92 <sup>a</sup>	1.84-2.00	2.33 <sup>a</sup>	2.22-2.44	
	Org. Tolerance Sexual Harass.	2.01 <sup>a</sup>	1.98-2.03	1.86 <sup>a</sup>	1.84-1.88	1.86 <sup>a</sup>	1.84-1.89	2.73 <sup>a</sup>	2.67-2.79	2.19 <sup>a</sup>	2.14-2.24	
	Coworker Dissatisfaction	1.41 <sup>a</sup>	1.39-1.42	1.46 <sup>a</sup>	1.44-1.48	1.31 <sup>a</sup>	1.29-1.33	1.40 <sup>a</sup>	1.37-1.42	1.19 <sup>a</sup>	1.16-1.22	
2010	Deployment	1.64 <sup>a</sup>	1.61-1.68	1.59 <sup>a</sup>	1.56-1.63	1.76 <sup>a</sup>	1.72-1.81	1.95 <sup>a</sup>	1.87-2.03	1.21 <sup>a</sup>	1.15-1.27	
	Gender Uncommon	2.18 <sup>a</sup>	2.14-2.23	1.69 <sup>a</sup>	1.65-1.72	1.68 <sup>a</sup>	1.64-1.72	1.70 <sup>a</sup>	1.64-1.77	2.09 <sup>a</sup>	1.99-2.19	
	Paygrade	0.75 <sup>a</sup>	0.73-0.77	0.93 <sup>a</sup>	0.91-0.95	1.46 <sup>a</sup>	1.41-1.52	2.63 <sup>a</sup>	2.44-2.83	2.39 <sup>a</sup>	2.19-2.61	
	Masculinity: Combat	1.45 <sup>a</sup>	1.41-1.49	1.33 <sup>a</sup>	1.29-1.36	1.52 <sup>a</sup>	1.47-1.56	2.50 <sup>a</sup>	2.38-2.63	1.55 <sup>a</sup>	1.46-1.65	
	Org. Tolerance Sexual Harass.	1.71 <sup>a</sup>	1.69-1.73	1.66 <sup>a</sup>	1.64-1.68	1.87 <sup>a</sup>	1.84-1.89	2.40 <sup>a</sup>	2.35-2.45	2.04 <sup>a</sup>	1.99-2.10	
	Coworker Dissatisfaction	1.63 <sup>a</sup>	1.61-1.65	1.58 <sup>a</sup>	1.56-1.60	1.44 <sup>a</sup>	1.42-1.46	1.61 <sup>a</sup>	1.57-1.64	1.24 <sup>a</sup>	1.21-1.27	
2012	Deployment	1.33 <sup>a</sup>	1.30-1.36	1.35 <sup>a</sup>	1.32-1.38	1.42 <sup>a</sup>	1.38-1.46	1.70 <sup>a</sup>	1.64-1.77	1.10 <sup>a</sup>	1.05-1.15	
	Gender Uncommon	2.07 <sup>a</sup>	2.02-2.11	1.62 <sup>a</sup>	1.59-1.66	1.54 <sup>a</sup>	1.51-1.58	1.39 <sup>a</sup>	1.34-1.45	1.52 <sup>a</sup>	1.46-1.58	
	Paygrade E1 to E4		0.70 <sup>a</sup>	0.68-0.72	0.91 <sup>a</sup>	0.88-0.93	1.67 <sup>a</sup>	1.62-1.73	2.95 <sup>a</sup>	2.76-3.16	2.59 <sup>a</sup>	2.41-2.77
		E5 to E9	0.73 <sup>a</sup>	0.71-0.75	0.81 <sup>a</sup>	0.79-0.83	1.06 <sup>b</sup>	1.03-1.10	1.93 <sup>a</sup>	1.80-2.07	1.13 <sup>b</sup>	1.05-1.22
	Masculinity: Combat	1.55 <sup>a</sup>	1.51-1.59	1.25 <sup>a</sup>	1.22-1.29	1.56 <sup>a</sup>	1.52-1.61	1.77 <sup>a</sup>	1.69-1.85	1.28 <sup>a</sup>	1.22-1.35	
	Org. Tolerance Sexual Harass.	2.38 <sup>a</sup>	2.35-2.42	2.30 <sup>a</sup>	2.27-2.33	1.95 <sup>a</sup>	1.92-1.97	2.09 <sup>a</sup>	2.05-2.13	1.70 <sup>a</sup>	1.67-1.74	
	Coworker Dissatisfaction	1.49 <sup>a</sup>	1.47-1.51	1.45 <sup>a</sup>	1.44-1.47	1.27 <sup>a</sup>	1.25-1.29	1.39 <sup>a</sup>	1.36-1.42	1.21 <sup>a</sup>	1.18-1.23	

*Note.* Deployment information was not included in the 2006 public use dataset. The independent variables Percent Male and Masculinity: Advertising were excluded from the multiple predictor regressions in 2006, 2010, and 2012 due to their high correlation with the independent variable, Masculinity: Combat.

<sup>a</sup>*p* < .0001.

<sup>b</sup>*p* < .001.

<sup>c</sup>*p* < .01.

### **Interpreting Interactions in Logistic Regression**

The remaining hypotheses all involve interactions using logistic regression. In logistic regression, the odds ratios for the main effects are exactly what the title implies. That is, they are ratios of odds (e.g., odds of sexual harassment in a male-dominated organization versus odds of sexual harassment in a non-male dominated organization). Interaction effects indicate the ratio by which the odds ratio changes (i.e., they are ratios of odds ratios). To illustrate the meaning of the interaction, in Table 5 there is a significant interaction between deployment and percent male in 2010 with an odds ratio of 1.29. This odds ratio represents the ratio of the odds ratio corresponding to a one-unit increase in males (i.e., 12.57% in this instance) among females who have been deployed versus the odds ratio corresponding to a one-unit increase in males among females not deployed. In other words, females who are not deployed and work in a military organization where the percent of males increases by 12.57% are 3.18 times more likely to experience sexist hostility, whereas females who are deployed and are working in the same organization with a 12.57% increase in males are 4.11 time more likely to experience sexist hostility. If we divide 4.11 by 3.18, the result is 1.29, which is the interaction term in Table 5 for sexist hostility in 2010. The ratio increase in sexist hostility in 2010 is 1.29 times greater for deployed females as the percent of males in the organization increases than it is for non-deployed females as the percent of males in the organization increases. Hypotheses 2b thru 5b all involve logistic regression interactions that should be interpreted in this manner.

### **Hypothesis 2b**

Two different independent variables were used to test Hypothesis 2b. First, ten logistic regression interactions were used to test the hypothesis that the sexual harassment of females in male-dominated organizations will be exacerbated by deployment (see Table 5 and Figure 3).

The results of those interactions for 2010 provide partial support for Hypothesis 2b with sexist hostility, sexual hostility, and unwanted sexual attention being exacerbated in the deployment by percent male interaction. However, unwanted sexual contact interacts with deployment and percent male in the opposite direction hypothesized, with the ratio increase in unwanted sexual contact being greater for non-deployed females than the ratio increase in deployed females. Hypothesis 2b is not supported by the results of the 2012 analyses with the unwanted sexual attention, sexual coercion, and unwanted sexual contact interactions in the opposite direction hypothesized (see Table 5 and Figure 3).

The second test of Hypothesis 2b included ten additional logistic regression interactions to determine if the sexual harassment of females who work in a group where members of their gender are uncommon is exacerbated by deployment. The 2010 results failed to support the hypothesis with sexist hostility, sexual hostility, and unwanted sexual attention having interactions in the opposite direction hypothesized (see Table 6 and Figure 4). The 2012 results also failed to support the hypothesis with the odds ratio interaction of unwanted sexual attention going in the opposite direction hypothesized. The only exacerbation for 2012 was for sexual hostility. Overall, the results failed to support Hypothesis 2b.

### **Hypothesis 3b**

This hypothesis stated that the lower ranking (i.e., paygrade) females in the military would experience a greater increase in sexual harassment when deployed than the higher-ranking females when deployed. In 2010 and 2012, Hypothesis 3b is not supported and all significant interactions are in the opposite direction hypothesized. The odds ratios comparing deployment versus non-deployment in female officers tend to be greater than the corresponding odds ratios

for females with an enlisted rank with significant interactions for all sexual harassment types in both 2010 and 2012 (see Table 7 and Figure 5).

### **Hypothesis 4b**

Two different independent variables were used to test Hypothesis 4b. First, ten logistic regression interactions were used to test the hypothesis that the sexual harassment of females in organizations with higher tolerance for sexual harassment ratings will be exacerbated by deployment (see Table 8 and Figure 7). There is partial support for this hypothesis in 2010, as sexist hostility, sexual hostility, and unwanted sexual attention are exacerbated by deployment. However, this interaction reverses for sexual coercion in 2010 with the odds ratio increase being greater for females who are not deployed as organizational tolerance of sexual harassment increases than for females who are deployed. In 2012, only sexist hostility is exacerbated by deployment, thus failing to provide support for Hypothesis 4b. Unwanted sexual attention and sexual coercion have interactions in the opposite direction hypothesized.

The second test of Hypothesis 4b included ten additional logistic regression interactions to determine if the sexual harassment of females is exacerbated by the interaction of coworker dissatisfaction and deployment (see Table 9 and Figure 8). The 2010 results support Hypothesis 4b, with all five types of sexual harassment exacerbated by the coworker dissatisfaction and deployment interaction. Contrary to 2010, the 2012 results failed to support the hypothesis and sexual hostility, sexual coercion, and unwanted sexual contact all have interactions in the opposite direction hypothesized.

### **Hypothesis 5b**

Two different independent variables were used to test Hypothesis 5b. First, ten logistic regression interactions were used to test the hypothesis that the sexual harassment of females in

military organizations with a greater focus on traditional masculinity in advertising will be exacerbated by deployment. Hypothesis 5b was partially supported in 2010 with an exacerbation in sexist hostility, sexual hostility, and unwanted sexual attention when comparing the Army and Navy to the Air Force. The opposite relationship was found when comparing the Marines to the Air Force in sexual coercion and unwanted sexual contact. The 2012 results were less consistent than 2010 in support of the hypothesis. There was a significant interaction between deployment and the Navy when compared to the Air Force for sexist hostility, sexual hostility, unwanted sexual attention, and unwanted sexual contact. There was a significant interaction opposite the direction hypothesized between deployment and Marines when compared to the Air Force for sexual hostility, unwanted sexual attention, and sexual coercion. Overall, these results provided partial support for Hypothesis 5b, with sixteen significant interactions in the direction hypothesized and six interactions in the opposite direction hypothesized.

The second test of Hypothesis 5b included ten additional logistic regression interactions to determine if the sexual harassment of females is exacerbated by the interaction of masculinity as measured by the percent of combat injuries with deployment. These logistic regressions failed to support Hypothesis 5b, with three interactions over the two years in support of a greater odds ratio increase in sexual harassment as combat injuries increase, and four interactions in support of a smaller odds ratio increase in sexual harassment as combat injuries increase.

Table 5

*Logistic Regression of the Interactive Effects of Percent Male and Deployment on Sexual Harassment*

	Sexist Hostility		Sexual Hostility		Unwanted Sexual Attention		Sexual Coercion		Unwanted Sexual Contact	
	Odds		Odds		Odds		Odds		Odds	
	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI
2010 Deployment	0.32 <sup>a</sup>	0.18-0.55	2.80 <sup>a</sup>	2.69-2.92	3.06 <sup>a</sup>	2.92-3.21	5.75 <sup>a</sup>	5.34-6.18	3.62 <sup>a</sup>	3.32-3.96
Percent Male	3.18 <sup>a</sup>	3.05-3.31	0.46 <sup>c</sup>	0.27-0.79	0.17 <sup>a</sup>	0.09-0.30	4.65 <sup>a</sup>	2.04-10.59	19.29 <sup>a</sup>	6.43-57.92
Deployment*Percent Male	1.29 <sup>a</sup>	1.19-1.40	1.22 <sup>a</sup>	1.12-1.32	1.43 <sup>a</sup>	1.31-1.56	0.90	0.80-1.01	0.68 <sup>a</sup>	0.58-0.80
2012 Deployment	1.67	0.93-3.02	2.54 <sup>a</sup>	2.45-2.64	3.03 <sup>a</sup>	2.91-3.17	3.67 <sup>a</sup>	3.44-3.92	3.01 <sup>a</sup>	2.80-3.23
Percent Male	3.07 <sup>a</sup>	2.95-3.19	2.07 <sup>c</sup>	1.16-3.69	3.07 <sup>a</sup>	1.65-5.72	5.01 <sup>a</sup>	2.10-11.95	4.14 <sup>c</sup>	1.44-11.88
Deployment*Percent Male	0.99	0.91-1.07	0.96	0.88-1.04	0.91 <sup>d</sup>	0.83-0.99	0.87 <sup>d</sup>	0.77-0.98	0.84 <sup>d</sup>	0.73-0.97

<sup>a</sup>*p* < .0001.<sup>c</sup>*p* < .01.<sup>d</sup>*p* < .05.

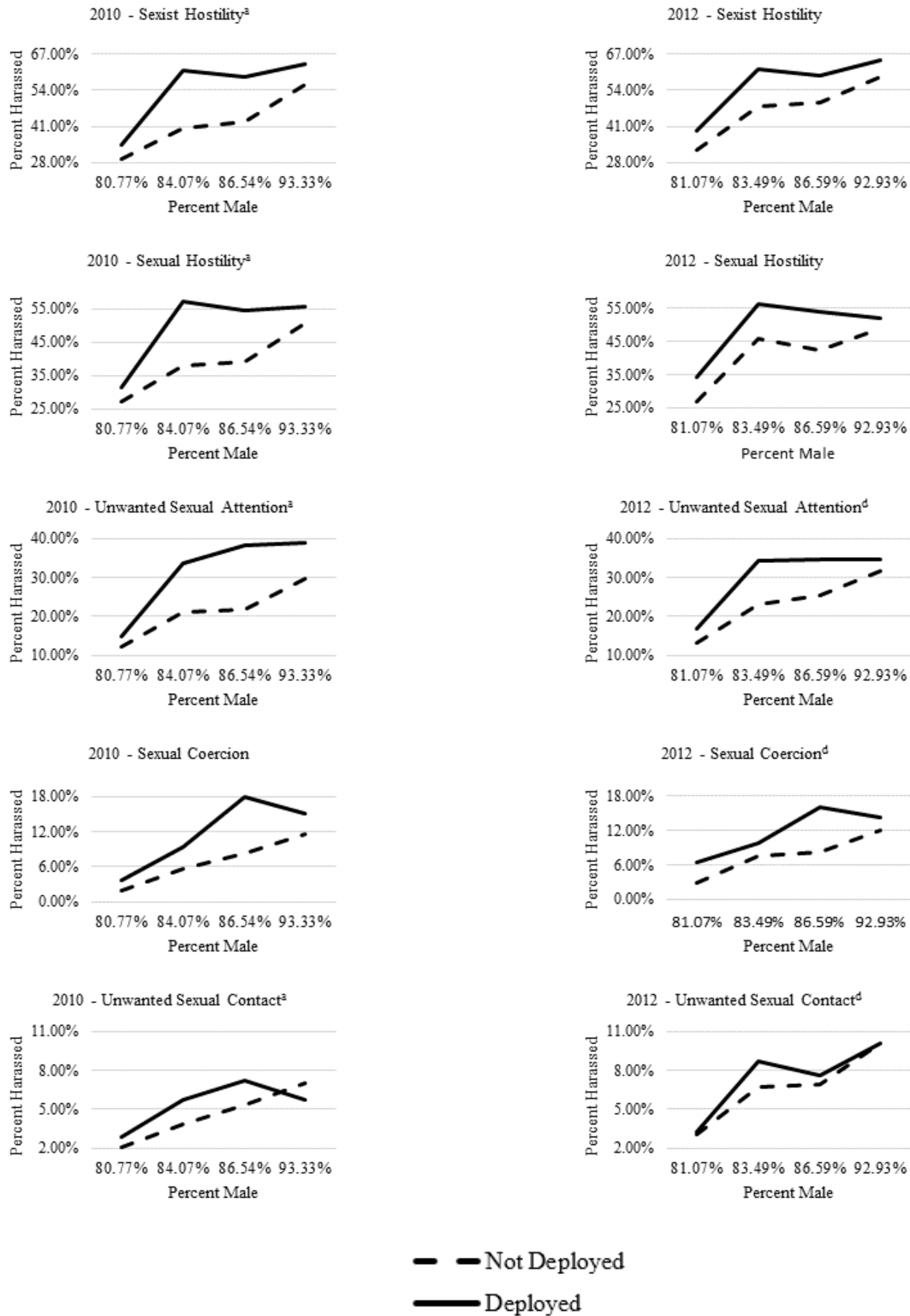


Figure 3. Interactive effects of percent male and deployment on sexual harassment in 2010 and 2012.

<sup>a</sup> $p < .0001$ . <sup>d</sup> $p < .05$ .

Table 6

*Logistic Regression of the Interactive Effects of Gender Uncommon and Deployment on Sexual Harassment*

	Sexist Hostility		Sexual Hostility		Unwanted Sexual Attention		Sexual Coercion		Unwanted Sexual Contact	
	Odds		Odds		Odds		Odds		Odds	
	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI
2010 Deployment	1.93 <sup>a</sup>	1.89-1.98	1.95 <sup>a</sup>	1.91-2.00	2.12 <sup>a</sup>	2.06-2.18	2.15 <sup>a</sup>	2.05-2.25	2.34 <sup>a</sup>	2.22-2.47
Gender Uncommon	2.47 <sup>a</sup>	2.41-2.53	1.85 <sup>a</sup>	1.81-1.90	2.13 <sup>a</sup>	2.07-2.19	2.27 <sup>a</sup>	2.17-2.38	1.35 <sup>a</sup>	1.27-1.44
Deployment*Gender Uncommon	0.79 <sup>a</sup>	0.76-0.83	0.82 <sup>a</sup>	0.78-0.85	0.76 <sup>a</sup>	0.73-0.80	0.94	0.88-1.01	1.02	0.93-1.12
2012 Deployment	1.55 <sup>a</sup>	1.51-1.59	1.84 <sup>a</sup>	1.80-1.88	1.87 <sup>a</sup>	1.82-1.92	1.98 <sup>a</sup>	1.90-2.07	2.21 <sup>a</sup>	2.12-2.31
Gender Uncommon	2.24 <sup>a</sup>	2.19-2.29	1.47 <sup>a</sup>	1.43-1.51	1.53 <sup>a</sup>	1.49-1.58	1.96 <sup>a</sup>	1.87-2.06	1.40 <sup>a</sup>	1.33-1.48
Deployment*Gender Uncommon	0.97	0.93-1.01	1.11 <sup>a</sup>	1.06-1.16	1.03	0.98-1.08	0.91 <sup>c</sup>	0.84-0.97	0.68 <sup>a</sup>	0.62-0.74

<sup>a</sup> $p < .0001$ .<sup>c</sup> $p < .01$ .



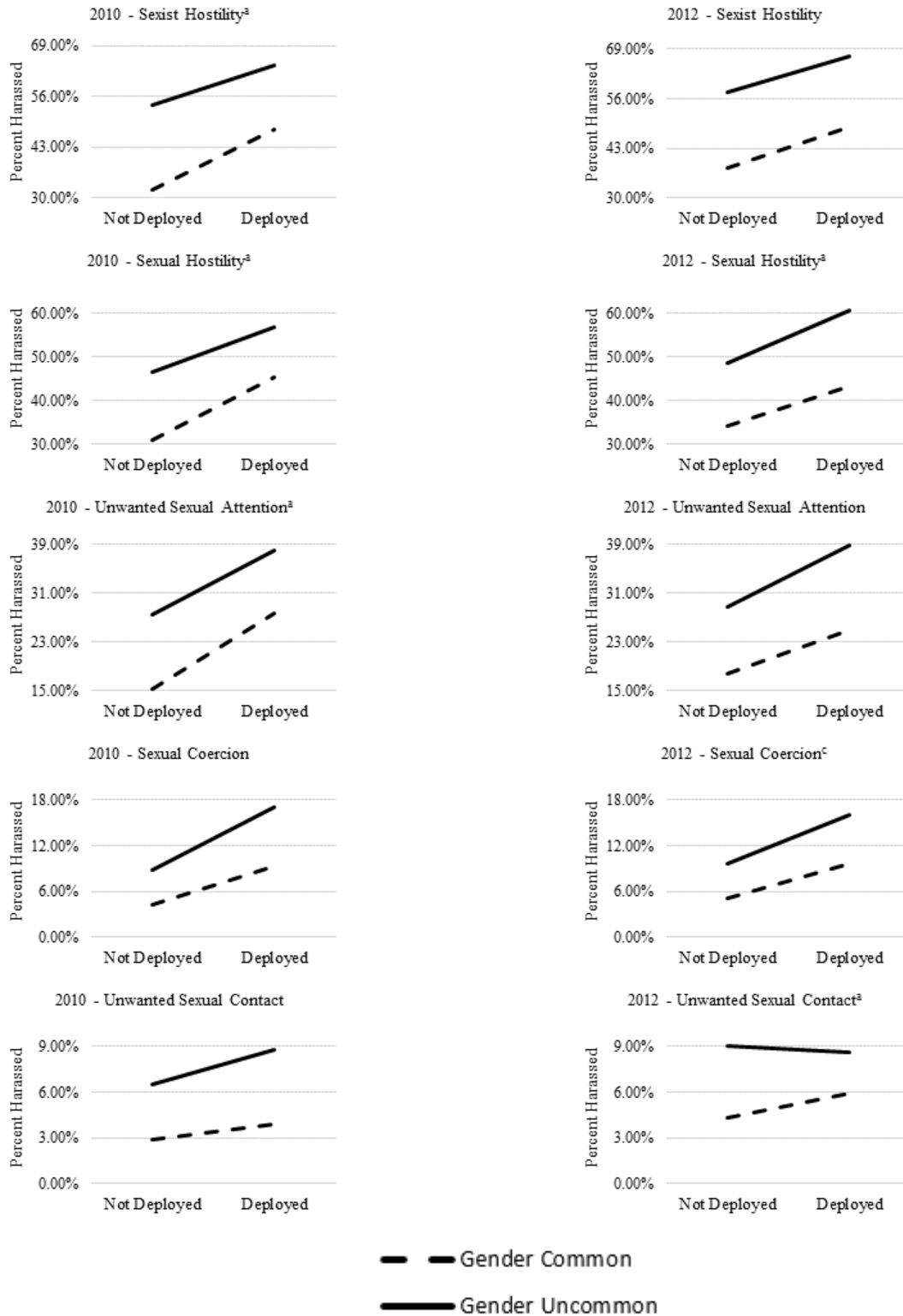


Figure 4. Interactive effects of gender uncommon and deployment on sexual harassment in 2010 and 2012.

<sup>a</sup> $p < .0001$ . <sup>c</sup> $p < .01$ .

Table 7

*Logistic Regression of the Interactive Effects of Paygrade and Deployment on Sexual Harassment*

		Sexist Hostility		Sexual Hostility		Unwanted Sexual Attention		Sexual Coercion		Unwanted Sexual Contact		
		Odds		Odds		Odds		Odds		Odds		
		Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	
2010	Deployment	2.26 <sup>a</sup>	2.15-2.36	2.50 <sup>a</sup>	2.38-2.62	2.95 <sup>a</sup>	2.78-3.13	3.75 <sup>a</sup>	3.29-4.27	2.16 <sup>a</sup>	1.85-2.51	
	Paygrade	1.09 <sup>a</sup>	1.06-1.12	1.37 <sup>a</sup>	1.33-1.41	2.23 <sup>a</sup>	2.14-2.33	4.32 <sup>a</sup>	3.90-4.79	3.09 <sup>a</sup>	2.78-3.43	
	Deployment*Paygrade	0.79 <sup>a</sup>	0.75-0.84	0.67 <sup>a</sup>	0.63-0.70	0.64 <sup>a</sup>	0.60-0.68	0.60 <sup>a</sup>	0.53-0.69	0.65 <sup>a</sup>	0.56-0.77	
2012	Deployment	2.31 <sup>a</sup>	2.20-2.43	2.67 <sup>a</sup>	2.54-2.80	1.92 <sup>a</sup>	1.81-2.04	3.39 <sup>a</sup>	3.00-3.82	2.04 <sup>a</sup>	1.80-2.31	
	Paygrade	E1 to E4	1.17 <sup>a</sup>	1.14-1.20	1.49 <sup>a</sup>	1.44-1.53	2.25 <sup>a</sup>	2.16-2.33	5.25 <sup>a</sup>	4.81-5.73	4.02 <sup>a</sup>	3.71-4.35
		E5 to E9	1.00	0.97-1.03	1.15 <sup>a</sup>	1.12-1.19	1.25 <sup>a</sup>	1.20-1.30	2.62 <sup>a</sup>	2.38-2.87	1.33 <sup>a</sup>	1.22-1.46
	Deployment*E1 to E4	0.66 <sup>a</sup>	0.63-0.70	0.54 <sup>a</sup>	0.51-0.58	0.82 <sup>a</sup>	0.77-0.88	0.53 <sup>a</sup>	0.47-0.60	0.50 <sup>a</sup>	0.44-0.58	
	Deployment*E1 to E5	0.59 <sup>a</sup>	0.55-0.62	0.51 <sup>a</sup>	0.48-0.54	0.87 <sup>a</sup>	0.81-0.93	0.66 <sup>a</sup>	0.57-0.75	0.88	0.76-1.02	

<sup>a</sup>*p* < .0001.

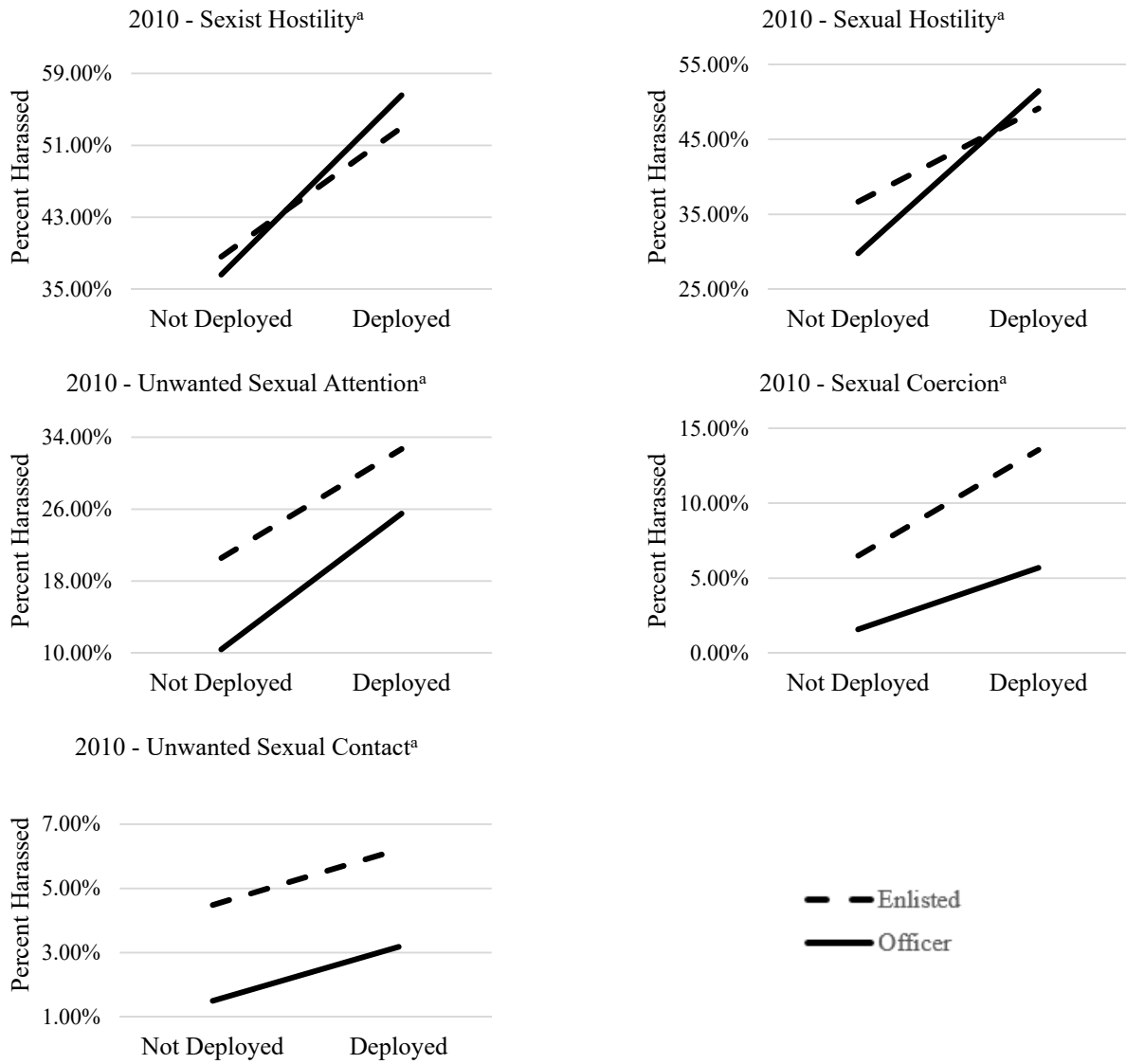


Figure 5. Interactive effects of paygrade and deployment on sexual harassment in 2010.  
<sup>a</sup> $p < .0001$ .

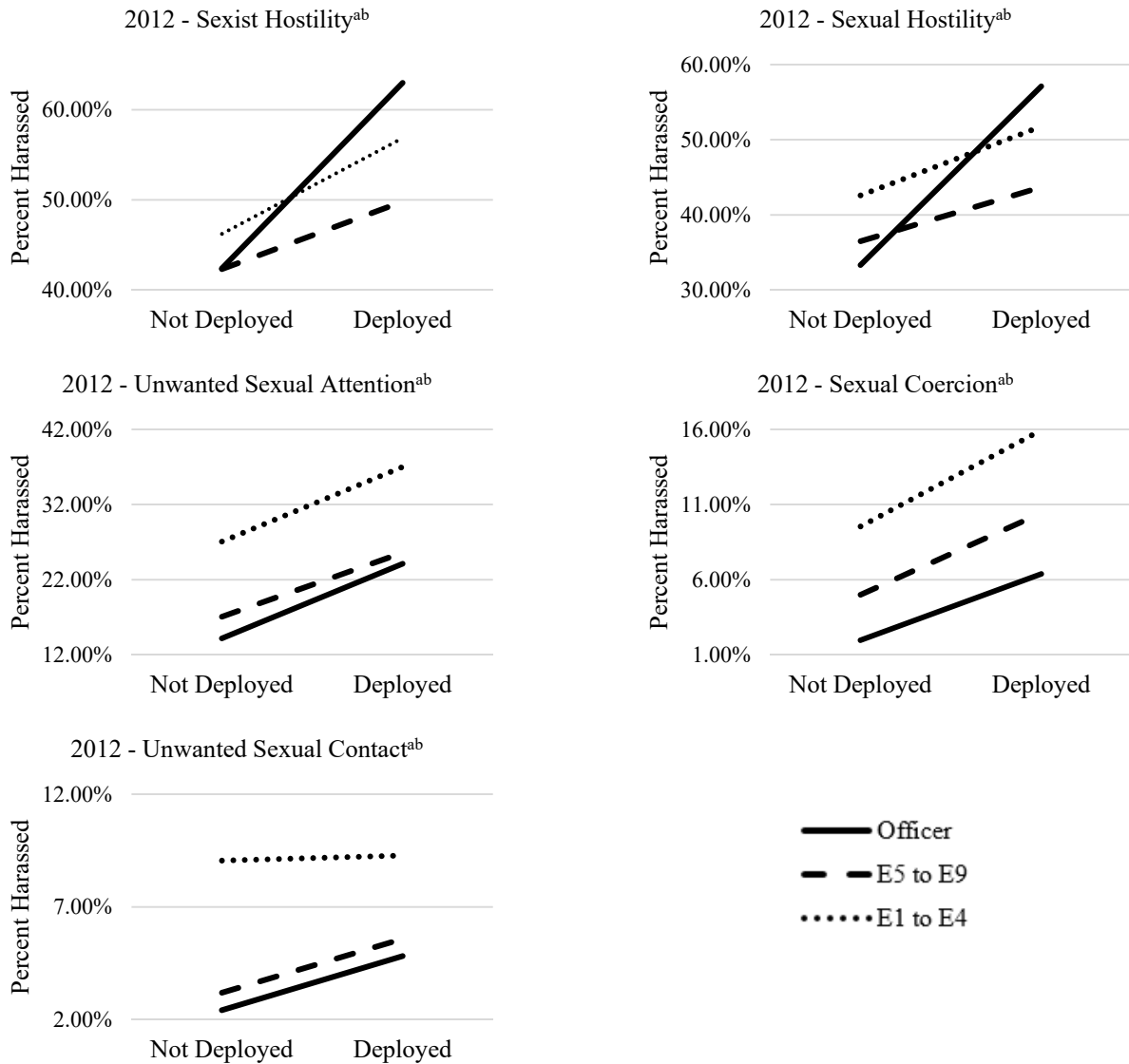


Figure 6. Interactive effects of paygrade and deployment on sexual harassment in 2012. <sup>a</sup>Interaction between E1 to E4, Officers, and deployment. <sup>b</sup>Interaction between E5 to E9, Officers, and deployment. All interactions have a significance level of  $p < .0001$ .

Table 8

*Logistic Regression of the Interactive Effects of Organizational Tolerance of Sexual Harassment and Deployment on Sexual Harassment*

	Sexist Hostility		Sexual Hostility		Unwanted Sexual Attention		Sexual Coercion		Unwanted Sexual Contact	
	Odds		Odds		Odds		Odds		Odds	
	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI
2010 Deployment	1.18 <sup>a</sup>	1.11-1.25	1.17 <sup>a</sup>	1.11-1.24	1.68 <sup>a</sup>	1.57-1.81	3.94 <sup>a</sup>	3.47-4.48	1.42 <sup>a</sup>	1.22-1.66
Org. Tolerance Sexual Harass.	1.85 <sup>a</sup>	1.83-1.88	1.82 <sup>a</sup>	1.80-1.84	2.13 <sup>a</sup>	2.10-2.16	3.36 <sup>a</sup>	3.27-3.46	2.41 <sup>a</sup>	2.33-2.48
Deployment* Org. Tolerance SH	1.21 <sup>a</sup>	1.18-1.24	1.18 <sup>a</sup>	1.15-1.21	1.05 <sup>b</sup>	1.02-1.07	0.80 <sup>a</sup>	0.77-0.84	0.97	0.92-1.02
2012 Deployment	1.16 <sup>a</sup>	1.09-1.22	1.38 <sup>a</sup>	1.31-1.46	1.55 <sup>a</sup>	1.47-1.65	2.34 <sup>a</sup>	2.13-2.57	1.12 <sup>d</sup>	1.00-1.24
Org. Tolerance Sexual Harass.	2.77 <sup>a</sup>	2.73-2.81	2.73 <sup>a</sup>	2.69-2.77	2.27 <sup>a</sup>	2.24-2.30	2.65 <sup>a</sup>	2.60-2.70	1.99 <sup>a</sup>	1.95-2.03
Deployment* Org. Tolerance SH	1.11 <sup>a</sup>	1.08-1.15	1.00	0.97-1.02	0.95 <sup>a</sup>	0.93-0.98	0.87 <sup>a</sup>	0.84-0.90	0.97	0.93-1.01

<sup>a</sup> $p < .0001$ .<sup>b</sup> $p < .001$ .<sup>d</sup> $p < .05$ .

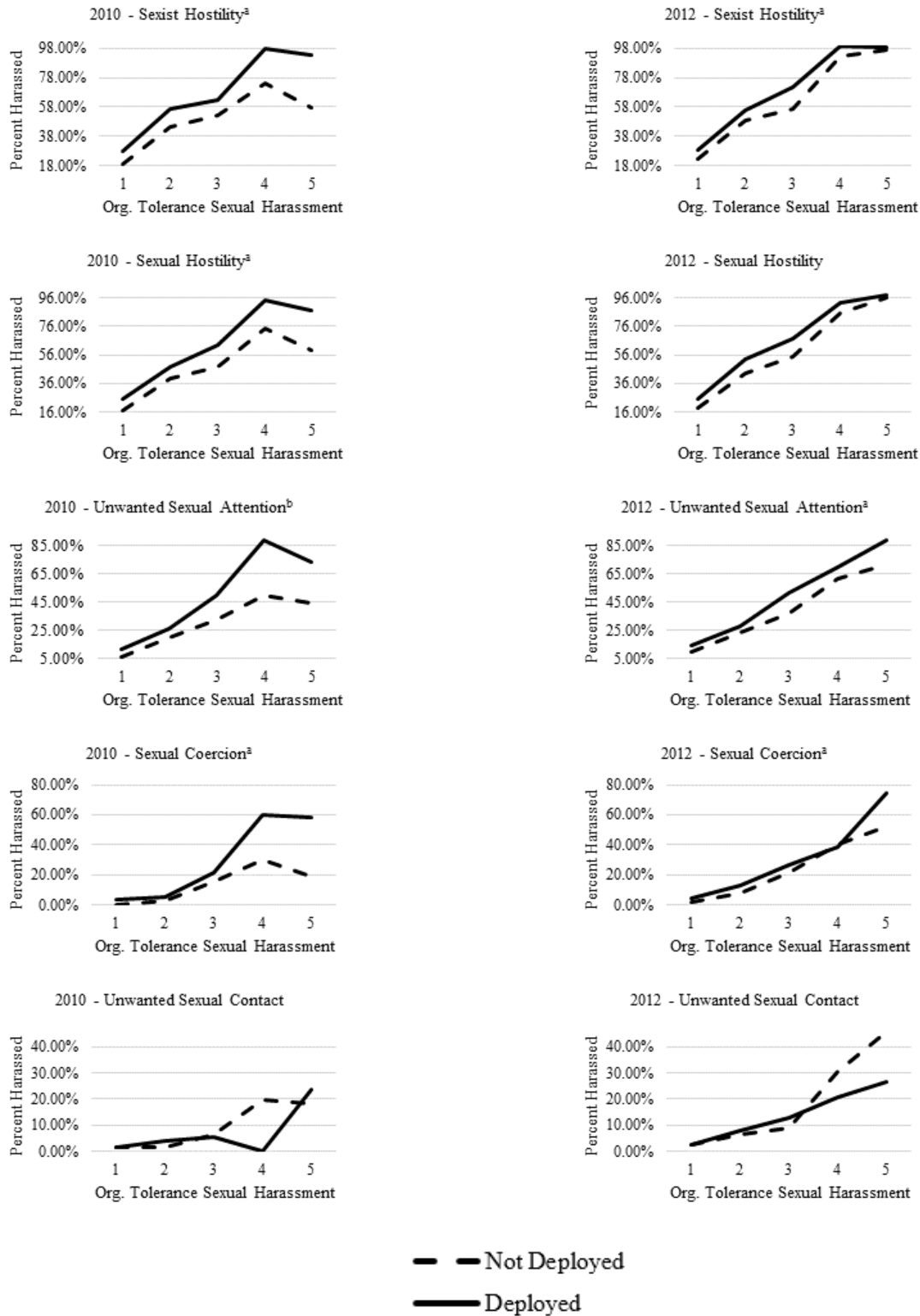


Figure 7. Interactive effects of organizational tolerance of sexual harassment and deployment on sexual harassment in 2010 and 2012.

<sup>a</sup> $p < .0001$ . <sup>b</sup> $p < .001$ .

Table 9

*Logistic Regression of the Interactive Effects of Coworker Dissatisfaction and Deployment on Sexual Harassment*

	Sexist Hostility		Sexual Hostility		Unwanted Sexual Attention		Sexual Coercion		Unwanted Sexual Contact	
	Odds		Odds		Odds		Odds		Odds	
	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI
2010 Deployment	1.60 <sup>a</sup>	1.54-1.67	1.49 <sup>a</sup>	1.43-1.55	1.69 <sup>a</sup>	1.61-1.78	2.02 <sup>a</sup>	1.86-2.19	1.19 <sup>a</sup>	1.08-1.31
Cowrkr. Dissatisfaction	1.81 <sup>a</sup>	1.79-1.84	1.77 <sup>a</sup>	1.75-1.80	1.73 <sup>a</sup>	1.71-1.76	2.16 <sup>a</sup>	2.10-2.21	1.60 <sup>a</sup>	1.55-1.65
Deployment* Cowrkr. Dissatisfaction	1.08 <sup>a</sup>	1.06-1.11	1.10 <sup>a</sup>	1.08-1.13	1.07 <sup>a</sup>	1.04-1.10	1.04 <sup>d</sup>	1.00-1.08	1.08 <sup>b</sup>	1.03-1.13
2012 Deployment	1.43 <sup>a</sup>	1.38-1.49	1.56 <sup>a</sup>	1.49-1.62	1.44 <sup>a</sup>	1.37-1.51	2.09 <sup>a</sup>	1.94-2.26	1.45 <sup>a</sup>	1.33-1.58
Cowrkr. Dissatisfaction	2.02 <sup>a</sup>	2.00-2.05	2.05 <sup>a</sup>	2.02-2.08	1.80 <sup>a</sup>	1.78-1.83	2.20 <sup>a</sup>	2.15-2.25	1.76 <sup>a</sup>	1.72-1.80
Deployment* Cowrkr. Dissatisfaction	1.02	0.99-1.04	0.95 <sup>a</sup>	0.92-0.97	1.01	0.99-1.04	0.91 <sup>a</sup>	0.87-0.94	0.86 <sup>a</sup>	0.82-0.90

<sup>a</sup> $p < .0001$ .<sup>b</sup> $p < .001$ .<sup>d</sup> $p < .05$ .

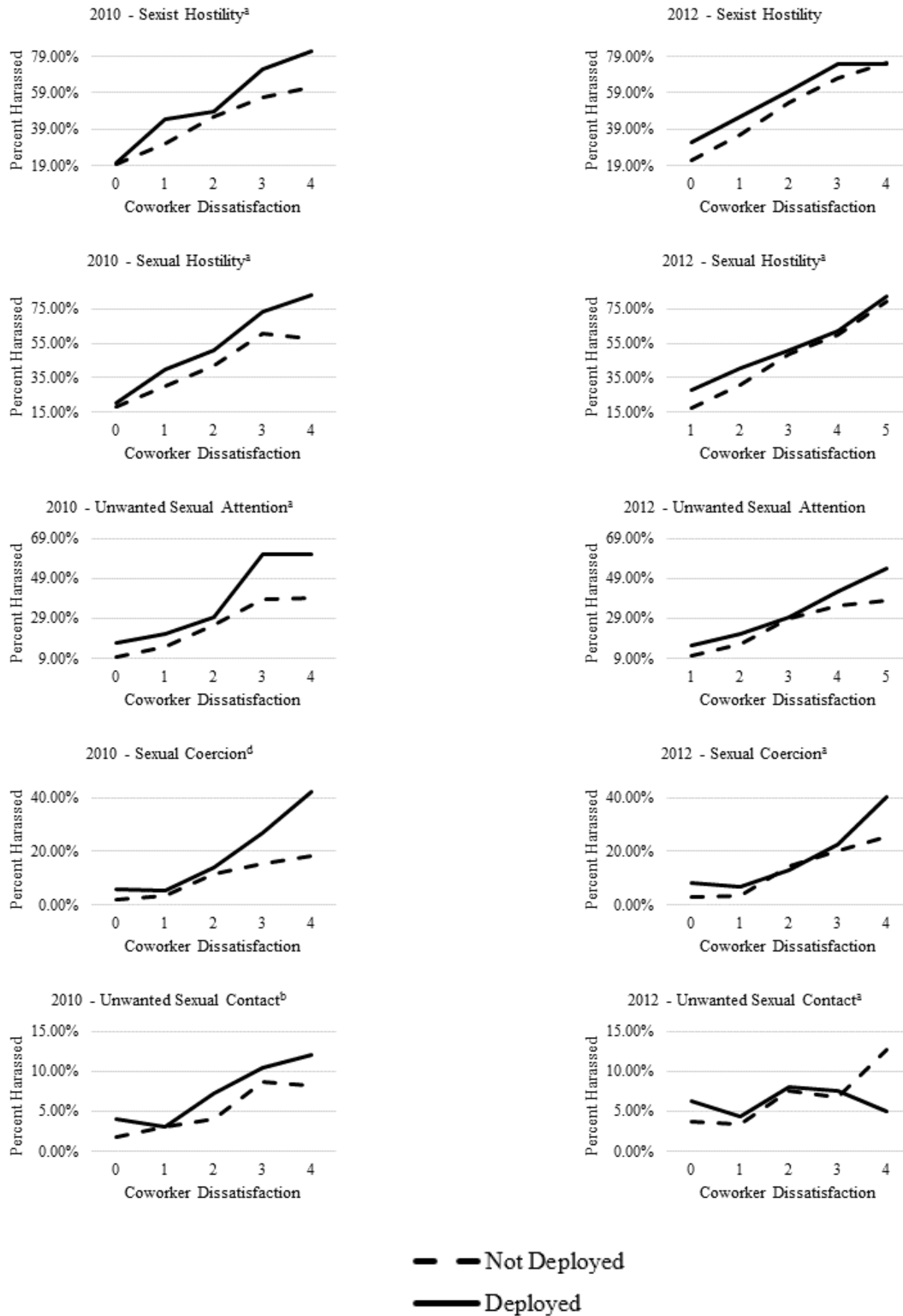


Figure 8. Interactive effects of coworker dissatisfaction and deployment on sexual harassment in 2010 and 2012.

<sup>a</sup> $p < .0001$ . <sup>b</sup> $p < .001$ . <sup>d</sup> $p < .05$ .



Table 10

*Logistic Regression of the Interactive Effects of Masculinity in Advertising and Deployment on Sexual Harassment*

		Sexist Hostility		Sexual Hostility		Unwanted Sexual Attention		Sexual Coercion		Unwanted Sexual Contact	
		Odds		Odds		Odds		Odds		Odds	
		Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI
2010	Deployment	1.28 <sup>a</sup>	1.23-1.34	1.23 <sup>a</sup>	1.18-1.28	1.27 <sup>a</sup>	1.21-1.35	1.87 <sup>a</sup>	1.68-2.09	1.35 <sup>a</sup>	1.20-1.51
	Masculinity: Marines	3.09 <sup>a</sup>	2.95-3.23	2.72 <sup>a</sup>	2.60-2.84	3.02 <sup>a</sup>	2.87-3.18	6.50 <sup>a</sup>	5.94-7.11	3.47 <sup>a</sup>	3.14-3.84
	Advertising Army	1.80 <sup>a</sup>	1.76-1.85	1.72 <sup>a</sup>	1.67-1.77	2.00 <sup>a</sup>	1.93-2.07	4.50 <sup>a</sup>	4.18-4.83	2.60 <sup>a</sup>	2.42-2.80
	Navy	1.65 <sup>a</sup>	1.61-1.70	1.62 <sup>a</sup>	1.57-1.67	1.95 <sup>a</sup>	1.88-2.02	3.00 <sup>a</sup>	2.78-3.25	1.87 <sup>a</sup>	1.72-2.03
	Deployment*Marines	1.05	0.96-1.15	1.00	0.92-1.10	1.20 <sup>a</sup>	1.09-1.32	0.72 <sup>a</sup>	0.62-0.85	0.60 <sup>a</sup>	0.49-0.74
	Deployment*Army	1.49 <sup>a</sup>	1.42-1.57	1.50 <sup>a</sup>	1.43-1.58	1.76 <sup>a</sup>	1.65-1.88	1.30 <sup>a</sup>	1.15-1.46	1.03	0.90-1.17
	Deployment*Navy	1.80 <sup>a</sup>	1.70-1.91	1.78 <sup>a</sup>	1.68-1.88	1.46 <sup>a</sup>	1.36-1.57	0.93	0.81-1.06	1.11	0.96-1.29
2012	Deployment	1.36 <sup>a</sup>	1.31-1.42	1.41 <sup>a</sup>	1.35-1.47	1.32 <sup>a</sup>	1.25-1.39	2.24 <sup>a</sup>	2.05-2.45	1.06	0.95-1.19
	Masculinity: Marines	2.95 <sup>a</sup>	2.82-3.08	2.60 <sup>a</sup>	2.49-2.72	3.03 <sup>a</sup>	2.88-3.18	4.50 <sup>a</sup>	4.16-4.87	3.53 <sup>a</sup>	3.25-3.83
	Advertising Army	2.04 <sup>a</sup>	1.99-2.09	1.99 <sup>a</sup>	1.94-2.04	2.25 <sup>a</sup>	2.18-2.32	2.97 <sup>a</sup>	2.79-3.15	2.32 <sup>a</sup>	2.18-2.47
	Navy	1.94 <sup>a</sup>	1.89-1.99	2.30 <sup>a</sup>	2.23-2.36	1.96 <sup>a</sup>	1.90-2.03	2.71 <sup>a</sup>	2.54-2.89	2.28 <sup>a</sup>	2.14-2.43
	Deployment*Marines	1.27 <sup>a</sup>	1.20-1.35	0.80 <sup>a</sup>	0.73-0.88	0.87 <sup>c</sup>	0.78-0.96	0.54 <sup>a</sup>	0.47-0.63	0.94	.79-1.12
	Deployment*Army	1.09 <sup>b</sup>	1.04-1.15	1.14 <sup>a</sup>	1.08-1.20	1.17 <sup>a</sup>	1.09-1.24	0.95	0.86-1.05	1.05	0.93-1.20
	Deployment*Navy	1.27 <sup>a</sup>	1.20-1.35	1.08 <sup>c</sup>	1.02-1.15	1.32 <sup>a</sup>	1.23-1.42	0.60 <sup>a</sup>	0.53-0.67	1.23 <sup>c</sup>	1.08-1.41

<sup>a</sup> $p < .0001$ .<sup>b</sup> $p < .001$ .<sup>c</sup> $p < .01$ .

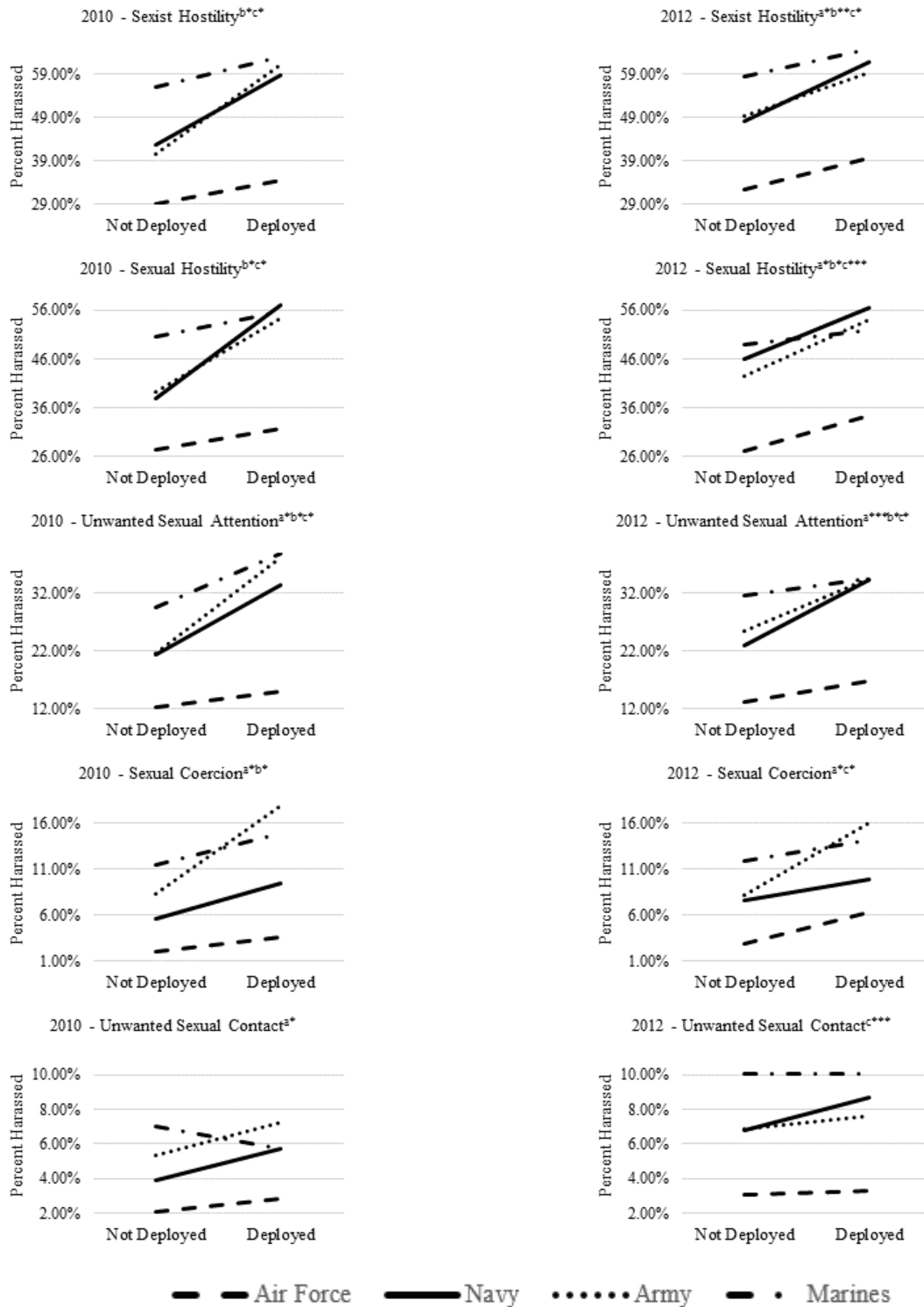


Figure 9. Interactive effects of masculinity in advertising on sexual harassment in 2010 and 2012.

<sup>a</sup>Interaction between Marines, Air Force, and deployment. <sup>b</sup>Interaction between Army, Air Force, and deployment. <sup>c</sup>Interaction between Navy, Air Force, and deployment. \* $p < .0001$ . \*\* $p < .001$ . \*\*\* $p < .01$ .

Table 11

*Logistic Regression of the Interactive Effects of Combat Masculinity and Deployment on Sexual Harassment*

	Sexist Hostility		Sexual Hostility		Unwanted Sexual Attention		Sexual Coercion		Unwanted Sexual Contact	
	Odds		Odds		Odds		Odds		Odds	
	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI
2010 Deployment	1.81 <sup>a</sup>	1.76-1.86	1.74 <sup>a</sup>	1.69-1.79	1.70 <sup>a</sup>	1.64-1.76	2.01 <sup>a</sup>	1.89-2.14	1.57 <sup>a</sup>	1.46-1.69
Masculinity: Combat	1.85 <sup>a</sup>	1.80-1.91	1.73 <sup>a</sup>	1.68-1.78	1.82 <sup>a</sup>	1.76-1.88	3.43 <sup>a</sup>	3.24-3.63	2.44 <sup>a</sup>	2.28-2.61
Deployment* Masculinity: Combat	0.97	0.93-1.03	0.98	0.93-1.03	1.27 <sup>a</sup>	1.20-1.34	1.11 <sup>d</sup>	1.01-1.22	0.77 <sup>a</sup>	0.69-0.87
2012 Deployment	1.57 <sup>a</sup>	1.53-1.62	1.51 <sup>a</sup>	1.47-1.56	1.62 <sup>a</sup>	1.56-1.68	1.72 <sup>a</sup>	1.63-1.83	1.29 <sup>a</sup>	1.21-1.37
Masculinity: Combat	1.84 <sup>a</sup>	1.79-1.89	1.56 <sup>a</sup>	1.52-1.60	1.97 <sup>a</sup>	1.91-2.03	2.23 <sup>a</sup>	2.12-2.34	1.89 <sup>a</sup>	1.80-2.00
Deployment* Masculinity: Combat	0.90 <sup>a</sup>	0.86-0.95	0.99	0.94-1.04	0.88 <sup>a</sup>	0.83-0.93	1.13 <sup>c</sup>	1.04-1.23	0.81 <sup>a</sup>	0.73-0.90

<sup>a</sup> $p < .0001$ .<sup>c</sup> $p < .01$ .<sup>d</sup> $p < .05$ .

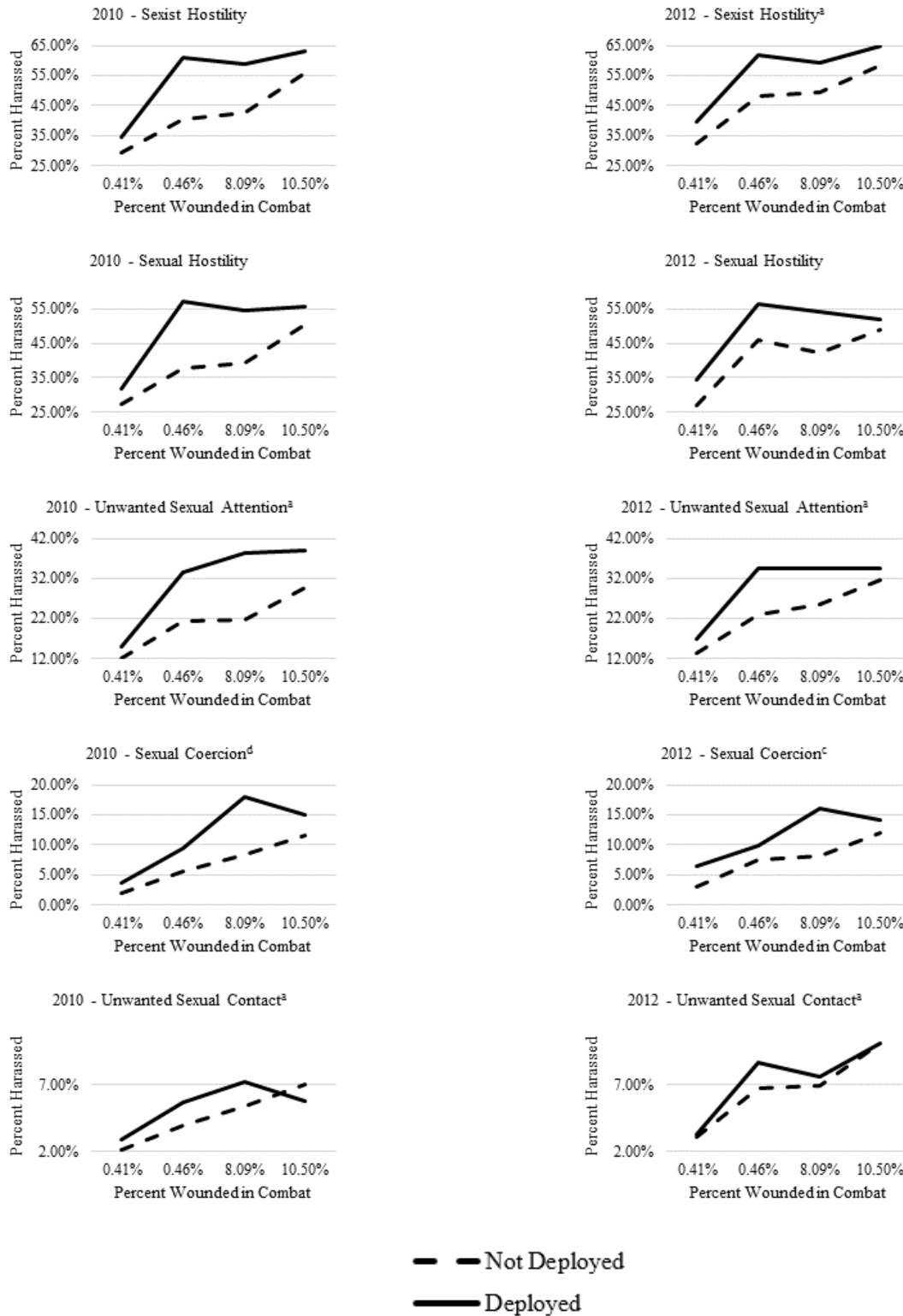


Figure 10. Interactive effects of combat masculinity and deployment on sexual harassment in 2010 and 2012.

<sup>a</sup> $p < .0001$ . <sup>c</sup> $p < .01$ . <sup>d</sup> $p < .05$ .

## Discussion

The relationship between the deployment of women in the military and sexual harassment has received very little research. In fact, to date, only one study has empirically compared sexual harassment of deployed versus non-deployed women (LeardMann et al., 2013). The present study was designed to provide a unique contribution to the literature by investigating the main effects of deployment and organizational factors (e.g., sex-ratio, masculinity, paygrade) as they relate to various types of sexual harassment. Additionally, this study provides insight into how deployment and organizational factors interact to affect the levels of sexual harassment experienced by females in the military.

### Main Effect of Deployment

The hypothesis that females who are deployed will be sexually harassed more than females who have not been deployed was strongly supported across the two survey years where deployment was reported (2010 and 2012). All five types of sexual harassment were more likely to occur when females were deployed. In both 2010 and 2012, approximately 49.2% to 55.0% (which converts to odds of 0.97 to 1.22 as shown in Table 3) of deployed females experienced sexist and sexual hostility as compared to 35.5% to 44.1% (converts to odds of 0.55 to 0.79) of non-deployed females. On the more severe end of sexual harassment, more than one in ten deployed females (odds of 0.14 and 0.13) were sexually coerced compared to about one in fifteen non-deployed females (odds of 0.06 and 0.07).

The reason for the increase in sexual harassment when deployed could be due to some of the other independent variables in the study that are related to deployment such as, sex-ratio (likely to be even more skewed in deployment), paygrade (fewer women in leadership positions), and culture of masculinity. However, the effects of deployment remain strong even when

controlling for the other independent variables. This suggests that there is something unique to being deployed which has an effect on sexual harassment. It is possible that the adoption of “battlemind” (Dunivin, 1994) during deployment results in changing mental and moral norms (Greene, Buckman, Dandeker, and Greenberg, 2010) that result in sexually harassing behaviors that wouldn’t have occurred otherwise. Soldiers who are deployed typically live in close quarters with one another where eating, sleeping, hygiene activities, and extracurricular activities all take place with the same group of individuals. This type of environment might increase the likelihood of workplace disagreements or injustices, which has been shown to result in an increase in workplace aggression (Baron, Neuman, and Geddes, 1999). Additionally, when women are deployed, they are more likely to be perceived as threat to the social status of those soldier who have typically been deployed in the past (i.e., men), which may result in aggressive behaviors from men (e.g., sexual harassment) in order to protect their sex-based social status (Berdahl, 2007a).

### **Main Effect of Sex Ratio**

Consistent with Hypothesis 2a, females were more likely to be sexually harassed when working with a higher percentage of male coworkers. This held true for both an objective measure (percent males in the organization) and a subjective measure (females uncommon in the workgroup), across all five types of sexual harassment. These results are in agreement with previous research which has demonstrated fairly consistently that sexual harassment increases as the percentage of males in the organization increases (Brown, 1998; European Commission, 1998; Gruber, 1992; Gutek, 1985; Gutek & Morasch, 1982; Kabat-Farr & Cortina, 2014; LaFontaine & Tredeau, 1986; Tangri, Burt & Johnson, 1982; Niebuhr & Boyles, 1991).

What is somewhat unique with the current study is the subjective measure of sex-ratio where respondents indicated whether they are in a workgroup where members of their gender are uncommon. With a subjective measure such as this there could potentially be two females who are in the same workgroup and yet provide differing responses to this question. Interestingly, some of the highest odds reported (see Table 3) for all types of sexual harassment occurred when respondents subjectively indicated that other females are uncommon in their workgroup. Garcia (2017) investigated the effects of perceived self-to-other similarity (i.e., how much you feel similar to another person) and found that perceived similarity mediates the effects of actual gender similarity of group members in regards to ratings of group solidarity and satisfaction. In other words, members of a group can be in a gender dissimilar group yet still identify strongly with the group.

It is possible that female soldiers who perceive themselves to be more like their male counterparts do not subjectively feel like their gender is uncommon in their workgroup, whereas females who are more traditionally feminine feel isolated in the same situation. Being traditionally more feminine may call attention and cause the person to stand out from the work group and become a target of sexual harassment. Indeed, women in the military have traditionally been expected to modify their behavior to conform to a masculine military culture (Tarrasch et al., 2010). Non-conformers will stand out among their coworkers, likely leading to adverse consequences. Jensen, Patel, and Raver (2014) conducted a study demonstrating that performance norm violators (i.e., high or low performers) are more likely to be targets of aggression from their coworkers. While being female does not make a person a high or low performer, standing out from the crowd (i.e., acting different than or being perceived as different than male soldiers) may make traditionally feminine soldiers targets for sexual harassment.

### **Main Effect of Paygrade**

The relationship between paygrade and sexual harassment was partially supported. The less severe forms for sexual harassment (i.e., sexist hostility and sexual hostility) were more likely to be directed at officers than females with an enlisted rank (see Table 4). However, the more severe forms of sexual harassment (i.e., unwanted sexual attention, sexual coercion, unwanted sexual contact) were more likely to be directed at enlisted females. This pattern in the data provide a clear distinction between verbal and physical forms sexual harassment. Berdahl's (2007a) theory of sexual harassment is that the underlying motive behind all sexual harassment is a desire to protect sex-based social status. Based on this theory, females who are officers threaten the social status of men within the military and therefore become targets for harassment, helping to reduce the male's feeling of inferiority (Lam, Van der Vegt, Walter, and Huang, 2011). However, based on the results it appears that it is too risky to engage in more severe or physical forms of sexual harassment towards officers, possibly because they have more access to resources and individuals capable of punishing potential sexual harassers. Enlisted female officers are less likely to have the ability to punish harassers, which may explain the crossover pattern in the data.

### **Main Effect of Organizational Climate**

Consistent with past research (Fitzgerald et al., 1995; Pryor, 1995; Welsh, 1999; Williams et al., 1999), the current study found a positive relationship between negative organizational climate ratings and sexual harassment. This relationship is not a new finding but does serve to support past research and further spotlight the need for the military to foster a positive organizational climate. Leaders and teams play a critical role in shaping the climate of an organization (Schneider, Gonzalez-Roma, Ostroff, and West, 2017). Given the group



structure and hierarchical nature of military organizations, significant improvement in sexual harassment may be realized by focused interventions aimed at improving these two areas.

### **Main Effect of Masculinity**

Masculinity as measured by advertising and masculinity as measured by the percentage of soldiers wounded in combat were both positively related with sexual harassment. The more masculine the organization is, the more likely a female is to experience all types of sexual harassment. What is clear from the masculinity results is that the Air Force is clearly a step above the other three DoD organizations when it comes to odds of females being sexually harassed. The odds of every type of sexual harassment in the Air Force are generally lower, and lower by half or more compared to the next best organization. The lower rates of sexual harassment are supported by an analysis of advertisements put out by the Air Force, which are the least likely of any DoD organization to promote the traditional warrior masculinity (Brown, 2012). The marines are the most likely to promote traditional warrior masculinity and they had the greatest odds of almost every type of sexual harassment in all three survey years. It seems that the military organizations are getting what they have asked for. People looking for employment tend to be attracted to advertisements that are congruent with their existing image of the organization (Baum, Schafer, and Kabst, 2016) and the military organizations that promote a more traditional masculinity were more likely to have greater odds of sexual harassment amongst females.

Just as with masculinity in advertising, as the likelihood of being wounded in combat increases, so do the odds of a female being sexually harassed. If new recruits are aware of which military organizations are doing more of the traditional fighting, individuals who are more traditionally masculine may self-select into these organizations at a higher rate. This may serve

to perpetuate the current high levels of sexual harassment (Saunders and Easteal, 2013). Military organizations that are more likely to send soldiers into combat are also more likely to promote a traditionally masculine image in advertising, which appears to attract males who are more traditionally masculine, which in turn results in higher levels of sexual harassment.

It is also possible that the requirements for entry into each branch of the military have an effect on sexual harassment. The Armed Services Vocational Aptitude Battery (ASVAB) is administered to all individuals seeking to enlist in the military and is designed to measure the general cognitive ability of military recruits (ASVAB, 2018). Each military branch sets their own standard regarding the minimum score recruits must obtain to be eligible for enlistment. The Air Force has the highest standard, followed by the Navy, then the Marines, and Army with the lowest score requirement (Military.com, 2018). The higher ASVAB standards in the Air Force and Navy may be due to the greater likelihood of more technical training of individuals in these military branches (Teachman, 2007). The ASVAB score requirements for each branch of the military are negatively correlated with the odds of female sexual harassment. That is, the ASVAB score requirement is highest for the Air Force, which is where the odds of sexual harassment are also the lowest. Conversely, the ASVAB score requirements for the Marines and Army are the lowest and these are the two branches with the highest odds of sexual harassment (see Table 3). Previous research has found a negative correlation between intelligence and anger (Zajenkowski and Zajenkowska, 2015), which may contribute towards the greater amounts of sexual harassment in military branches with lower ASVAB score requirements.

### **Interactive Effects of Deployment and Other Organizational Dynamics**

While the main effects resulted in consistent findings across all hypotheses, the majority of interactions were inconsistent and inconclusive. However, two interactions resulted in a

reliable pattern of significant differences across the 2010 and 2012 survey years. First, the interactions between paygrade and deployment in all but one case were significant. Females with an officer rank experienced a larger proportional (i.e., odds ratio) increase in sexual harassment than females with an enlisted rank. As can be seen in Figure 5, there is a crossover pattern in the percentage of females who experienced sexist and sexual hostility by rank. Specifically, the percentage of non-deployed females who experience sexist and sexual hostility is greater for enlisted soldiers, but when females are deployed, the percentage of officers who experience sexist and sexual hostility exceeds that of enlisted soldiers. For unwanted sexual attention, sexual coercion, and unwanted sexual contact, the percentages are always greater for enlisted soldiers than officers regardless of deployment status. However, the proportional increase is always greater for officers when moving from non-deployment to deployment (see Table 7). In summary, higher ranking females who were deployed experienced greater proportional increases in all types of sexual harassment when compared to lower ranking females.

It is possible that the deployment of females magnifies the perception of threat in the eyes of male soldiers (Berdahl, 2007a). Male soldiers may see deployment as one of the few places where men can be men, and when females start to invade this space, particularly at the officer ranks, it results in more incidences of sexual harassment.

The second interaction that resulted in a consistent pattern of differences was the interaction of deployment with masculinity in advertising. The Navy and Army had greater proportional increases in almost all types of sexual harassment when moving from non-deployment to deployment compared to the proportional increases in the Air Force (see Table 10 and Figure 9). Essentially, when moving from non-deployment to deployment, the Navy and

Army distance themselves from the Air Force and become more like the Marines. The Marines on the other hand tend to have high rates of sexual harassment regardless of deployment status. It is as if there is a ceiling effect with the Marines where the levels of sexual harassment are already high in non-deployment situations, making it difficult to get much worse in deployment, thereby resulting in a closing of the gap by the Navy and Army.

It may be that the dynamics of deployment are significantly different for the Marines, Army, and Navy compared to the Air Force, which results in the interaction effects. The Marines and Army are more likely to be engaged in ground combat where they live in close quarters. Similarly, deployment in the Navy is likely to involve some type of ship where individuals also live in close quarters. As previously discussed, there are significantly more males in the military, and this becomes even more pronounced in deployment. Living in close quarters with a high percentage of males is likely to result in more traditionally masculine culture. It is possible that deployment in the Air Force is a vastly different experience, helping to explain the interaction effects in the current study.

### **Study Limitations and Future Research**

While the current study has provided a valuable contribution to the investigation of sexual harassment, it is not without limitations. The variable of deployment used in the current study was not able to differentiate between females who were deployed to combat zones versus females who were deployed to non-combat zones throughout the world. This information was collected as part of the surveys; however, it was not made available in the public use dataset. Future studies would benefit from evaluating the relationship between women deployed to frontline combat roles and odds of sexual harassment.

The current study found that deployed females were more likely to experience all types of sexual harassment. It would be valuable to understand how the relationship between deployment and sexual harassment changes as more women are in combat zones. It may be that as more women are introduced to traditionally male roles in traditionally male cultures, it will serve to reduce levels of harassment of deployed females in the long run (Allport, 1954). Longitudinal studies investigating the change in the odds of sexual harassment of deployed females would prove beneficial.

Another limitation of the current study is a lack of quantitative information regarding the number of times a person has experienced each type of sexual harassment. The current study merely asked individuals to indicate whether they had experienced each type of harassment within the past twelve months. Thus, the individual who was told one sexist joke is categorized the same as the individual who was told hundreds of sexist jokes. Having a measure of quantity could help to further understand the relationship of the different types of sexual harassment with predictors of sexual harassment.

Within the four major DoD organizations, the Air Force clearly stands out as the best in terms of lower amounts of sexual harassment. It would be valuable to understand how the Air Force differs from the other DoD organizations and if there are strategies the Marines, Army, and Navy can implement that would reduce their levels of sexual harassment.

Lastly, future research should evaluate if sexual harassment can be reduced in the military while still maintaining a traditionally masculine cultural identity. Masculinity may not be an either/or scenario where a person must rid themselves of traditional masculinity in order to not sexually harass females. Can a person espouse a traditional masculine role, temporarily set aside societal norms when in combat (e.g., not killing other people), and refrain from sexually

harassing others? Masculinity has always played a central role in the military (Hale, 2012) and has even been referred to as the “cementing principle” of military life (Harrison, 2003, p. 75). Given the centrality of masculinity in the military, it may be beneficial to investigate how to embrace masculinity or aspects of masculinity and reduce the incidences of sexual harassment.

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## Appendix A

**Ranks of Active Duty Members who Participated in the Study**

	<b>Marines</b>	<b>Army</b>	<b>Navy</b>	<b>Air Force</b>
E-1	Private	Private	Seaman Recruit	Airman Basic
E-2	Private Second Class	Private First Class	Seaman Apprentice	Airman
E-3	Private First Class	Lance Corporal	Seaman	Airman First Class
E-4	Corporal	Corporal	Petty Officer, Third Class	Senior Airman
E-5	Sergeant	Sergeant	Petty Officer, Second Class	Staff Sergeant
E-6	Staff Sergeant	Staff Sergeant	Petty Officer, First Class	Technical Sergeant
E-7	Sergeant First Class	Gunnery Sergeant	Chief Petty Officer	Master Sergeant
E-8	Master Sergeant	Master Sergeant	Senior Chief Petty Officer	Senior Master Sergeant
E-9	Sergeant Major	Sergeant Major	Master Chief Petty Officer	Chief Master Sergeant
W-1	Warrant Officer	Warrant Officer	--	--
W-2 to W-5	Chief Warrant Officer	Chief Warrant Officer	Chief Warrant Officer	--
O-1	Second Lieutenant	Second Lieutenant	Ensign	Second Lieutenant
O-2	First Lieutenant	First Lieutenant	Lieutenant, Junior Grade	First Lieutenant
O-3	Captain	Captain	Lieutenant	Captain
O-4	Major	Major	Lieutenant Commander	Major
O-5	Lieutenant Colonel	Lieutenant Colonel	Commander	Lieutenant Colonel
O-6	Colonel	Colonel	Captain	Colonel

Appendix B

**Dependent Variables**

In this question you are asked about sex/gender-related talk and/or behavior that was unwanted, uninvited, and in which you did not participate willingly. How often during the past 12 months have you been in situations involving

- Military Personnel (Active Duty or Reserve)
  - on- or off-duty
  - on- or off-installation or ship; and/or
- DoD/Service Civilian Employees and/or Contractors
  - in your workplace or on your installation/ship where one or more of these individuals (of either gender)...

*Mark one answer for each item.*

	Very Often				
	Often				
	Sometimes				
	Once or twice				
	Never				
<b>Sexist Hostility: DV1</b>					
Referred to people of your gender in insulting or offensive terms?					
Treated you "differently" because of your gender (e.g., mistreated, slighted, or ignored you)?					
Made offensive sexist remarks (e.g., suggesting that people of your gender are not suited for the kind of work you do)?					
Put you down or was condescending to you because of your gender?					
<b>Sexual Hostility: DV2</b>					
Repeatedly told sexual stories or jokes that were offensive to you?					
Made unwelcome attempts to draw you into a discussion of sexual matters (e.g., attempted to discuss or comment on your sex life)?					
Made offensive remarks about your appearance, body, or sexual activities?					
Made gestures or used body language of a sexual nature that embarrassed or offended you?					
<b>Unwanted Sexual Attention: DV3</b>					
Made unwanted attempts to establish a romantic sexual relationship with you despite your efforts to discourage it?					

In this question you are asked about sex/gender-related talk and/or behavior that was unwanted, uninvited, and in which you did not participate willingly. How often during the past 12 months have you been in situations involving

- Military Personnel (Active Duty or Reserve)
  - on- or off-duty
  - on- or off-installation or ship; and/or
- DoD/Service Civilian Employees and/or Contractors
  - in your workplace or on your installation/ship where one or more of these individuals (of either gender)...

*Mark one answer for each item.*

	Very Often			
	Often			
	Sometimes			
	Once or twice			
	Never			
Continued to ask you for dates, drinks, dinner, etc., even though you said "No"?				
Touched you in a way that made you feel uncomfortable?				
Intentionally cornered you or leaned over you in a sexual way?				
Made sexually suggestive comments, gestures, or looks (e.g., stared at your body)?*				
<b>Sexual Coercion: DV4</b>				
Made you feel like you were being bribed with some sort of reward or special treatment to engage in sexual behavior?				
Made you feel threatened with some sort of retaliation for not being sexually cooperative (for example, by mentioning an upcoming review)?				
Treated you badly for refusing to have sex?				
Implied faster promotions or better treatment if you were sexually cooperative?				

\*This item was eliminated from the 2010 and 2012 SEQ-DoD-s surveys due to conceptual and psychometric problems (DMDC, 2006b).

<b>Unwanted Sexual Contact: DV5*</b>	Yes	Yes, multiple times**	No
<p>In the past 12 months, have you experienced any of the following intentional sexual contacts that were against your will or occurred when you did not or could not consent where someone...</p> <p>Sexually touched you (e.g., intentional touching of genitalia, breasts, or buttocks) or made you sexually touch them?</p> <ul style="list-style-type: none"> <li>• Attempted to make you have sexual intercourse, but was not successful?</li> <li>• Made you have sexual intercourse?</li> <li>• Attempted to make you perform or receive oral sex, anal sex, or penetration by a finger or object, but was not successful?</li> <li>• Made you perform or receive oral sex, anal sex, or penetration by a finger or object?</li> </ul>			

\*This item is not part of the SEQ-DoD-s and was included to assess sexual assault in military organizations.

\*\* This answer option was only provided in the 2006 survey. Additionally, the Yes option in 2006 stated “Yes, once” (DMDC, 2006a).

## Appendix C

**Independent Variables**

*Unless indicated otherwise, the independent variable was identical for the 2006, 2010, and 2012 survey administrations.*

**Deployment: IV1**

In the past 12 months, have you been deployed for any of the following operations?	Yes, and I am still deployed for this operation	Yes, but I am no longer deployed for this operation	No
Operation Noble Eagle			
Operation Enduring Freedom			
Operation Iraqi Freedom			
Other			

\*This scale was included in the 2006 survey but was not included in the public use dataset and therefore any analysis involving deployment will exclude the 2006 dataset.

**Sex-ratio: IV2a**

<b>Percent Female</b>			
	<b>2006</b>	<b>2010</b>	<b>2012</b>
<b>Marines</b>	6.18%	6.67%	7.07%
<b>Army</b>	14.10%	13.46%	13.41%
<b>Navy</b>	14.52%	15.93%	16.51%
<b>Air Force</b>	19.66%	19.23%	18.93%

**Sex-ratio: IV2b**

Are you currently in a work environment where members of your gender are uncommon?

- Yes
- No

**Paygrade: IV3**

2006 and 2010 Survey Options

- Enlisted Military Member
- Officer

2012 Survey Options

- Enlisted Military Member Paygrade E1 to E4
- Enlisted Military Member Paygrade E5 to E9
- Officer Paygrade W1 to W5 and O1 to O6

**Organizational tolerance of sexual harassment: IV4a**

2006 and 2010 Survey Options

In your work group, to what extent... <i>Mark one answer for each item.</i>				
	Very large extent			
	Large extent			
	Moderate extent			
	Small extent			
	Not at all			
Would members of your work group feel free to report <u>sexual harassment</u> without fear of reprisals? <i>(Reverse-coded)</i>				
Would members of your work group feel free to report <u>sexual assault</u> without fear of reprisals? <i>(Reverse-coded)</i>				
Would complaints about <u>sexual harassment</u> be taken seriously no matter who files them? <i>(Reverse-coded)</i>				
Would people be able to get away with <u>sexual harassment</u> if it was reported?				
Would people be able to get away with <u>sexual assault</u> if it was reported?				

2012 Survey Options

In an effort to prevent sexual assault, please indicate how well your unit leadership... <i>Mark one answer for each item.</i>				
	Very poorly			
	Poorly			
	Neither well nor poorly			
	Well			
	Very well			
Makes it clear that sexual assault has no place in the military. <i>(Reverse-coded)</i>				
Promotes a unit climate based on mutual respect and trust. <i>(Reverse-coded)</i>				
Leads by example (e.g., refrains from sexist comments and behaviors). <i>(Reverse-coded)</i>				
Catches and immediately corrects incidents of sexual harassment (e.g., inappropriate jokes, comments, and behaviors). <i>(Reverse-coded)</i>				
Creates and environment where victims would feel comfortable reporting. <i>(Reverse-coded)</i>				

**Leadership Satisfaction: IV4b**

To what extent do you agree or disagree with the following statements about your work group?  
*Mark one answer for each item.*

	Strongly agree				
	Agree				
	Neither agree nor disagree				
	Disagree				
	Strongly disagree				
The leaders in your work group are more interested in looking good than being good. <i>(Reverse-coded)</i>					
The leaders in your work group are not concerned with the way Service members treat each other as long as the job gets done. <i>(Reverse-coded)</i>					
You would go for help with a personal problem to people in your chain-of-command.					
The leaders in your work group are more interested in furthering their careers than in the well-being of their Service members. <i>(Reverse-coded)</i>					

**Supervisor Satisfaction: IV4c**

How much do you agree or disagree with the following statements about your supervisor?  
*Mark one answer for each item.\**

	Strongly agree				
	Agree				
	Neither agree nor disagree				
	Disagree				
	Strongly disagree				
You trust your supervisor.					
Your supervisor ensures that all assigned personnel are treated fairly.					
There is very little conflict between your supervisor and the people who report to him/her.					
Your supervisor evaluates your work performance fairly.					
Your supervisor assigns work fairly in your work group.					
You are satisfied with the direction/supervision you receive.					

\*This scale was included in the 2006 survey but was not included in the public use dataset and therefore any analysis involving supervisor satisfaction will exclude the 2006 dataset.



**Coworker Satisfaction: IV4d**

How much do you agree or disagree with the following statements about the people in your work group? <i>Mark one answer for each item.*</i>				
			Strongly agree	
			Agree	
	Neither agree nor disagree			
	Disagree			
	Strongly disagree			
There is very little conflict among your coworkers.				
Your coworkers put in the effort required for their jobs.				
The people in your work group tend to get along.				
The people in your work group are willing to help each other.				
You are satisfied with the relationships you have with your coworkers.				

\*While the statements were identical in all three survey years, the instructions for the 2006 survey were slightly different. They stated “How much do you agree or disagree with the following statements about the people you work with at your workplace?”

**Work Satisfaction: IV4e**

How much do you agree or disagree with the following statements about the work you do at your workplace? <i>Mark one answer for each item.</i>				
			Strongly agree	
			Agree	
	Neither agree nor disagree			
	Disagree			
	Strongly disagree			
Your work provides you with a sense of pride.				
Your work makes good use of your skills.				
You like the kind of work you do.				
Your job gives you the chance to acquire valuable skills.				
You are satisfied with your job as a whole.				

**Advertising Masculinity: IV5a**

Rank order of Advertising Masculinity:

1. Marines
2. Army
3. Navy
4. Air Force

**Combat Masculinity: IV5b**

Combat Masculinity based on Wounded in Action:

	Wounded in Action	
	#	%
Marines	12,891	10.50%
Army	32,602	8.09%
Navy	961	0.46%
Air Force	792	0.41%

## Appendix D

## Correlations of Percent Male and Masculinity Variables

*Correlations among Select Independent Variables*

Independent Variable		1	2	3
2006	1. Percent Male			
	2. Masculinity: Advertising	.917*		
	3. Masculinity: Combat	.710*	.912*	
2010	1. Percent Male			
	2. Masculinity: Advertising	.968*		
	3. Masculinity: Combat	.857*	.915*	
2012	1. Percent Male			
	2. Masculinity: Advertising	.968*		
	3. Masculinity: Combat	.896*	.913*	

\*Correlation is significant at the .01 level

## Appendix E

## Logistic Regressions for All Organizational Climate Independent Variables

*Seventy Single Predictor Logistic Regressions for Five Types of Sexual Harassment in the Military with Five Organizational Climate Independent Variables in 2006, 2010, and 2012*

		Sexist Hostility		Sexual Hostility		Unwanted Sexual Attention		Sexual Coercion		Unwanted Sexual Contact	
		Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI
Org. Tolerance Sexual Harass.	2006	2.27 <sup>a</sup>	2.25-2.30	2.17 <sup>a</sup>	2.14-2.19	2.15 <sup>a</sup>	2.13-2.18	3.30 <sup>a</sup>	3.24-3.37	2.48 <sup>a</sup>	2.43-2.53
	2010	1.98 <sup>a</sup>	1.96-2.00	1.93 <sup>a</sup>	1.91-1.95	2.20 <sup>a</sup>	2.17-2.23	3.13 <sup>a</sup>	3.07-3.20	2.41 <sup>a</sup>	2.35-2.47
	2012	2.87 <sup>a</sup>	2.83-2.90	2.75 <sup>a</sup>	2.72-2.78	2.26 <sup>a</sup>	2.23-2.29	2.57 <sup>a</sup>	2.53-2.61	1.97 <sup>a</sup>	1.94-2.01
Coworker Dissatisfaction	2006	1.76 <sup>a</sup>	1.74-1.78	1.80 <sup>a</sup>	1.78-1.82	1.69 <sup>a</sup>	1.67-1.71	2.05 <sup>a</sup>	2.02-2.08	1.64 <sup>a</sup>	1.61-1.67
	2010	1.87 <sup>a</sup>	1.85-1.90	1.85 <sup>a</sup>	1.83-1.87	1.80 <sup>a</sup>	1.78-1.83	2.24 <sup>a</sup>	2.20-2.28	1.66 <sup>a</sup>	1.63-1.70
	2012	2.05 <sup>a</sup>	2.03-2.08	2.04 <sup>a</sup>	2.01-2.06	1.83 <sup>a</sup>	1.80-1.85	2.16 <sup>a</sup>	2.12-2.20	1.69 <sup>a</sup>	1.66-1.73
Leader Dissatisfaction	2006	1.74 <sup>a</sup>	1.73-1.76	1.66 <sup>a</sup>	1.65-1.68	1.64 <sup>a</sup>	1.63-1.66	2.15 <sup>a</sup>	2.08-2.15	1.47 <sup>a</sup>	1.45-1.50
	2010	1.74 <sup>a</sup>	1.73-1.76	1.69 <sup>a</sup>	1.68-1.71	1.70 <sup>a</sup>	1.68-1.72	2.09 <sup>a</sup>	2.05-2.13	1.73 <sup>a</sup>	1.69-1.77
	2012	1.75 <sup>a</sup>	1.74-1.77	1.76 <sup>a</sup>	1.74-1.78	1.68 <sup>a</sup>	1.67-1.70	2.04 <sup>a</sup>	2.01-2.08	1.70 <sup>a</sup>	1.67-1.73
Supervisor Dissatisfaction	2010	1.65 <sup>a</sup>	1.64-1.67	1.59 <sup>a</sup>	1.58-1.61	1.57 <sup>a</sup>	1.55-1.58	1.78 <sup>a</sup>	1.76-1.81	1.53 <sup>a</sup>	1.50-1.56
	2012	1.72 <sup>a</sup>	1.71-1.74	1.69 <sup>a</sup>	1.58-1.71	1.58 <sup>a</sup>	1.56-1.59	1.80 <sup>a</sup>	1.77-1.82	1.56 <sup>a</sup>	1.54-1.58
Work Dissatisfaction	2006	1.58 <sup>a</sup>	1.57-1.60	1.56 <sup>a</sup>	1.54-1.57	1.43 <sup>a</sup>	1.42-1.44	1.61 <sup>a</sup>	1.59-1.63	1.28 <sup>a</sup>	1.26-1.30
	2010	1.55 <sup>a</sup>	1.53-1.56	1.50 <sup>a</sup>	1.49-1.52	1.51 <sup>a</sup>	1.50-1.53	1.61 <sup>a</sup>	1.59-1.64	1.50 <sup>a</sup>	1.48-1.54
	2012	1.61 <sup>a</sup>	1.59-1.62	1.57 <sup>a</sup>	1.56-1.59	1.44 <sup>a</sup>	1.42-1.45	1.58 <sup>a</sup>	1.56-1.61	1.37 <sup>a</sup>	1.35-1.40

*Note.* Dissatisfaction with Supervisor was not included in the 2006 public use dataset.

<sup>a</sup> $p < .0001$ .

*Fourteen Multiple Predictor Logistic Regressions for Five Types of Sexual Harassment in the Military with Five Organizational Climate Independent Variables in 2006, 2010, and 2012*

		Sexist Hostility		Sexual Hostility		Unwanted Sexual Attention		Sexual Coercion		Unwanted Sexual Contact	
		Odds		Odds		Odds		Odds		Odds	
		Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI	Ratio	95% CI
2006	Org. Tolerance Sexual Harass.	1.89 <sup>a</sup>	1.87-1.92	1.83 <sup>a</sup>	1.81-1.86	1.85 <sup>a</sup>	1.83-1.88	2.66 <sup>a</sup>	2.60-2.72	2.35 <sup>a</sup>	2.29-2.40
	Coworker Dissatisfaction	1.20 <sup>a</sup>	1.19-1.22	1.31 <sup>a</sup>	1.29-1.33	1.23 <sup>a</sup>	1.21-1.24	1.32 <sup>a</sup>	1.29-1.34	1.25 <sup>a</sup>	1.22-1.28
	Leader Dissatisfaction	1.16 <sup>a</sup>	1.15-1.17	1.07 <sup>a</sup>	1.06-1.09	1.11 <sup>a</sup>	1.10-1.13	1.18 <sup>a</sup>	1.15-1.20	0.96 <sup>c</sup>	0.94-0.99
	Work Dissatisfaction	1.21 <sup>a</sup>	1.20-1.23	1.20 <sup>a</sup>	1.19-1.22	1.11 <sup>a</sup>	1.10-1.13	1.11 <sup>a</sup>	1.09-1.13	0.96 <sup>a</sup>	0.94-0.98
2010	Org. Tolerance Sexual Harass.	1.67 <sup>a</sup>	1.65-1.69	1.63 <sup>a</sup>	1.61-1.65	1.90 <sup>a</sup>	1.87-1.92	2.53 <sup>a</sup>	2.47-2.59	2.15 <sup>a</sup>	2.09-2.21
	Coworker Dissatisfaction	1.35 <sup>a</sup>	1.33-1.37	1.36 <sup>a</sup>	1.34-1.38	1.31 <sup>a</sup>	1.29-1.33	1.51 <sup>a</sup>	1.47-1.55	1.15 <sup>a</sup>	1.12-1.19
	Leader Dissatisfaction	1.14 <sup>a</sup>	1.13-1.16	1.15 <sup>a</sup>	1.13-1.16	1.09 <sup>a</sup>	1.07-1.10	1.14 <sup>a</sup>	1.11-1.17	1.03	1.00-1.07
	Supervisor Dissatisfaction	1.13 <sup>a</sup>	1.12-1.15	1.09 <sup>a</sup>	1.07-1.10	1.05 <sup>a</sup>	1.04-1.07	1.06 <sup>a</sup>	1.04-1.08	1.05 <sup>a</sup>	1.02-1.08
	Work Dissatisfaction	1.17 <sup>a</sup>	1.15-1.18	1.14 <sup>a</sup>	1.12-1.15	1.14 <sup>a</sup>	1.13-1.16	1.07 <sup>a</sup>	1.05-1.09	1.18 <sup>a</sup>	1.15-1.21
2012	Org. Tolerance Sexual Harass.	2.34 <sup>a</sup>	2.31-2.38	2.26 <sup>a</sup>	2.23-2.30	1.96 <sup>a</sup>	1.93-1.98	2.04 <sup>a</sup>	2.00-2.08	1.67 <sup>a</sup>	1.63-1.71
	Coworker Dissatisfaction	1.34 <sup>a</sup>	1.32-1.36	1.34 <sup>a</sup>	1.32-1.36	1.26 <sup>a</sup>	1.24-1.29	1.37 <sup>a</sup>	1.33-1.40	1.22 <sup>a</sup>	1.18-1.25
	Leader Dissatisfaction	1.05 <sup>a</sup>	1.04-1.07	1.06 <sup>a</sup>	1.05-1.08	1.06 <sup>a</sup>	1.04-1.07	1.13 <sup>a</sup>	1.10-1.16	1.17 <sup>a</sup>	1.14-1.20
	Supervisor Dissatisfaction	1.04 <sup>a</sup>	1.02-1.05	1.03 <sup>a</sup>	1.01-1.04	1.02 <sup>c</sup>	1.01-1.04	1.04 <sup>a</sup>	1.02-1.06	1.01	0.98-1.03
	Work Dissatisfaction	1.09 <sup>a</sup>	1.08-1.11	1.09 <sup>a</sup>	1.07-1.10	1.03 <sup>a</sup>	1.01-1.04	1.03 <sup>c</sup>	1.01-1.05	0.97 <sup>c</sup>	0.95-0.99

*Note.* Dissatisfaction with Supervisor was not included in the 2006 public use dataset.

<sup>a</sup> $p < .0001$ .

<sup>c</sup> $p < .01$ .