

Bias and discrimination against men with overweight in the military

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Abstract

Research on weight-bias against men and/or in the military is scarce. Such a bias might cause some military members, who are otherwise fit to perform their duties, to suffer from discrimination and undue stress. We showed military personnel a picture of a soldier who had either normal weight or overweight. In both conditions, the description of the soldier stated that his physical fitness and job-related skills were good. Nonetheless, the soldier's suitability for promotion was rated lower in the overweight condition. These findings improve our understanding of the impact of bias on the mental and physical health of men with overweight.

Keywords

discrimination, eating behaviors, eating disorders, gender, health psychology, male, military, obesity, overweight, stigma, weight bias

The term *weight bias* refers to the negative beliefs, attitudes, and behaviors directed at individuals because they have overweight or obesity (Puhl et al., 2007). Individuals with overweight or obesity are often stereotyped as being lazy, less competent, or lacking in self-control compared to individuals with normal weight (Fikkan and Rothblum, 2005; Olson et al., 2018). Some researchers have argued that weight bias and discrimination are akin to and comparable with racism and sexism (Crandall, 1994; O'Brien et al., 2013). Weight bias has been reported in various settings, including education and healthcare, but the strongest evidence of bias is seen in employment settings (Durso et al., 2016; Puhl and Heuer, 2009). Meta-analysis (Rudolph et al., 2009) and reviews (Giel et al., 2010; Puhl and Heuer, 2009) have found that individuals with overweight encounter barriers to employment, lower wages, denial of promotions, and being targeted for pejorative humor and comments from co-workers.

Weight bias in the workplace is often thought to affect women more than men. Indeed, many studies on this topic have only studied women as the targets of such bias (e.g., Ding and Stillman, 2005; Kutcher and Bragger, 2004; O'Brien et al., 2013). Studies that examined both male and female targets have yielded mixed findings with respect to such gender differences. While some have argued that women suffer negative consequences due to overweight

more than men do (e.g., Puhl et al., 2008; Roehling et al., 2007; Sattler et al., 2018), a meta-analysis has found that women and men with overweight are affected to a similar extent by such bias (Roehling et al., 2013). Recently, a population study of men found that reports of weight stigma were quite common (Himmelstein et al., 2018). Nonetheless, the scarcity of controlled experiments with male targets and the need to study the impact of weight bias on men have both been noted (Himmelstein et al., 2019; Puhl and Heuer, 2009). The present study focuses on weight bias against men in a traditionally masculine setting: the military.

The United States Armed Forces require service members to maintain physical fitness in order to increase their combat effectiveness and reduce their risk of injuries (Department of the Army, 2012; Mala et al., 2015; Naghii, 2006). In addition to physical fitness standards (e.g., required numbers of repetitions of push-ups and sit-ups, or time to complete a two-mile run), service members are expected to maintain weight-per-height standards and

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maximum allowable body-fat percentages (Department of the Army, 2013). Failure to meet these standards (regardless of physical fitness test scores) can result in negative consequences, such as forced enrollment into a body composition program, denial of career advancement opportunities, and separation from service (Department of the Army, 2016a, 2016b).

Given the physical demands associated with military service, the need to enforce such standards is understandable. However, the military culture also gives rise to norms that favor lean or muscular appearances, regardless of actual physical fitness, Body Mass Index (BMI), or fat percentage (Gunderson, 1965; Martin et al., 2016). The Army Body Composition Program lists among its goals to ensure that service members present a “*soldierly appearance* at all times” (Department of the Army, 2013). “Soldierly appearance” has no clear definition, and is hence a subjective term that might incorporate stigma and bias. Furthermore, the governing regulation gives unit commanders authorization to assess an individual’s current weight and/or body fat percentage based on appearance alone (Department of the Army, 2013; Naghii, 2006). This enables commanders and leaders to bring their personal biases into action. For example, senior leaders at the US Army War College have been shown to associate overweight appearance with poor leadership skills, lack of self-discipline, and low ability to mentor subordinates (McCowen, 2003). Therefore, service members with overweight might be negatively evaluated by leaders in domains unrelated to physical fitness. Moreover, service members who are physically fit, but *appear* to have overweight, may also be perceived negatively by their leaders.

Weight bias and the increased scrutiny it causes might affect service members in various ways. In one study, US Army soldiers with overweight have reported consequences beyond what may be reasonably expected to maintain readiness for combat (e.g., remedial physical training, daily weigh-ins), such as denial of career advancement opportunities and being called pejorative nicknames (Schvey et al., 2017). However, this study was conducted on soldiers who had been identified as having overweight or obesity according to their BMI and body-fat percentage (that is, not solely based on appearance). Moreover, an individual’s self-reported reasons for negative outcomes in the workplace, such as not being promoted, may be skewed. Therefore, further research is needed in order to assess the unjustified impact of overweight appearance in the military. The present study aims to address this goal through a controlled experiment.

The clinical implications of weight bias in the military can be severe. The military population is at elevated risk for unsafe dieting behaviors, eating disorders, and mood disorders (Bodell et al., 2014; Litwack et al., 2014; Pearlstein, 2002). Bulimia nervosa rates, as well as the use of laxatives, fasting, and purging, are reportedly higher in the military than in the civilian population (McNulty, 1997). As reasons

for such behaviors, service members often indicate not only the need to maintain fitness or body composition standards, but also wanting to avoid harassment from commanders (Institute of Medicine, 2004). Shifts in body weight can also be due to the unique hardships associated with the military service. For example, service members who have faced food insecurity (inability to reliably attain food) during their service, such as members of reconnaissance units and participants in special operations, are at heightened risk for binge eating disorder (Smith et al., 2009). Binge eating has also been associated with mental-health issues that many service members face, such as depression, posttraumatic stress disorder (PTSD), and general stress (Hoerster et al., 2015; Rosenberger and Dorflinger, 2013). Finally, it has recently been suggested that military-specific weight stigma has implications on physical health (Shank et al., 2019). The increased scrutiny and negative repercussions that result from weight bias may well cause stress, and further exacerbate these problems.

The present study’s primary goal was to test whether active-duty military personnel would give lower evaluations to the professional abilities of a soldier when he appears to have overweight, compared to when he appears to have normal weight. Next, we considered the effect of gender. Gender has been suggested to play a role in the negative judgement of individuals with overweight (Puhl et al., 2008; Roehling et al., 2007; Sattler et al., 2018). Some studies have found that men tend to evaluate individuals with overweight more negatively than women do (e.g., Lieberman et al., 2012). Therefore, we examined whether male and female military personnel would differ in their rating of the target soldier, and whether the respondents’ gender would moderate the effect of the target soldier’s appearance (overweight or normal weight). Finally, we examined whether military service-related factors, such as length of service, rank, and force structure (combat arms, combat support, or combat service support) would moderate the effect of the target soldier’s appearance.

Methods

Participants

A total of 134 active-duty US service members participated (99 male, 34 female, 1 other; this gender distribution is typical of the U.S. Armed Forces (Department of Defense, 2015). They were recruited using an ad posted on Facebook group pages associated with the military. The ad contained information about the inclusion criteria (active-duty military members, aged 18 and above) and a link to the study materials on Survey Monkey, a website that serves as an online platform for data collection and analysis. The ad also informed participants that per every complete questionnaire, \$1.50 will be donated to a non-profit that supports the families of military members and veterans.

Materials and measures

Vignette and photographs. Participants read a vignette that portrayed a soldier whose test scores and accomplishments met the requirements for promotion in the US armed forces, but did not exceed these requirements considerably. This was done in order to depict a target-person who is similar to the majority of service members at his level of experience. The vignette included the following language.

“Tyler is preparing for the promotion board set to occur in two months. He passed his last Army Physical Fitness Test with a total score of 251 out of 300. His event scores were 64 push-ups for 87 points, 68 sit-ups for 84 points, and 14:48 2-mile run for 80 points. He graduated four months ago from the Basic Leaders Course on the Commandant’s List. Tyler is your squad’s subject matter expert in vehicle maintenance and team-level battle drills. He volunteers to teach new soldiers how to inspect tactical vehicles and perform basic maintenance. He has finished 9 credit hours towards an Associate’s degree in General Studies at the local community college. Additionally, Tyler has completed 120 hours of correspondence course hours in various military areas. Tyler has never received any non-judicial punishment or an Article 15. However, he has received two negative counseling forms for arriving late to first formation, which occurred over a year and a half ago. He has not received any negative actions since.”

Above the vignette appeared one of two photographs of a soldier in physical training uniform (a t-shirt and training shorts). Photograph A depicted a soldier who appeared to have normal weight. Photograph B was created by altering Photograph A using a software program, to make the same soldier appear to have overweight (see Supplemental Figure 1 under “Supplementary Material”).

Two veterans of the US Army and one veteran of the US Marine Corps reviewed the vignette and the photographs prior to the study, and helped to ensure that the information presented in the vignette was consistent with military norms and that the photographs seemed authentic.

Attitudes about the target person. After viewing the vignette and the photograph, participants were asked to evaluate the soldier’s professionalism and leadership potential, and to indicate whether they would recommend him for the promotion board. The evaluations were done on Likert scales ranging from 1 (“Disagree”) to 5 (“Agree”). Participants were also asked to rate the soldier on a list of adjectives adapted from the Fat Phobia Scale—Short Form (Bacon et al., 2001). All the items included in this part of the study are listed in Table 1.

Demographic questionnaire. Participants answered questions regarding their gender, age, rank, force structure, years of service, race/ethnicity, education, deployment to a combat zone, having made a career-related recommendation for a subordinate, and having held a leadership position.

Procedure

Participants who clicked on the link provided in the ad were directed to the Survey Monkey online platform. They first viewed and completed an informed consent, and then proceeded to the study materials (photograph, vignette, etc.). The assignment to study conditions was done randomly by the online software. All participants provided an informed consent. All information gathered was anonymous. The study was approved by the University’s Institutional Review Board.

Data analysis plan

Analyses were done using IBM SPSS Statistics 23 software. Comparisons between the two conditions (soldier’s overweight status as depicted in the photograph version received) on demographic variables and characteristics of military service were done using independent samples *t*-tests or Chi-square tests, as appropriate for each variable.

To test the hypotheses that evaluations of the overweight looking soldier will be lower than those of the normal-weight looking soldier, we used one-sided independent samples *t*-test. The analyses of differences between male and female respondents were also done using one-sided independent samples *t*-test. The procedure described by Benjamini and Hochberg (1995) was used to correct *p*-values for multiple testing.

To test whether the respondents’ gender moderated the effect of the target person’s appearance, we conducted a series of two-way ANOVAs on all the items included in the evaluations, with photograph version and respondent’s gender as the independent variables. A similar series of ANOVAs was conducted to test whether the respondents’ characteristics of military service moderated the effect of the target person’s appearance.

Results

Demographics and characteristics of military service

The participants’ age range was 19–50 years ($M=28.90$, $SD=7.02$, median=28). The reported race/ethnicity categories were Caucasian (74%), Hispanic/Latino (19%), African American (18%), more than one race (13%), and Asian/Pacific Islander (9%). This is consistent with the US military population (Department of Defense, 2015). Sixty participants (45%) had college degrees. The remainder had some college (29%) or high-school level (28%) education.

Participants had up to 25 years of military service ($M=8.33$, $SD=6.13$, median=6). As to their military careers, 103 participants (77%) have held a leadership position in the military, 94 (70%) have made a career-related recommendation for a subordinate, and 74 (55%) have deployed to a combat zone. The most common force structure was combat

Table 1. Differences between study conditions in attitudes toward the soldier.

Evaluation of the soldier (1–5)	Soldier's ("Tyler") appearance		Test statistic	p^a	p^b	Cohen's d
	Normal weight $n = 68$	Overweight $n = 66$				
	Mean (SD)	Mean (SD)				
Tyler would be a role model for younger soldiers in the unit	4.63 (0.73)	4.39 (0.82)	$t_{(129.3)} = 1.77$	0.039*	0.050*	0.31
I would recommend Tyler for the promotion board	4.90 (0.35)	4.61 (0.78)	$t_{(89.6)} = 2.76$	0.004**	0.025*	0.48
I would be proud to have Tyler in my squad	4.78 (0.48)	4.46 (0.81)	$t_{(105.8)} = 2.82$	0.003**	0.013*	0.48
I think Tyler is a good leader	4.47 (0.80)	4.24 (0.91)	$t_{(132)} = 1.54$	<i>n.s.</i>	<i>n.s.</i>	0.27
Rating of Tyler's tactical proficiency	4.00 (0.62)	3.86 (0.78)	$t_{(124.1)} = 1.11$	<i>n.s.</i>	<i>n.s.</i>	0.20
Rating of Tyler's technical proficiency	4.16 (0.73)	4.05 (0.67)	$t_{(132)} = 0.97$	<i>n.s.</i>	<i>n.s.</i>	0.16
Rating of Tyler's physical fitness	3.31 (0.53)	3.14 (0.78)	$t_{(132)} = 1.50$	<i>n.s.</i>	<i>n.s.</i>	0.26
Rating of Tyler: Overall	3.96 (0.53)	3.73 (0.65)	$t_{(125.7)} = 1.70$	0.014*	0.038*	0.39
Adjectives describing the soldier (1–5)						
Lazy	1.75 (0.92)	1.91 (1.03)	$t_{(132)} = -0.94$	<i>n.s.</i>	<i>n.s.</i>	0.16
Has good will power	4.16 (0.82)	3.89 (0.99)	$t_{(132)} = 1.70$	0.046*	<i>n.s.</i>	0.30
Has good self-control	4.18 (0.81)	3.88 (0.99)	$t_{(125.7)} = 1.91$	0.029*	<i>n.s.</i>	0.33
Slow	2.13 (1.15)	2.46 (1.28)	$t_{(132)} = -1.54$	<i>n.s.</i>	<i>n.s.</i>	0.27
Has endurance	3.72 (0.90)	3.52 (1.10)	$t_{(125.3)} = 1.19$	<i>n.s.</i>	<i>n.s.</i>	0.20
Active	4.19 (0.80)	3.86 (1.01)	$t_{(132)} = 2.09$	0.019*	<i>n.s.</i>	0.36
Weak	1.93 (0.95)	2.05 (1.04)	$t_{(132)} = -0.69$	<i>n.s.</i>	<i>n.s.</i>	0.12
Self-sacrificing	4.20 (0.73)	3.86 (0.91)	$t_{(132)} = 2.06$	0.021*	<i>n.s.</i>	0.41
Self-confident	4.27 (0.82)	4.03 (0.84)	$t_{(132)} = 1.63$	<i>n.s.</i>	<i>n.s.</i>	0.29
Dependable	4.34 (0.70)	4.33 (0.75)	$t_{(132)} = 0.04$	<i>n.s.</i>	<i>n.s.</i>	0.01
Responsible	4.40 (0.79)	4.21 (0.83)	$t_{(132)} = 1.32$	<i>n.s.</i>	<i>n.s.</i>	0.23

^aUncorrected.

^bBenjamini–Hochberg correction applied.

* $p < 0.05$. ** $p < 0.01$.

support (military police, intelligence, etc.; 35%), followed by combat arms (infantry, artillery, etc.; 33%), combat service support (transport, maintenance, etc.; 25%), and unknown (7%). The reported ranks were junior enlisted non-commissioned officers (E5–E6; 39%), lower enlisted (E1–E4; 30%), senior enlisted non-commissioned officers (E7–E9; 20%), and commissioned officers (O1 and above; 11%).

We used t-tests or chi-square tests, as appropriate, to test for differences between participants in the two study conditions in the aforementioned characteristics. No such differences emerged ($p > 0.05$ in all cases).

Effect of target soldier's overweight appearance

As can be seen in Table 1, respondents who viewed the overweight appearance photograph version evaluated the soldier more negatively than those who viewed the normal-weight appearance version in several categories: being a role model to younger soldiers, being recommended to the promotion board, the evaluator's feelings of pride in having this soldier in the squad, and the overall rating of the soldier.

The soldier with overweight was also given somewhat lower ratings on will power, self-control, self-sacrifice, and being active, though these results did not maintain significance after the Benjamini-Hochberg procedure was applied.

The inter-correlations within each condition (photograph version) appear in Tables 1 and 2 in the supplementary material.

Gender effects

Next, we examined whether male and female participants in the present study differed in their rating of the soldier in the vignette.¹ As can be seen in Table 2, there were gender differences in ratings of the soldier's physical fitness and endurance, with men evaluating the soldier more negatively than women. Men evaluated the target soldier as somewhat slower than women did, but this difference did not maintain significance after the Benjamini–Hochberg correction was applied. All other differences were insignificant.

To test whether the respondents' gender moderated the effect of the target person's appearance, we further conducted

Table 2. Gender comparisons of service members' attitudes toward the target soldier.

Evaluation of the soldier (1–5)	Men <i>n</i> = 99	Women <i>n</i> = 34	Test statistic	<i>p</i> ^a	<i>p</i> ^b	Cohen's <i>d</i>
	Mean (SD)	Mean (SD)				
Tyler would be a role model for younger soldiers in the unit	4.525 (0.774)	4.471 (0.825)	$t_{(131)} = 0.349$	<i>n.s.</i>	<i>n.s.</i>	0.07
I would recommend Tyler for the promotion board	4.758 (0.608)	4.735 (0.666)	$t_{(131)} = 0.180$	<i>n.s.</i>	<i>n.s.</i>	0.04
I would be proud to have Tyler in my squad	4.576 (0.716)	4.735 (0.567)	$t_{(71.718)} = -1.319$	<i>n.s.</i>	<i>n.s.</i>	0.23
I think Tyler is a good leader	4.364 (0.814)	4.324 (1.007)	$t_{(131)} = 0.233$	<i>n.s.</i>	<i>n.s.</i>	0.05
Rating of Tyler's tactical proficiency	3.899 (0.735)	4.029 (0.627)	$t_{(131)} = -0.925$	<i>n.s.</i>	<i>n.s.</i>	0.18
Rating of Tyler's technical proficiency	4.071 (0.689)	4.206 (0.729)	$t_{(131)} = -0.972$	<i>n.s.</i>	<i>n.s.</i>	0.19
Rating of Tyler's physical fitness	3.091 (0.624)	3.588 (0.657)	$t_{(54.870)} = -3.857$	<0.0001**	0.013*	0.79
Rating of Tyler: Overall	3.798 (0.589)	3.971 (0.627)	$t_{(131)} = -1.451$	<i>n.s.</i>	<i>n.s.</i>	0.29
Adjectives describing the soldier (1–5)						
Lazy	1.909 (1.001)	1.618 (0.888)	$t_{(131)} = 1.506$	<i>n.s.</i>	<i>n.s.</i>	0.30
Has good will power	4.000 (0.904)	4.118 (0.977)	$t_{(131)} = -0.641$	<i>n.s.</i>	<i>n.s.</i>	0.13
Has good self-control	4.010 (0.863)	4.059 (1.043)	$t_{(49.431)} = -0.245$	<i>n.s.</i>	<i>n.s.</i>	0.05
Slow	2.404 (1.228)	2.000 (1.155)	$t_{(131)} = 1.680$	0.048*	<i>n.s.</i>	0.33
Has endurance	3.485 (1.014)	4.000 (0.888)	$t_{(64.813)} = -2.812$	0.004*	0.009*	0.52
Active	3.950 (0.941)	4.235 (0.819)	$t_{(131)} = -1.577$	<i>n.s.</i>	<i>n.s.</i>	0.31
Weak	2.061 (1.028)	1.794 (0.880)	$t_{(66.296)} = 1.457$	<i>n.s.</i>	<i>n.s.</i>	0.27
Self-sacrificing	4.010 (0.839)	4.029 (0.904)	$t_{(131)} = -0.114$	<i>n.s.</i>	<i>n.s.</i>	0.02
Self-confident	4.162 (0.829)	4.147 (0.857)	$t_{(131)} = 0.088$	<i>n.s.</i>	<i>n.s.</i>	0.02
Dependable	4.313 (0.709)	4.382 (0.779)	$t_{(131)} = -0.479$	<i>n.s.</i>	<i>n.s.</i>	0.09
Responsible	4.323 (0.793)	4.235 (0.890)	$t_{(131)} = 0.540$	<i>n.s.</i>	<i>n.s.</i>	0.11

^aUncorrected.

^bBenjamini–Hochberg correction applied.

p* < 0.05. *p* < 0.01.

a series of two-way ANOVAs on all variables, with photograph version and respondent's gender as the independent variables. Gender did not interact with photograph version (normal weight or overweight) in any of the analyses, indicating that the main effect of the target person's appearance was not moderated by the respondents' gender.

Effects of military service-related factors

We examined whether differences in force structure, rank, length of service, deployment history, or having held a leadership position moderated the main effect of the target soldier's appearance. This too was done using two-way ANOVAs, with photograph version and each factor of military service in turn as independent variables. None of these factors was found to have a significant effect on the respondents' evaluations of the target soldier (*p* > 0.05 for all analyses). Furthermore, none of these factors interacted with photograph version (normal weight or overweight) in any of the analyses, indicating that the main effect of the target person's appearance was not moderated by the respondents' force structure, rank, length of service, deployment history, or having held a leadership position in the military.

Discussion

This study examined whether military members would show bias against a male soldier with overweight appearance, even when presented with information that testifies to his adequate physical and professional capabilities and achievements. Our findings suggest that there is such a bias, as expressed in lower ratings of the soldier's leadership potential and suitability for promotion. Respondents also indicated that they would be less proud to have the overweight-looking soldier in their squad, compared to those who viewed a normal-weight looking soldier with the same capabilities and achievements. Finally, respondents expressed lower willingness to recommend the overweight-looking soldier for promotion, despite having received information that indicated his meeting all of the necessary requirements. With that being said, the soldier's overweight did not seem to impact the evaluations of his tactical proficiency, technical proficiency, physical fitness, and being a good leader. It may be that the effect of weight bias on these items was weaker due to the presence of written information (in the vignette) that ascertained the soldier's adequate level of achievement in these areas. Similarly, overweight status did not have an effect on the Fat Phobia Scale adjective ratings.

Above and beyond norms of beauty or physical attractiveness—which are beyond the scope of the present investigation—our findings suggest that weight bias against men in the military may be due to certain aspects of military culture. The military culture emphasizes discipline, self-denial, and physical strength and ability (Rosen et al., 2003; Wilson, 2008; United States Army, n.d.; United States Marine Corps, n.d.), and individuals with overweight tend to be judged as lacking in these traits (e.g., Fikkan and Rothblum, 2005). Because findings regarding weight bias against men in civilian settings have been mixed (Puhl et al., 2008; Roehling et al., 2013; Sattler et al., 2018), future studies may determine whether culture makes weight bias against men more prevalent in military settings than in civilian ones.

Service members who are identified as having excess weight and/or body-fat are “*flagged*” (Department of the Army, 2016)—an administrative action that prohibits them from being promoted, receiving awards, and attending career enhancing military schools, among other negative consequences. While being flagged is based on objective criteria (body composition standards), and although the career-related consequences associated with being flagged are determined by military regulations and are not up to the discretion of commanders, weight bias may contribute to peers and leaders questioning the character of the “flagged” individuals. Service members in this situation have reported being called lazy, and being told they needed more will power (Schvey et al., 2017). In addition, it is often those identified by leaders as having overweight (based on appearance) who are referred to a body composition assessment. Therefore, even those who aren’t officially “flagged” may still face biased treatment in the form of weight-related nicknames and teasing, additional physical training, and negative assumptions about their work ethic or capabilities (Schvey et al., 2017).

These negative consequences and biases can have serious emotional and clinical implications. Weight-related teasing has been found to have a positive correlation with depression and anxiety (Pearlstein, 2002). Soldiers with overweight have reported being openly mocked, or given a pejorative nickname; they also reported having depressive symptoms (Schvey et al., 2017). Additionally, experiencing weight bias has been associated with low self-esteem (Puhl and Heuer, 2009), an outcome also reported by soldiers with overweight (Schvey et al., 2017). It should be noted that, regardless of weight issues, service members are at high risk of developing mental health disorders due to stress associated with combat exposure, family separation, and other aspects of the military environment (Kim et al., 2010).

Problems with self-esteem, body dissatisfaction, and weight stigma often lead to the development of eating disorders (Pearlstein, 2002). In fact, weight stigma, particularly teasing, was found to be more closely linked to dysfunctional eating disorders than to depressive symptoms (Benas and

Gibb, 2008). It has been found that military veterans tend to binge eat more when they have been exposed to, as well as have internalized, weight bias and stigma (Rosenberger and Dorflinger, 2013). Maladaptive behaviors, such as purging and using diuretics or laxatives, have also been documented among service members as a means to lose weight (Institute of Medicine, 2004; Litwack et al., 2014; McNulty, 1997; Naghii, 2006). The Institute of Medicine (2003) has found that one of the main reasons that service members engage in such behavior was weight-related harassment from commanders. As Naghii (2006) points out, these behaviors can result in frequent cycles of weight-loss and weight-gain, which can lead to the development of mental health disorders such as depression, anxiety, and eating disorders, and can also cause physiological distress, such as malnutrition and dehydration (Naghii, 2006).

Our findings suggest that efforts should be made to identify and address weight bias in the military and to educate service members about the implications and consequences of weight bias. The US military currently has equal opportunity programs in place in order to address numerous types of biases, targeting race, gender, and religion (Department of the Army, 2016). Weight bias and discrimination have been paralleled with these other types of biases (O’Brien et al., 2013), and they could be incorporated into the military’s equal opportunity program. Education about weight bias and its effects may also be helpful. Similar to instances of racism and sexism, occurrences of overt weight bias, such as mocking and using pejorative language, could result in punitive action under the Uniform Code of Military Justice. Furthermore, a clear definition of “soldierly appearance” could help reduce the influence of individual biases.

It may be argued that, despite the importance of mitigating undeserved bias and discrimination, assessing a soldier with overweight less favorably than a normal-weight soldier with identical skills and abilities does not necessarily reflect discrimination in the military context. Maintaining a healthy body weight is well within the military standards, and a professional appearance may have its merits as well. In this regard, the present study did not assess the relative importance that service members place on weight and appearance relative to other aspects of performance, such as leadership and professional skills. This may be a beneficial direction for future research.

This study is unique in that it assesses weight bias against men. The majority of research regarding weight bias to date has emphasized its impact on women (e.g., Sattler et al., 2018; Roehling et al., 2007), with studies of men in this context being scarce (Puhl and Heuer, 2009). It has been noted that men are under-represented in studies on obesity-related issues in general (Koritzky et al., 2012; Pagoto et al., 2012). The suggested explanation for this focus on women is the prevalence of social norms that emphasize physical attractiveness, as associated with thinness, in women but less so in men (Pagoto et al., 2012).

Consistent with the need to increase diversity in obesity research, the present study contributes to filling this gap by providing empirical evidence that weight-bias and discrimination against men with overweight may well be occurring in the military. As the majority of previous research on weight bias has been conducted with female participants, in the present study we addressed the participants' gender to determine its potential effect on the results. Although gender was not a moderator of the effect of the target soldier's overweight appearance, a few differences emerged between male and female service members in the study. We found gender differences in the evaluation of the target soldier's physical fitness, and endurance, with females rating more favorably than males (regardless of the appearance of the target). It may be conjectured that these differences are the result of differences in how physical fitness is assessed in men and women in the military. Women service members may perform fewer repetitions of the exercises and run required distances in a slower pace than men are required to do (Department of the Army, 2012). Additionally, the study's sample consisted of 33% combat arms participants, an area of the military which continues to be predominately male. Nonetheless, since we only detected a few such gender differences, these effects may have been random. Future studies may clarify this issue, as well as compare the extent of weight-bias experienced by both male and female members of the military.

A potential limitation of the present study is in its being a laboratory study, and as such, it may not provide an accurate prediction of actual behavior. Indeed, the research methods in most studies of bias and discrimination consist of self-report and laboratory experiments (Kite and Whitley, 2016). Field studies may be required as a next step in the assessment of weight bias in the military.

A few additional limitations of the study arise from the characteristics of the photographs we used. By using pictures of the same individual, we were able to control for factors such as his age and race, which might have confounded the effect of weight bias. Yet, the fact that the picture of the soldier with overweight was an edited version of the picture in which he had normal weight might have affected the results as well. There may also be a limitation in that the target-soldier in the photographs was only of one race (Caucasian). Although a review has found that race was not a moderating factor in weight-related discrimination in civilian work settings (Roehling et al., 2007), it may be worthwhile to address this issue specifically with respect to the military population.

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Supplemental material

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Note

1. Since only one participant selected "other" as their answer to the gender question, this gender category was omitted from this analysis.

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