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Eating Disorder Symptoms and Comorbid Psychopathology among Male and Female Veterans

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Abstract

Objective—Eating disorder (ED) symptoms have gone mostly unexamined among veterans. The current study assessed rates of bulimia nervosa (BN) and binge eating disorder (BED) symptoms and diagnoses and their associations with common comorbidities among male and female veterans.

Method—Participants were U.S. military veterans who screened positive for trauma histories and/or a probable *DSM-IV* PTSD diagnosis ($n = 499$). Symptoms of PTSD were assessed using the Clinician Administered PTSD Scale (CAPS), and symptoms of EDs, mood, and substance use disorders were assessed using the Structured Clinical Interview for the *DSM-IV* (SCID).

Results—Lifetime rates of BN and BED diagnoses were comparable to civilian populations and a considerable range of lifetime and current BN and BED symptoms were identified. In multivariate models, PTSD and depression severity were most consistently associated with BN and BED symptom severity, with depression most strongly associated with EDs for women.

Conclusions—Findings highlight the importance of screening for ED symptoms among male and female veterans, particularly those that present with PTSD and depression symptomatology. Future examinations of the temporal order of such relationships and the degree to which ED symptoms and associated symptoms impact veteran functioning are warranted.

Keywords

binge eating disorder; bulimia nervosa; gender; comorbidity; veterans

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The prevalence of eating disorders (EDs) and co-occurrence of EDs and comorbid psychopathology among women have been well documented [1]. Recent examinations have implicated mood, anxiety, substance use, and personality disorders as common comorbid conditions of EDs among women [2]; however, few studies have considered the comorbid conditions of men with EDs. In addition, while veterans consistently have been found to have higher rates of mental health problems compared to the general public [3,4], investigations of EDs among veteran samples are lacking. With the number of veterans who have been seeking mental health services increasing over recent years due to the conflicts in Iraq and Afghanistan [5], including increasing numbers of female veterans, rates and comorbidities of EDs and ED symptoms amongst the veteran population is an important area to examine.

In the general population, previous studies have found a lifetime prevalence of bulimia nervosa (BN) in adult women to be 1 – 4.2% [6,7] and binge eating disorder (BED) lifetime prevalence rates have been estimated to range from 2 – 3.5% among women [8,9]. In men, the lifetime prevalence of BN ranges from 0.1 – 0.5% [6,8,10], and the lifetime prevalence estimates of BED range from 0.8 – 2% [8,10]. Thus, although women comprise the majority of ED cases, rates are higher among men than previously thought [8]. Further, men and women appear to have much more similar rates of BED than BN or anorexia nervosa [8].

There have been few investigations of ED prevalence among veterans. Striegel-Moore and colleagues [11] found that among 466,000 men who were discharged from VA facilities, 0.02% had a current ED diagnosis. Among approximately 600,000 returning veterans presenting to the VA Healthcare System for the first time from 2001 to 2010, the prevalence of ED diagnoses (categories collapsed) was 0.08% ($n = 465$) for women and 0.03% ($n = 192$) for men [12]. Importantly, these two studies calculated rates based on medical chart diagnoses listed at discharge or first appointments at the VA. Therefore, as noted by Maguen and colleagues [12], these rates are likely underestimates, as EDs are not routinely screened for in VA settings.

Eating Disorders, Comorbidity, and Gender in the General Population

Individuals with EDs have been found to have higher rates of comorbid psychopathology, including comorbid depression, anxiety disorders, and substance use disorders (SUDs), although examinations have been mostly limited to women [2,8]. To date, research findings comparing ED comorbidities between men and women has been mixed. Among civilian samples, some research indicates that men with EDs have higher rates of comorbid depression, anxiety, and SUDs than women [13,14]. In contrast, other studies report higher rates of comorbid symptoms among women [15], while still other investigations have found similar comorbidity rates among men and women [16]. In a nationally representative sample, Mitchell and colleagues [17] found similar rates of lifetime posttraumatic stress disorder (PTSD) among men and women with BED (25% and 24% respectively), but considerably higher rates of PTSD among men with BN (66%) than women with BN (40%).

Eating Disorders, Comorbidity, and Gender in Military and Veteran Samples

Few previous investigations have examined the rates of EDs and psychiatric comorbidities among military or veteran samples, and studies that have attempted to examine these associations have had considerable limitations with regards to generalizability [12]. Similar to civilian populations, PTSD, mood disorders, and SUDs have been the most common comorbid conditions identified in military and veteran samples [12,18,19].

Gender differences in ED comorbidities among veterans have also gone largely unexamined. The two exceptions to this are Maguen and colleagues [12], who identified similar patterns of comorbidities among male and female veterans, and Striegel-Moore and colleagues [19], who found that female veterans with EDs were more likely to be diagnosed with a mood or personality disorder, and male veterans with EDs were more likely to be diagnosed with a psychotic disorder. However, as noted above, these studies did not utilize a standard ED diagnostic interview, which raises concerns about the accuracy of the findings reported.

In addition, the few studies that have investigated EDs in veteran populations have examined EDs at the dichotomous level of diagnosis [11]. Importantly, sub-threshold ED symptoms (e.g. binge eating 2 days per week for less than 6 months) have been argued to have a significantly deleterious impact on health [8]. As described by the APA Practice Guidelines for the Treatment of Eating Disorders [1], ED symptoms frequently occur along a continuum, and a number of researchers have noted the importance of exploring the impact of symptom severity in addition to diagnoses [20].

The current study examined the rates of BN and BED symptoms and diagnoses among male and female veterans using a standardized and validated semi-structured interview of ED symptoms (i.e., Structured Clinical Interview for *DSM-IV* Disorders – Eating Disorders Module). We anticipated that, consistent with previous research, rates of BN would be slightly higher for women, and rates of BED would be comparable among men and women. Furthermore, we expected a considerable range of BN and BED symptom severity among both men and women, as has been identified within military populations [18].

We also explored the degree to which symptoms of common comorbidities (e.g., mood, anxiety, SUD) were associated with severity of ED symptoms, as well as the effect of gender on comorbid ED and Axis I symptoms. We focused on BN and BED symptomatology for several reasons: 1) anorexia nervosa (AN), characterized by extremely low body weight and fear of gaining weight, is less common among both men and women, and 2) PTSD and SUDs, disorders that are quite prevalent in veteran samples, are more often comorbid with EDs characterized by bingeing and/or purging [8,17]. With PTSD, major depressive disorder, and SUDs among the most common mental health diagnoses for veterans [3], we hypothesized that BN and BED symptom severity would be positively associated with PTSD, depressive, and substance use symptomatology. Among returning female veterans, depression has been identified as the most prevalent mental health diagnosis, whereas among returning male veterans, PTSD has been found to be most prevalent [21]. Based on these findings, we anticipated that BN and BED symptom severity

would be more strongly associated with PTSD symptoms for male veterans and with depressive symptoms for female veterans.

METHODS

Participants

Participants were U.S. military veterans and a subset of their intimate partners who were enrolled in one of two studies at either a large, urban Northeastern VA or a Southwestern VA medical center (total $N = 852$). One study recruited male and female veterans who endorsed exposure to a traumatic event as defined by the *Diagnostic and Statistical Manual of Mental Disorders* 4th Edition (*DSM-IV*) [22], as well as their spouses or intimate partners. Eligible veterans had an intimate partner with whom they had been cohabitating for the 12 months prior to study enrollment and the partner was willing to participate in the study. The second study recruited male and female veterans who met *DSM-IV* criteria for probable current PTSD based on a telephone administration of the PTSD Checklist-Civilian Version (PCL-C). Additional exclusionary criteria were consistent across both of the studies; participants were excluded if they indicated during screening or the diagnostic interview that they had been drinking or using drugs on a daily basis within the past 30 days or if, based on clinician's judgment, they were observed to have significant neurocognitive deficits or other behavioral abnormalities that would impair valid assessment.

Only data from veterans were included in the current study. This yielded a subsample of 523, of whom 24 participants were omitted from data analyses for the following reasons: nine due to problems conforming their behavior to protocol expectations (e.g., repeatedly falling asleep), 13 due to incomplete data, one did not meet eligibility requirements, and one withdrew before completing the diagnostic interviews. Thus, the final sample ($N = 499$) was comprised of 432 male and 67 female veterans, including 28 couples in which both partners were veterans.

Procedure

Participants were recruited via flyers, clinician referrals, and from a database of veterans who had consented to be contacted for research. They were screened by telephone to ensure that they met study eligibility criteria. Participants provided informed consent and underwent clinician-administered diagnostic interviews. All interviews were administered by advanced psychology trainees or licensed clinical psychologists and were videotaped for reliability purposes. The local Institutional Review Board approved all study procedures.

Measures

Structured Clinical Interview for the *DSM-IV* (SCID) [23]—The SCID was used to assess Axis I psychopathology. Standard SCID skip-outs were ignored; all items were administered in each module in order to obtain accurate symptom counts for each participant. Symptoms within a module were anchored temporally to the same time period to ensure that they co-occurred in a syndromal fashion. Severity scores were created by summing items for each diagnosis. Lifetime and current severity of BN, BED, depression, and substance abuse and/or dependence disorders were included in the analyses. Intraclass

correlations (ICCs) were calculated to determine inter-rater reliability for current and lifetime BN (.93 and .94, respectively), BED (.98 and .97), major depressive disorder (.96 for both current and lifetime), and SUDs with prevalence greater than 1% (.82 – 1.0 and .80 – .99).

Clinician Administered PTSD Scale (CAPS) [24]—The CAPS was used to diagnose lifetime and current *DSM-IV* PTSD. This measure yields a continuous score of frequency and intensity for each symptom (each on a 0 – 4 scale). Continuous lifetime and current severity scores were used in the current study. Severity scores were calculated by summing the frequency and intensity ratings for each of the 17 items [25]. The CAPS has been shown to have test-retest reliability between .90 and .96 over one week [24]. Internal consistency of CAPS item severity scores in this study was excellent (Cronbach’s alpha coefficient = .90). All CAPS interviews were video-recorded, and approximately 25% ($n = 197$) were re-coded by an independent rater. Inter-rater reliability was high for total current (ICC = .96) and lifetime (.97) severity score ratings.

Statistical Analyses

Analyses were performed in SAS 9.3. Missing data was listwise deleted. First, correlations among lifetime EDs, depression, PTSD, and SUD severities, and demographic variables were estimated. Variables that were significantly correlated ($p < .05$) with lifetime BN or BED severity, respectively, were then used in general linear models with BN or BED as the outcomes. A similar procedure was used for current BN and BED severity. Generalized estimating equations (GEE) were used with SAS PROC GENMOD to account for the correlated nature of the couple data in order to produce accurate standard errors [26]. In addition, product terms were created to test whether gender moderated the impact of depression and PTSD severity on disordered eating.

RESULTS

Descriptives

Participants’ mean age was 51.95 ($SD = 10.72$). The majority (81.89%) were Caucasian, 13.39% were African American, 1 (0.20%) was Asian, 7.87% were American Indian/Alaskan Native, 0.59% were Hawaiian/Pacific Islander, and 5.71% reported that their race was unknown (categories are not mutually exclusive). Approximately half (48.88%) reported incomes of less than or equal to \$30,000; 8.48% had less than a high school education, 14.20% had a high school diploma or GED, and 77.32% had some type of higher education.

Rates of BN and BED

Two men (0.49%) met criteria for lifetime *DSM-IV* BN; none met criteria for current BN. No women met criteria for lifetime or current BN. Three women (4.76%) and 15 men (3.69%) met criteria for lifetime BED. One woman (1.59%) and nine men (2.22%) met criteria for current BED. Because of the low numbers of individuals meeting criteria for BN or BED, subsequent analyses focused on continuous symptom severity variables.

Frequency of BN and BED Symptoms

The number of BN and/or BED symptoms that veterans endorsed ranged from zero to 10 for current symptoms and zero to 12 for lifetime symptoms. As seen in Table 1, over 65% of female veterans and 45% of male veterans assessed in this study reported one or more current symptoms of BN and/or BED. Additionally, 7.5% of female veterans and 6.3% of male veterans reported 7 or more current symptoms of BN and/or BED. The average number of current symptoms was 1.89 ($SD = 2.48$) for female veterans and 1.21 ($SD = 2.24$) for male veterans. Lifetime endorsement of BN and/or BED symptoms was considerably higher, particularly for females, with 18% of female veterans and 9% of male veterans reporting 7 or more lifetime symptoms. The average number of lifetime symptoms for female veterans was 3.40 ($SD = 3.44$) and for male veterans was 1.79 ($SD = 2.71$).

Associations of Lifetime BN and BED Severity

Gender and lifetime symptom severity of cannabis dependence, cocaine dependence, depression, and PTSD were significantly correlated with lifetime BN severity; gender, depression severity, and PTSD severity were significantly correlated with lifetime BED severity. Thus, these variables were included in subsequent models with lifetime BN or BED severity, respectively, as outcomes.

See Table 2 for multivariate results for lifetime BN and BED. General linear models with GEE revealed that gender and lifetime PTSD severity were significantly associated with lifetime BN severity. Lifetime PTSD severity was marginally significantly associated with lifetime BED severity.

Product terms were added to separate models to test whether gender moderated the impact of lifetime PTSD or depression severity, respectively. The impact of lifetime PTSD severity did not differ significantly by gender for either lifetime BN ($B = .003, z = .34, p = .73$) or BED severity ($B = -.001, z = -.09, p = .93$). However, gender significantly moderated the association between lifetime depression severity and BN ($B = .17, z = 2.71, p < .001$) as well as BED severity ($B = .15, z = 2.46, p = .01$), such that the relation between these variables was stronger among women.

Associations of Current BN and BED Severity

Gender and current depression and PTSD severity were significantly correlated with current BN; current opioid dependence, depression, and PTSD severity were associated with current BED severity. See Table 2 for multivariate results for current BN and BED. General linear models with GEE showed that gender and current depression severity were associated with current BN severity. Only depression severity was associated with current BED severity. Gender did not moderate the impact of current PTSD severity on either current BN ($B = .00, z = .04, p = .97$) or BED severity ($B = .01, z = .92, p = .36$). There was a marginally significant interaction of gender \times depression on BN severity ($B = .10, z = 1.93, p = .05$) and a significant gender \times depression interaction for BED severity ($B = .20, z = 2.21, p = .03$), such that these relations were stronger for women.

DISCUSSION

The aims of the current study were to assess rates of EDs and ED symptoms among veterans, as well as further examine the relationships between ED symptoms and comorbid symptoms of psychiatric disorders among veterans. As expected, rates of lifetime BED were found to be comparable among men and women (4.76% and 3.69% respectively). Rates of lifetime BN among men were consistent with previous research with 0.49% of male veterans meeting criteria. Contrary to our hypotheses, no female veterans met criteria for lifetime or current BN in this sample. These rates highlight the degree to which men need to be considered in examinations of eating disorders, even among the stereotypically masculine culture of veterans [27].

With regard to ED symptom severity, a considerable range of BN and BED symptoms were identified among men and women. A striking 18% of female veterans and 9% of male veterans endorsed 7 or more ED symptoms in their lifetime. Additionally, 7.5% of female veterans and 6.3% of male veterans endorsed 7 or more current ED symptoms. These findings provide evidence that considerable numbers of both male and female veterans experience subthreshold ED symptoms which may result in functional impairment and physical health consequences and may lead, over time, into diagnosable EDs [28].

Consistent with previous research [2], PTSD and depression severity had the most consistent associations with lifetime and current BN and BED symptom severity in multivariate models. Although this sample consisted of mostly veterans who passed an initial PTSD screening, it is important to highlight that it was not merely the presence of a diagnosis or a certain cutoff of symptom severity that was associated with ED severity, but rather, higher levels of PTSD severity were associated with higher levels of BN and BED symptoms. Furthermore, in multivariate models, PTSD severity was the only construct that was associated with lifetime BN severity, and the impact of PTSD was found to be similar across male and female veterans. These strong associations may be due to a number of shared commonalities among PTSD and EDs, such as attempts at emotional regulation, impulsivity, and common genetic and biological vulnerabilities [29–32].

Depression severity was also associated with current and lifetime severity of BN and BED symptoms for both male and female veterans. Unlike PTSD severity, however, gender was found to moderate the relationship between depression severity and ED severity, such that, among female veterans, depression severity was associated more strongly with lifetime BN and BED severity, as well as with current BED severity, than among male veterans. This is consistent with findings that highlight higher rates of lifetime major depressive disorder among women with EDs than among men with EDs in the general population [16]. One possible explanation for this gender difference may be that a cultural ideal of thinness, which has been consistently found to be much stronger for women, may play a part in the development of symptoms of both EDs and depression [33].

Substance dependence has also been repeatedly shown to be highly comorbid with both BN and BED [8], and thus lifetime and current substance dependence symptoms were of interest in this study. Although there were some significant bivariate associations between severity

of ED and SUD symptoms, there were no significant ED-SUD associations in multivariate models. Some researchers previously have found higher rates of ED-SUD comorbidities among female veterans [12], while others have found equal rates among male and female veterans [19]. It is possible that in future examinations of veterans with ED-SUD comorbidities, additional factors (e.g. at which stage of life an ED and/or SUD first develop) may be identified that clarify these mixed findings.

Due to the concurrent examination of ED symptoms and other mental health symptoms, the sequence in which veterans in the current sample developed each set of symptoms cannot be determined. In a prospective evaluation, Jacobson and colleagues [18] identified a subset of individuals who developed EDs prior to deployment and combat exposure and a subset of individuals who developed EDs after combat exposure. It is possible that for at least some veterans, traumas experienced during military service may act as a vulnerability factor that leads to the development of ED symptoms subsequent to the development of comorbid conditions, such as PTSD, as has been suggested among the general population [34]. Further investigations to better understand the temporal order of such relationships amongst veterans is warranted, as this may inform how co-occurring ED and Axis I disorders are conceptualized and treated.

The current study contributes to two important, yet understudied areas of mental health research. Women are often underrepresented or unexamined in studies of veterans' mental health, and until recently, men, particularly male veterans, have been mostly excluded from examinations of EDs [2], and are more generally underrepresented in treatment settings. For example, Lewinsohn and colleagues [35] found that men were less likely to seek treatment than women when reporting comparable levels of ED symptoms.

This study also took the important step of examining co-occurring ED symptomatology with symptoms of other mental health conditions. Examinations of subthreshold EDs have been relatively rare, yet this study has provided evidence that significant numbers of male and female veterans report engaging in ED symptoms although they do not meet *DSM-IV* clinical criteria for an ED diagnosis. Consequently, their symptoms may not be detected during standard medical care. Importantly, studies that have considered subthreshold EDs, as well as other subthreshold mental health diagnoses (e.g., PTSD), have found significant contributions to overall impairment, even when controlling for the impact of comorbid conditions [36,37]. Early intervention has the potential to both decrease impairment and to save considerable money over the life-span of a veteran suffering from ED symptoms. In turn, the considerable range of ED symptoms found among the current sample of veterans strengthens previous calls for the use of standardized screening tools for EDs within the VA [12].

Certain aspects of the current sample limit the generalizability of the results. In order to be eligible, veterans were first screened and determined to have trauma histories and/or symptoms consistent with a likely diagnosis of PTSD, limiting generalizability to other samples. Importantly, among veterans returning from Iraq and Afghanistan and seen at VA healthcare facilities from 2001 to 2005, the single most common mental health diagnosis was PTSD, which was present in 52% of veterans receiving mental health diagnoses [38]. It

is also possible that our moderation analyses may have been underpowered due to the small number of female veterans in this sample. However, a major methodological strength of this study, the lack of skip-outs in clinical interviews, allowed for increased power by examining symptom severity of EDs and comorbid conditions. Future studies may further benefit from assessment of a broader range of ED symptomatology among veterans, such as with the Eating Disorders Examination [39], as well as an examination of body mass index (BMI) and the degree to which this may be related to veterans' ED and comorbid symptomatology. Finally, although the large majority of the sample consisted of White veterans, the proportion of races represented in this sample is consistent with proportions in the overall population of U.S. veterans [40].

Our findings call attention to the considerable presence of EDs and ED symptoms among male and female veterans as well as the degree to which ED severity was associated with symptoms of other psychiatric disorders, most significantly PTSD and depression. Future research should continue to examine sub-threshold symptoms and explore the degree to which such symptoms result in functional impairment. Additionally, longitudinal examinations of ED and comorbid symptoms will be crucial in understanding the etiology of these symptoms and informing early intervention and longer term treatment efforts.

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References

1. APA Pr Guid Treat Psychiatr Disord Compr Guid Guid Watch. 3. Vol. 1. Arlington, VA: American Psychiatric Association; n.d. Treatment of Patients With Eating Disorders.
2. Pearlstein T. Eating disorders and comorbidity. *Arch Womens Ment Health*. 2002; 4:67–78.
3. Jordan BK, Schlenger WE, Hough R, Kulka RA, Weiss D, Fairbank JA, et al. Lifetime and current prevalence of specific psychiatric disorders among Vietnam veterans and controls. *Arch Gen Psychiatry*. 1991; 48:207. [PubMed: 1996916]
4. Seal KH, Metzler TJ, Gima KS, Bertenthal D, Maguen S, Marmar CR. Trends and risk factors for mental health diagnoses among Iraq and Afghanistan veterans using Department of Veterans Affairs health care, 2002–2008. *Am J Public Health*. 2009; 99:1651–8. [PubMed: 19608954]
5. United States Government Accountability Office. VA Mental Health: Number of Veterans Receiving Care, Barriers Faced, and Efforts to Increase Access. United States Government Accountability Office; 2011.
6. Garfinkel PE, Lin E, Goering P, Spegg C, Goldbloom DS, Kennedy S, et al. Bulimia nervosa in a Canadian community sample: prevalence and comparison of subgroups. *Am J Psychiatry*. 1995; 152:1052–8. [PubMed: 7793442]
7. Hoek HW, Van Hoeken D. Review of the prevalence and incidence of eating disorders. *Int J Eat Disord*. 2003; 34:383–96. [PubMed: 14566926]
8. Hudson JI, Hiripi E, Pope HG Jr, Kessler RC. The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. *Biol Psychiatry*. 2007; 61:348–58. [PubMed: 16815322]
9. Spitzer RL, Devlin M, Walsh BT, Hasin D, Wing R, Marcus M, et al. Binge eating disorder: a multisite field trial of the diagnostic criteria. *Int J Eat Disord*. 1992; 11:191–203.
10. Kinzl JF, Traweger C, Trefalt E, Mangweth B, Biebl W. Binge eating disorder in males: a population-based investigation. *Eat Weight Disord*. 1999; 4:169–74. [PubMed: 10728177]

11. Striegel-Moore RH, Garvin V, Dohm F-A, Rosenheck RA. Psychiatric comorbidity of eating disorders in men: a national study of hospitalized veterans. *Int J Eat Disord.* 1999; 25:399–404. [PubMed: 10202650]
12. Maguen S, Cohen B, Cohen G, Madden E, Bertenthal D, Seal K. Eating Disorders and Psychiatric Comorbidity among Iraq and Afghanistan Veterans. *Womens Health Issues.* 2012; 22:e403–e406. [PubMed: 22749199]
13. Bramon-Bosch E, Troop NA, Treasure JL. Eating disorders in males: A comparison with female patients. *Eur Eat Disord Rev.* 2000; 8:321–8.
14. Grilo CM, White MA, Masheb RM. DSM-IV psychiatric disorder comorbidity and its correlates in binge eating disorder. *Int J Eat Disord.* 2009; 42:228–34. [PubMed: 18951458]
15. Bean P, Maddocks MB, Timmel P, Weltzin T. Gender differences in the progression of co-morbid psychopathology symptoms of eating disordered patients. *Eat Weight Disord.* 2005; 10:168–74. [PubMed: 16277139]
16. Woodside DB, Garfinkel PE, Lin E, Goering P, Kaplan AS, Goldbloom DS, et al. Comparisons of men with full or partial eating disorders, men without eating disorders, and women with eating disorders in the community. *Am J Psychiatry.* 2001; 158:570–4. [PubMed: 11282690]
17. Mitchell KS, Mazzeo SE, Schlesinger MR, Brewerton TD, Smith BN. Comorbidity of partial and subthreshold ptsd among men and women with eating disorders in the national comorbidity survey-replication study. *Int J Eat Disord.* 2012; 45:307–15. [PubMed: 22009722]
18. Jacobson IG, Smith TC, Smith B, Keel PK, Amoroso PJ, Wells TS, et al. Disordered Eating and Weight Changes After Deployment: Longitudinal Assessment of a Large US Military Cohort. *Am J Epidemiol.* 2009; 169:415–27. [PubMed: 19193718]
19. Striegel-Moore RH, Garvin V, Dohm F-A, Rosenheck RA. Eating disorders in a national sample of hospitalized female and male veterans: Detection rates and psychiatric comorbidity. *Int J Eat Disord.* 1999; 25:405–14. [PubMed: 10202651]
20. Striegel-Moore RH, Rosselli F, Perrin N, DeBar L, Wilson GT, May A, et al. Gender difference in the prevalence of eating disorder symptoms. *Int J Eat Disord.* 2009; 42:471–4. [PubMed: 19107833]
21. Maguen S, Ren L, Bosch JO, Marmar CR, Seal KH. Gender differences in mental health diagnoses among Iraq and Afghanistan veterans enrolled in Veterans Affairs health care. *Am J Public Health.* 2010; 100:2450–6. [PubMed: 20966380]
22. Association AP. Diagnostic and statistical manual of disorders. Am Psychiatr Press; Wash DC: 1994.
23. First, MB.; Spitzer, RL.; Williams, JBW.; Gibbon, M. Structured Clinical Interview for DSM-IV (SCID). American Psychiatric Association; Wash DC: 1995.
24. Weathers FW, Litz BT. Psychometric Properties of the Clinician Administered PTSD Scale. *PTSD Res Q.* 1994; 5:2–6.
25. Weathers FW, Ruscio AM, Keane TM. Psychometric properties of nine scoring rules for the Clinician-Administered Posttraumatic Stress Disorder Scale. *Psychol Assess.* 1999; 11:124.
26. Hanley JA, Negassa A, Forrester JE. Statistical analysis of correlated data using generalized estimating equations: an orientation. *Am J Epidemiol.* 2003; 157:364–75. [PubMed: 12578807]
27. Brooks, GR. Counseling and Psychotherapy for Male Military Veterans. In: Good, GE.; Brooks, GR., editors. *New Handb Psychother Couns Men Compr Guide Settings Probl Treat Approaches Rev Abr.* San Francisco, CA, US: Jossey-Bass; 2005. p. 104-18.
28. Warner C, Warner C, Matuszak T, Rachal J, Flynn J, Grieger TA. Disordered Eating in Entry-Level Military Personnel. *Military Medicine.* 2007; 172:147–51. [PubMed: 17357768]
29. Claes L, Vandereycken W, Vertommen H. Impulsive and compulsive traits in eating disordered patients compared with controls. *Pers Individ Differ.* 2002; 32:707–14.
30. Dautzenberg FM, Hauger RL. The CRF peptide family and their receptors: yet more partners discovered. *Trends Pharmacol Sci.* 2002; 23:71–7. [PubMed: 11830263]
31. Pitman RK, Delahanty DL. Conceptually driven pharmacologic approaches to acute trauma. *CNS Spectrums.* 2005; 10:99–106. [PubMed: 15685120]

32. Tull MT, Barrett HM, McMillan ES, Roemer L. A preliminary investigation of the relationship between emotion regulation difficulties and posttraumatic stress symptoms. *Behav Ther.* 2007; 38:303–13. [PubMed: 17697854]
33. McCarthy M. The thin ideal, depression and eating disorders in women. *Behav Res Ther.* 1990; 28:205–14. [PubMed: 2196049]
34. Johnson JG, Cohen P, Kotler L, Kasen S, Brook JS. Psychiatric disorders associated with risk for the development of eating disorders during adolescence and early adulthood. *J Consult Clin Psychol.* 2002; 70:1119–28. [PubMed: 12362962]
35. Lewinsohn PM, Seeley JR, Moerk KC, Striegel-Moore RH. Gender differences in eating disorder symptoms in young adults. *Int J Eat Disord.* 2002; 32:426–40. [PubMed: 12386907]
36. Marshall RD, Olfson M, Hellman F, Blanco C, Guardino M, Struening EL. Comorbidity, impairment, and suicidality in subthreshold PTSD. *Am J Psychiatry.* 2001; 158:1467–73. [PubMed: 11532733]
37. Stice E, Marti CN, Shaw H, Jaconis M. An 8-year longitudinal study of the natural history of threshold, subthreshold, and partial eating disorders from a community sample of adolescents. *J Abnorm Psychol.* 2009; 118:587–97. [PubMed: 19685955]
38. Seal KH, Bertenthal D, Miner CR, Sen S, Marmar C. Bringing the war back home: Mental health disorders among 103 788 US veterans returning from Iraq and Afghanistan seen at Department of Veterans Affairs Facilities. *Arch Intern Med.* 2007; 167:476. [PubMed: 17353495]
39. Fairburn, CG. *Cognitive behavior therapy and eating disorders.* Guilford Press; 2008.
40. U.S. Census Bureau. *American Community Survey.* 2009

Table 1
Total Number of Current and Lifetime Bulimia Nervosa and Binge Eating Symptoms by Gender

Number of Symptoms Endorsed	Total # of Current ED Symptoms			Total # of Lifetime ED Symptoms		
	Female Veterans		Male Veterans	Female Veterans		Male Veterans
	#	%	#	#	%	%
0	22	32.8	225	19	52.1	28.4
1	14	20.9	80	4	18.5	6.0
2	12	17.9	22	7	5.1	10.4
3	4	6.0	10	7	2.3	10.4
4	2	3.0	10	9	2.3	13.4
5	3	4.5	5	3	1.2	4.5
6	0	3.0	5	2	1.2	3.0
7+	5	7.5	27	12	6.3	18.0
						9.0

Note: ED = eating disorder.

Table 2
 Linear Regression Models for Lifetime and Current Bulimia Nervosa and Binge Eating Severity

	Bulimia Nervosa (BN)			Binge Eating Disorder (BED)								
	Lifetime			Current								
	B	z	p	B	z	p						
Sex (reference group = males)	1.38	3.60	<.001	0.54	2.11	0.03	1.11	1.83	0.07	--	--	
Cannabis dependence severity	0.09	1.86	0.06	--	--	--	--	--	--	--	--	
Cocaine dependence severity	0.04	1.34	0.18	--	--	--	--	--	--	--	--	
Opiate dependence	--	--	--	--	--	--	--	--	--	2.35	1.89	0.06
Depression symptom severity	0.03	1.91	0.06	0.05	2.80	.01	0.07	1.81	0.07	0.11	3.04	0.002
PTSD symptom severity	0.01	2.46	0.01	0.002	0.47	0.63	0.01	1.99	0.05	0.002	0.34	0.73

Note: PTSD = posttraumatic stress disorder. Sex, lifetime cannabis dependence, cocaine dependence, depression, and PTSD severity were significantly correlated with lifetime BN severity and were included in the regression models; sex, and lifetime depression and PTSD severity were significantly correlated with lifetime BED severity and were included in regression models. Sex, current depression, and PTSD severity were significantly correlated with current BN severity and were included in regression models; current opioid dependence, depression, and PTSD severity were associated with current BED severity and were included in regression models. Unstandardized coefficients (B) and z-scores (z) are presented.