

# Borderline Personality Disorder and Traits in Veterans: *Psychiatric Comorbidity, Healthcare Utilization, and Quality of Life Along a Continuum of Severity*

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## ABSTRACT

**Objective:** To examine the presence of borderline personality disorder (BPD) traits in Gulf War veterans, and to assess psychiatric comorbidity, health status, healthcare utilization, and quality of life (QOL) along a continuum of BPD trait severity.

**Method:** BPD and traits were evaluated using the Schedule for Non-Adaptive and Adaptive Personality in 576 veterans who were either deployed to the Persian Gulf (1990–1991) or were on active duty though not deployed to the Gulf. Demographic and military characteristics, personal and family history, psychiatric comorbidity, and QOL were also assessed.

**Results:** One or more BPD traits were present in 247 subjects (43%), and BPD ( $\geq 5$  traits) was identified in 15 subjects (3%). The number of traits was significantly associated with age and level of education. Lifetime psychiatric comorbidity was significantly associated with the number of BPD traits present, and level of functioning, health status, healthcare utilization, social functioning, self-injurious tendencies, and military/behavioral problems.

**Conclusion:** BPD and traits identified in Gulf War veterans were associated with significant psychiatric morbidity, poorer QOL, and increased utilization of healthcare resources. Early recognition and treatment of veterans with BPD symptoms may be warranted to minimize the burden on the healthcare system.

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### Needs Assessment

Borderline personality disorder (BPD) is associated with significant psychosocial impairment and psychological distress. This article demonstrates the pattern of psychiatric comorbidity observed in a military sample, details the extent and pattern of morbidity, and use of healthcare services. Importantly, the article shows that the number of BPD symptoms present influences the extent of associated problems along a gradient of severity. This information will enhance the clinician's understanding of the extent to which BPD and its symptoms can impair an individual's ability to function in the "real world."

### Learning Objectives

At the end of this activity, the participant should be able to:

- List the comorbid disorders associated with borderline personality disorder (BPD).
- Provide examples of impaired psychosocial functioning in BPD.
- Identify area in which BPD contributes to increased healthcare utilization.

**Target Audience:** Neurologists and psychiatrists

**CME Accreditation Statement:** The Mount Sinai School of Medicine is accredited by the Accreditation Council for Continuing Medical Education to provide Continuing Medical Education for physicians.

The Mount Sinai School of Medicine designates this educational activity for a maximum of 3 *AMA PRA Category 1 Credit(s)*<sup>™</sup>. Physicians should only claim credit commensurate with the extent of their participation in the activity.

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This activity has been peer-reviewed and approved by Eric Hollander, MD, chair at Mount Sinai School of Medicine. Review Date: July 11, 2006.

**To Receive Credit for This Activity:** Read this article, and the two CME-designated accompanying articles, reflect on the information presented, and then complete the CME quiz found on pages 719 and 720. To obtain credits, you should score 70% or better. Termination date: September 30, 2008. The estimated time to complete this activity is 3 hours.

## INTRODUCTION

Borderline personality disorder (BPD) has emerged as a major health problem, having a community prevalence of ~1%, though the disorder is more frequent in selected populations, including psychiatric inpatients and outpatients, individuals with substance misuse, and incar-

cerated individuals.<sup>1-3</sup> The disorder is associated with substantial medical morbidity, functional impairment, impaired quality of life (QOL), and increased healthcare utilization.<sup>4,5</sup>

BPD is also associated with significant psychiatric comorbidity, particularly mood, anxiety, and substance use disorders.<sup>6,7</sup> The symptom of BPD that probably makes the greatest demand on mental health resources is recurrent suicidal threats and gestures, which may be a defining characteristic of the disorder.<sup>8</sup> Suicidal behavior affects up to 84% of patients with BPD<sup>9</sup>; Soloff and colleagues<sup>10</sup> calculated a mean of 3.4 lifetime attempts per individual. Deliberate self-harm, typically involving such behaviors as cutting, burning, or head banging, is also frequent and, while potentially life-threatening, is not generally motivated by a desire for death.

We recently had an opportunity to examine patterns of psychiatric comorbidity, health care utilization, and QOL variables in a well-characterized sample of Gulf War veterans. In this study, we focused on BPD and BPD traits assessed using the Schedule for Non-Adaptive and Adaptive Personality (SNAP),<sup>11</sup> a self-report instrument of known reliability. To our knowledge, this is one of the first explorations of BPD and its traits in a military population. Our purpose was to examine patterns of psychiatric comorbidity and health-related QOL and their relationships with BPD and BPD traits. We hypothesized that individual BPD symptoms would be frequent, but that BPD itself would be relatively uncommon; applicants to the military are screened to exclude those with evidence of past or present emotional instability, which could compromise one's ability to succeed in the military. We hypothesized that BPD traits would be present along a continuum, and that there would be a positive association between the number of traits present and the frequency of psychiatric comorbidity and healthcare utilization, and a negative association between number of traits present and QOL variables. The results are reported herein.

## METHODS

### Subjects

Subjects were participants in the second of a two-stage investigation. The first wave involved a telephone survey of military personnel on active duty during the first Gulf War, some deployed to the Gulf and others who were not, who had par-

ticipated in a structured, computer-assisted telephone interview.<sup>12</sup> The interview was administered to 3,695 individuals, or 76% of those eligible to participate. The second wave involved extensive in-person interviews and examinations of a stratified random sample of the telephone survey participants who were living in Iowa or one of the surrounding states.<sup>13</sup> The selection was made on the basis of survey status (case versus control) and deployment status (deployed versus non-deployed) in order to obtain a representative sample of the outcomes of interest. Subjects were recruited for the second wave if they had one or more of the most prevalent a priori-defined conditions of interest in the first wave (depression, chronic widespread pain, cognitive dysfunction). "Depression" included the categories of major depression, minor depression, and dysthymia; the diagnosis "chronic widespread pain" was based either on a self-report of having had fibrositis or fibromyalgia in the prior year, or a self-report of overall body pain of almost daily occurrence with a minimum duration of 3 months in the previous year. "Cognitive dysfunction" was diagnosed when a subject reported at least one of the following: severe memory impairment, moderate to significant difficulties with confusion/disorientation, or moderate to significant problems caused by at least two of the following: clear thinking, concentration, comprehension, reading comprehension, slips of the tongue, forgetfulness or memory problems. A control group that did not meet criteria for any of these conditions was also recruited. Approximately two cases were drawn for each control subject. An adaptive randomization was used to ensure comparability across cases and controls. The study was approved by the University of Iowa Institutional Review Board and written, informed consent was obtained from all subjects who volunteered to participate. Additional details about this study are reported by Ang and colleagues<sup>14</sup> and Forman-Hoffman and colleagues.<sup>15</sup>

### Assessments

Demographic data, including age, sex, race, education, income, and marital status, were obtained along with military variables of interest such as military status, branch of service, rank, deployment to the Gulf, and combat during the first Gulf War.

Personality was assessed using the SNAP,<sup>11</sup> a factor-analytically derived, self-report instrument that assesses three major trait dimensions

important in personality disorders, including negative temperament, positive temperament, and disinhibition. The scales assessing these dimensions are internally consistent and have acceptable test/retest reliability. The SNAP also assesses the presence of the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition-Revised (DSM-III-R)*<sup>16</sup> personality disorders and their individual criteria.

Through structured questions, personal, medical, and psychiatric history, items were obtained, including information regarding depression, anxiety, drug abuse, use of psychiatric medication, psychiatric hospitalization, attempted suicide, and incarceration. Family history items assessed included anxiety, alcoholism, drug addiction, psychiatric medications, psychiatric hospitalization, psychotherapy or counseling, suicide attempt, or completed suicide.

The Structured Clinical Interview for the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (SCID)*<sup>17</sup> was administered to all study subjects by a trained rater in order to collect psychiatric diagnostic information. This widely used instrument has shown reliability compared with that of other major diagnostic instruments used to assess Axis I disorders employing the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* criteria. Interviewers were trained to administer the SCID by one of the investigators. The interrater reliability of SCID results was compared on three separate occasions using audio tapes from randomly selected cases. On these occasions, the kappa coefficient was consistently >0.8. Assessments based on the trained interviewer's use of the SCID and blinded assessments by the psychiatrist based on all available data were nearly always identical. Raw data included self-report questionnaires and the SCID interview and were reviewed by one of the psychiatrist investigators who then assigned a "best estimate diagnosis" for each subject, taking all data into account.<sup>18</sup> The study psychiatrist was blind to case versus control status and deployment status.

Subjects were regarded as having been involved in combat if they were in the Gulf during the war and reported at least three of nine combat-related exposures: Scud missile explosion; artillery, rocket, mortar explosion; small arms fire; combat-related injury; saw dead body; witnessed dying; exposed to nerve gas; exposed to mustard or other gas; caused the death of another.<sup>19</sup>

Level of exposure to combat was assessed with the Expanded Combat Exposure Scale (CES).<sup>20</sup> This is a 34-item scale designed to assess the frequency of major combat-related stressors. It is a modified version of the Laufer Combat Scale, originally developed to assess traditional combat experiences, such as whether an individual has received friendly fire or incoming fire, whether his/her unit had been ambushed, attacked, or received sniper fire, or whether he/she had seen Americans or other troops killed or wounded. The psychometric properties of the original Laufer Combat Scale were satisfactory.<sup>21</sup> The modifications include assessing exposures to events encountered during deployment to the Gulf, such as being placed on alert for chemical or biological attacks, exposure to poison gas or germ warfare, or loss of communication among units. The Social Provisions Scale was used to assess social support.<sup>22</sup> This scale contains 24 statements concerning current relationships that call for responses on a four-point scale (ranging from strongly agree to strongly disagree). The scale provides a reliable measure of general support. It has been shown to be related to stress, depression, and symptoms of illness, and has been validated in a wide range of settings.<sup>23</sup>

Level of functioning was determined using the Medical Outcome Survey-Short Form 36 Health Survey.<sup>24</sup> This is a measure of perceived health status over the previous 4 weeks, which contains 36 items that assess dimensions of both physical and mental health, including pain. The instrument is widely used as a general health status measure of functional capacity and well-being and has excellent reliability and validity.<sup>25</sup>

Military preparedness was assessed by means of six items that inquired into how adequately subjects had been prepared, how they had met fitness and height/weight requirements, and how they had been trained for their assigned tasks.<sup>26</sup> These items called for yes or no responses and, because the distribution was highly skewed, a sum was dichotomized; a score of 6 determined that subjects were fully prepared, versus a score  $\leq 5$ , which determined that subjects were not fully prepared.

### **Statistical Analysis**

Analyses were performed using Statistical Analysis System version 8.<sup>27</sup> Descriptive statistics including percentages for categorical data, means, and standard errors for continuous data were generated. Subject groups were created

based on the number of BPD criteria met. The variable that defines these groups represents an ordinal, equally-spaced scale, so tests of association between this variable and categorical and continuous variables of interest were performed together with trend analysis. Because of the small number of participants in the group with BPD (n=15) and low frequencies for some demographic variables and SCID mental disorders overall or in certain categories, exact non-parametric tests were used in the analysis. Fisher's Exact Test was used to test associations between the BPD criteria group and categorical measures. Trend analysis for categorical variables was performed using Cochran Armitage trend test<sup>28</sup> for dichotomous variables or Jonkheere-Terpstra test<sup>29</sup> for multilevel variables. Associations between the BPD criteria group and continuous variables were tested using the non-parametric Kruskal-Wallis test. Presence of linear trend was assessed using regression models with number of BPD traits as a regressor variable.

## RESULTS

A total of 602 veterans were interviewed, and 576 (95.7%) completed the SNAP. As shown in Table 1, 247 subjects (42.8%) satisfied one or more criteria for BPD. For ease of analysis, we created the following subject groups: no criteria met (n=329), 1–2 criteria met (n=182), 3–4 criteria met (n=50), and  $\geq 5$  criteria met (n=15). Individuals in the last category met full syndromal criteria for the diagnosis of BPD.

As can be seen in Table 2, there was an association between number of BPD criteria met and age, level of education, and case versus control status. These results indicated that the greater the number of BPD criteria present, the younger the subjects' age, the lower the level of education, and the greater the likelihood of fitting the case definitions of one of the three groups selected for study (depression, fibromyalgia, cognitive dysfunction). There was no association between military variables and the number of BPD criteria met. Interestingly, the number of BPD traits met was significantly associated with the CES, though there was no association between BPD traits and participation in combat itself.

Next, the association of lifetime psychiatric comorbidity and number of BPD traits was tested (Table 3). For nearly all categories of psychiatric disorders, the association was significant and showed that as the number of criteria met

increased, the greater the percentage of subjects having each psychiatric disorder of interest. In fact, 80% of subjects meeting criteria for BPD ( $\geq 5$  traits) had a lifetime SCID disorder compared with 56.2% of those meeting no criteria.

Trends for health status, level of functioning, health service utilization, social functioning, self-injurious tendencies, and military/social were examined next (Tables 4 and 5). For almost all variables the association between number of BPD criteria satisfied and the variable of interest was statistically significant. Those having more BPD traits had worse health status, poorer physical functioning and increased levels of pain, more outpatient visits and inpatient stays, worse social functioning, less employment, more past suicide attempts, higher potential for self-injury, and a greater likelihood of having a family history of suicide or suicide attempts. A greater number of BPD criteria was also associated with a greater likelihood of having been incar-

**TABLE 1.**  
**Criteria for BPD**

<i>Criteria</i>	<b>N= 576</b>	
	<i>n</i>	<i>%</i>
Inappropriate anger	160	18.4
Impulsivity	101	17.5
Chronic emptiness	92	16.0
Mood instability	76	13.2
Identity disturbance	40	7.1
Efforts to avoid disturbance	36	6.3
Unstable relationships	30	5.2
Suicidal/self-mutilative behavior	7	1.2
<b><i>Distribution of Number of Criteria</i></b>		
0	329	57.1
1	120	20.8
2	62	10.8
3	32	5.6
4	18	3.1
5	13	2.3
6	2	0.4
7	0	0.0
8	0	0.0

BPD=borderline personality disorder.

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cerated, having been court martialled, receiving some other military discipline, having used illegal drugs. There was also a negative association between number of BPD criteria met and the perception of preparedness for military service.

## DISCUSSION

Nearly 43% of Gulf War veterans assessed with the SNAP endorsed one or more BPD symptom, the most frequent being inappropriate displays of anger (18.4%), followed by impulsivity (17.5%),

**TABLE 2.**  
**Demographic and Military Characteristics by Number of BPD Criteria**

	<i>BPD 0 Criteria (n=329) (%)</i>	<i>BPD 1–2 Criteria (n=182) (%)</i>	<i>BPD 3–4 Criteria (n=50) (%)</i>	<i>BPD ≥5 Criteria (n=15) (%)</i>	<i>P-Value*</i>
<b>Age, Year, Mean (SE)</b>	39.9 (0.5)	39.4 (0.6)	35.5 (1.1)	35.0 (2.8)	.0001
<i>Gender</i>					.4061
Male	86.3	87.4	92.0	100.0	
Female	13.7	12.6	8.0	0.0	
<i>Race</i>					.4014
White	97.6	95.6	100.0	100.0	
Black/other	2.4	4.4	0.0	0.0	
<i>Education</i>					.0345
High school or less	30.7	40.7	42.9	40.0	
Some college	45.8	46.7	44.9	46.7	
College graduation or more	23.5	12.6	12.2	13.3	
<i>Marital Status</i>					.0509
Single/never married	7.5	10.0	14.0	6.7	
Married/living with partner	79.1	66.7	68.0	80.0	
Separated/divorced/widowed	13.4	23.3	18.0	13.3	
<i>Rank</i>					.2272
Enlisted	93.6	95.1	100.0	93.3	
Officer	6.4	4.9	0.0	6.7	
<i>Military Status</i>					.1890
Regular military	27.7	34.6	28.0	46.7	
National Guard/reserve	72.3	65.4	72.0	53.3	
<i>Branch of Service</i>					.7905
Army	71.4	70.9	70.0	66.7	
Air Force	6.1	6.0	2.0	13.3	
Marines	12.5	15.4	18.0	13.3	
Navy/Coast Guard	10.0	7.7	10.0	6.7	
<i>Case/Control Status</i>					<.0001
Case	47.4	78.6	84.0	93.3	
Control	56.2	21.4	16.0	6.7	
<i>Deployment to Gulf War</i>					.3818
Yes	72.3	70.3	80.0	86.7	
No	27.7	29.7	20.0	13.3	
<i>Participation in Combat for Gulf War Deployed<sup>†</sup></i>	<i>n=238</i>	<i>n=128</i>	<i>n=40</i>	<i>n=13</i>	
Combat	30.7%	37.5%	30.3%	61.5%	.0945/.0994
<i>Expanded Combat Exposure Scale mean (SE)</i>	6.2 (0.3)	6.7 (0.4)	7.7 (0.8)	10.5 (1.2)	.0006/.0010

\* *P*-values are from Fisher's Exact test for categorical variables; Kruskal-Wallis test for continuous variables

<sup>†</sup> *P* values are from Fisher's exact test/Cochran Armitage Trend test

BPD=borderline personality disorder.

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chronic feelings of emptiness (16.0%), and mood instability (13.2%). Fifteen individuals (3%) met the diagnostic threshold for BPD. This rate should not be interpreted as a prevalence estimate among all veterans because our study deliberately oversampled veterans with symptoms of depression, chronic widespread pain, and cognitive dysfunction. The study demonstrates that persons meeting criteria for BPD, or having one of its many traits, are found in military populations even though potential recruits are screened to exclude those with mental or physical disorders that could interfere with their ability to function in the military. While screening might possibly eliminate the most obvious cases of BPD, pro-

cedures are probably sufficiently imprecise to allow those with milder cases (or fewer symptoms) of BPD to enlist. Because some of these symptoms, such as anger and impulsivity, are relatively common in the general population, they may have little importance in isolation from other symptoms of BPD. Could the military culture itself be responsible for inducing these traits in recruits? While an intriguing possibility, it seems unlikely that these self-reported symptoms would reflect the influence of military-related experiences or short-term patterns of adjustment necessitated by the military lifestyle.

There are currently no studies in which BPD was examined in military personnel, although the work

**TABLE 3.**  
**Prevalence of Lifetime Psychiatric Disorders Assessed with SCID by Number of BPD Criteria**

<i>Psychiatric Disorders</i>	<i>0 Criteria (n=329) (%)</i>	<i>1–2 Criteria (n=182) (%)</i>	<i>3–4 Criteria (n=50) (%)</i>	<i>≥5 Criteria (n=15) (%)</i>	<i>P-Value</i>
Any SCID Disorder	56.2	80.7	92.0	80.0	<.0001/<.0001
Mood Disorder (any)	19.0	47.8	60.0	66.7	<.0001/<.0001
MDD	15.0	34.6	42.0	53.3	<.0001/<.0001
Bipolar I/II/Other	0.0	2.8	6.0	6.7	.0003/.0007
Dysthymia	1.0	7.1	14.0	6.7	<.0001/<.0001
Depressive Disorder	2.8	6.0	6.0	6.7	.1457/.0960
Anxiety	15.6	34.6	56.0	73.3	<.0001/<.0001
Panic	1.8	7.7	8.0	13.3	.0005/.0006
Agoraphobia	1.2	5.0	10.0	6.7	.0023/<.0021
Social Phobia	2.5	8.2	14.0	6.7	.0009/.0012
Specific Phobia	4.6	7.7	10.0	6.7	.2328/.1096
OCD	0.6	1.7	4.0	0.0	.1369/.1262
PTSD	6.1	15.9	20.0	46.7	<.0001/<.0001
GAD	2.8	9.3	20.0	26.7	<.0001/<.0001
Other	0.0	0.6	8.0	6.7	<.0001/.0001
Psychotic Disorders	0.3	0.0	2.0	6.7	.0224/.0316
Somatoform Disorders	1.2	1.7	12.0	13.3	.0002/.0002
Eating Disorders	0.9	2.2	8.0	6.7	.0087/.0038
Substance Abuse/Dependence Disorder (any)	44.0	56.6	66.0	66.7	.0021/.0004
Adjustment Disorder	0.6	2.2	0.0	0.0	.3686/.7824
Other <i>DSM-IV</i> Axis I Disorder	0.0	0.6	2.0	0.0	.1144/.1211

\* P-values are from Fisher's Exact test/Cochran Armitage trend test

BPD=borderline personality disorder; SCID=Structured Clinical Interview for the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*; MDD=major depressive disorder; OCD=obsessive-compulsive disorder; PTSD=posttraumatic stress disorder; GAD=generalized anxiety disorder.

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**TABLE 4.**  
**Measures of Distress and Health Status by Number of BPD Criteria**

<b>Health Status</b>	<b>BPD 0 Criteria (N=329) Mean (SE)</b>	<b>BPD 1–2 Criteria (N=182) Mean (SE)</b>	<b>BPD 3–4 Criteria (N=50) Mean (SE)</b>	<b>BPD ≥5 Criteria (N=15) Mean (SE)</b>	<b>P-Value</b>
SF-36 Phys. Component Summary (I) (95–96)	49.8 (0.5)	46.8 (0.7)	44.6 (1.5)	44.2 (2.3)	<.0001/<.0001
SF-36 Mental Component Summary (I) (95–96)	51.6 (0.5)	46.1 (0.9)	43.6 (1.8)	39.8 (3.1)	<.0001/<.0001
SF-36 Phys. Component Summary (II) (99–2002)	47.9 (0.5)	44.8 (0.8)	42.1 (1.7)	38.0 (2.8)	<.0001/<.0001
SF-36 Mental Component Summary (III) (99–2002)	54.2 (0.3)	45.1 (0.8)	36.7 (1.5)	33.4 (2.3)	<.0001/<.0001
Physical functioning	85.5 (1.0)	76.8 (1.7)	67.5 (3.7)	53.7 (7.9)	<.0001/<.0001
Physical role	82.5 (1.7)	65.5 (2.8)	48.0 (5.5)	38.3 (10.6)	<.0001/<.0001
Bodily pain	70.6 (1.1)	61.1 (1.6)	50.3 (3.1)	49.9 (5.5)	<.0001/<.0001
General health	71.8 (1.0)	59.4 (1.7)	48.0 (3.4)	35.8 (6.5)	<.0001/<.0001
Vitality	61.9 (1.2)	45.5 (1.7)	34.2 (2.8)	22.3 (3.9)	<.0001/<.0001
Social functioning	85.4 (1.0)	70.2 (1.7)	54.8 (3.3)	52.5 (6.8)	<.0001/<.0001
Emotional role	94.5 (1.0)	74.0 (2.8)	48.0 (6.0)	40.0 (11.4)	<.0001/<.0001
Mental health	82.3 (0.7)	65.3 (1.4)	52.1 (2.4)	41.1 (4.5)	<.0001/<.0001
<b>Level of Functioning (Reported by Physician)</b>					
<i>Disability</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	.0016/<.0001
None	62.6	43.7	46.9	40.0	
Slight disability	20.1	26.0	22.4	33.3	
Moderate	15.2	25.4	22.4	20.0	
Severe	2.1	5.0	8.2	6.7	
<b>Distress: Pain and Mental Suffering</b>					
None	57.5	36.5	34.7	40.0	<.0001/<.0001
Mild	34.7	45.3	40.8	26.7	
Moderate/severe	7.9	18.2	24.5	33.3	
<b>Healthservices Utilization</b>					
Outpatient visits to private physician office (>5)	16.4	23.2	26.5	25.0	.2633/.0498
ER visits (at least one)	24.0	30.7	31.3	33.3	.2954/.0563
Inpatient stay (at least one overnight)	6.2	11.4	14.6	13.3	.0488/.0124

\* P-values are from Fisher's Exact test/Cochran Armitage trend test for dichotomous variables; Fisher's Exact test/Jonkheere-Terpstra test for multilevel categorical variables; Kruskal-Wallis test/Regression models for continuous variables with number of BPD criteria as a regressor variable.

BPD=borderline personality disorder; ER=emergency room.

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of Hoge and colleagues<sup>30</sup> is relevant to this subject. They found that the presence of mental illness was an important source of morbidity among active duty United States military personnel; ~9% of hospitalizations and 4% of ambulatory visits involved a diagnosis of personality disorders, though not BPD specifically.

An important finding was the association between the number of BPD symptoms and both functional impairment and utilization of health-care resources. In short, the higher the number of traits, the greater the impairment (in multiple life domains) and the greater the use of healthcare resources, such as inpatient days, outpatient visits, and emergency department visits. Individuals

with BPD are known to have high rates of health-care utilization, and our findings are compatible with these clinical observations.<sup>4,5</sup> Another important finding is that comorbid psychiatric disorders are not only frequent in persons with BPD, but also in those with BPD symptoms that do not meet diagnostic threshold. If the number of criteria can be used as a proxy for severity, one can conclude that as the severity of BPD symptomatology increases, case complexity increases as well. BPD symptoms are associated with the presence of comorbid mood, anxiety, psychotic, somatoform, eating, and substance use disorders. In fact, of those meeting criteria for BPD, 66.77% met life-

**TABLE 5.**  
**Social and Military Functioning by Number of BPD Criteria**

<b><i>Social Functioning</i></b>	<b><i>BPD 0 Criteria (n=29) Mean (SE)</i></b>	<b><i>BPD 1–2 Criteria (n=182) Mean (SE)</i></b>	<b><i>BPD 3–4 Criteria (n=50) Mean (SE)</i></b>	<b><i>BPD ≥5 Criteria (Nnan (SE)</i></b>	<b><i>P-Value</i></b>
Social Provision Scale	83.0 (0.5)	76.5 (0.8)	68.6 (1.7)	69.7 (2.8)	<.0001/<.0001
Reliable alliance	14.4 (0.1)	13.4 (0.2)	12.0(0.4)	11.9 (0.8)	<.0001/<.0001
Attachment	13.8 (0.1)	12.1 (0.2)	10.8 (0.4)	10.8 (0.7)	<.0001/<.0001
Guidance	14.2 (0.1)	13.0 (0.2)	10.9 (0.4)	12.1 (0.6)	<.0001/<.0001
Nurturance	13.6 (0.1)	13.2 (0.2)	12.7 (0.4)	13.1 (0.7)	.0352/.0136
Social integration	13.7 (0.1)	12.6 (0.2)	11.8 (0.3)	11.7 (0.6)	<.0001/<.0001
Reassurance of worth	13.3 (0.1)	12.2 (0.2)	10.4 (0.3)	10.1 (0.6)	<.0001/<.0001
Social Desirability Scale	5.7 (0.1)	4.8 (0.2)	4.9 (0.3)	3.7 (0.4)	<.0001/<.0001
Currently employed	92.7%	90.0%	75.8%	86.7%	.0128/.0054
Most prepared for military service	81.2%	73.6%	76.0%	60.0%	.0014/.0124
<b><i>Self-Harm Tendencies</i></b>					
Suicide attempts (95–96 report)	2.7%	4.4%	14.0%	13.3%	.0026/.0011
SNAP Self-Harm Scale mean (SE)	0.9 (0.1)	3.0 (0.2)	5.1 (0.5)	6.2 (0.7)	<.0001/<.0001
Low self-esteem mean (SE)	0.5 (0.0)	1.9 (0.2)	3.4 (0.3)	4.0 (0.6)	<.0001/<.0001
Suicide proneness mean (SE)	0.4 (0.0)	1.0 (0.1)	1.7 (0.3)	2.2 (0.5)	<.0001/<.0001
Family history of suicide/suicide attempts	5.6%	14.3%	21.3%	14.3%	.0003/<.0001
<b><i>Military/Social Problems</i></b>					
Ever been in jail/prison	22.2%	29.1%	32.0%	46.7%	.0500/.0042
Have been court martialled	1.2%	1.1%	6.0%	6.7%	.0421/.0284
Other military discipline	11.9%	18.2%	26.0%	42.9%	.0014/.0002
Illegal or street drug use	24.3%	33.2%	30.0%	33.3%	.1622/.0454

\*P-values are from Fisher's Exact test/Cochran Armitage trend test for trend test for dichotomous variables; Kruskal Wallis test/regression models for continuous variables with number of BPD criteria as a regressor variable.

BPD=borderline personality disorder; SNAP=Schedule for Non-Adaptive and Adaptive Personality.

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time criteria for a substance use disorder, 53.3% met criteria for major depression, 46.7% met lifetime criteria for posttraumatic stress disorder, 26.7% met lifetime criteria for generalized anxiety disorder, and 13.3% met lifetime criteria each for panic disorder and a somatoform disorder. The pattern of comorbidity reflects what is seen in clinical samples, except perhaps for higher rates of substance use disorders, which may reflect the influence of having a predominantly male sample.<sup>6,7</sup> A finding that is likely unique to the sample is the male preponderance of those with BPD or its symptoms. While typically associated with women,<sup>1,2</sup> BPD occurs in men as well, as this study demonstrates.

Variables involving social and military functioning show the adverse impact of BPD symptoms. Social functioning along all its dimensions shows increasing levels of dysfunction as the number of BPD criteria increase. Employment is negatively impacted, perhaps because borderline symptoms contribute to an unstable work record<sup>5</sup>: for example, being fired, quitting a job out of pique, or having poor relationships with coworkers. There was an association between number of BPD symptoms and incarceration, being court-martialed, having received some other form of military discipline, or having used illegal drugs. While these behaviors (or consequences of a behavior) are typically associated with antisocial personality disorder, they are reflective of the tendency of some BPD-diagnosed individuals to behave in ways that are self-defeating or damaging. These results are also indicative of the need for the military to better assess BPD and its many symptoms, and to intervene whenever possible to minimize their negative impact.

Scores on the SNAP self-harm scale and suicide proneness scale also show a relationship with number of BPD symptoms. This finding is not surprising when one considers that deliberate self-harm and suicidal behavior are common components of BPD.<sup>10</sup> Also present was a relationship between the number of BPD traits and family history of suicidal behavior, suggesting that this particular symptom may be familial to some extent.

There was a significant relationship between BPD symptoms and the CES score. As described earlier, the scale involves the assessment of many experiences beyond combat, including perceived environmental exposures and loss of communication. The association can be interpreted in several ways. It can be interpreted to mean that

exposure to wartime situations can induce BPD symptoms, in a fashion similar to what is seen with posttraumatic stress disorder; yet, because BPD traits are generally long-standing, this explanation is probably unlikely. Alternatively, because individuals with BPD symptoms are emotionally oversensitive, and often experience overly intense reactions to stressful events, these individuals might report high scores on this scale, reflecting an exaggerated perception of external events. Another explanation is that the impulsivity seen in many BPD patients leads them to select and place themselves into high-risk situations.

There are a number of limitations to the study. First, BPD is more frequent in women and, because the military sample is mostly male, the results cannot be generalized to all veterans. Second, while recall bias could have altered reports of symptoms, the potential for this confound is probably reduced by the use of multiple validated self-report measures, including the SNAP and the SCID, both widely used psychiatric diagnostic instruments that have each been subject to validation studies. Third, SCID raters were personally trained by one of the investigators and reliability checks during the study showed excellent concordance of the raters with one of the study investigators. Finally, the best estimate diagnosis method was used so that all relevant information would be taken into account.

## CONCLUSION

While the current study was not developed as an epidemiologic study and represents an over-sampling of specified disorders of interest (depression, chronic widespread pain, cognitive dysfunction), the findings suggest that BPD and its many symptoms do occur in a military population. Using the number of BPD traits as a proxy for severity suggests their importance due to the positive association between number of symptoms and presence of psychiatric comorbidity and evidence of psychosocial dysfunction. Thus, one of the important results of this study is the finding that as BPD severity increases, subjects not only show greater psychiatric comorbidity, but show behavioral and demographic differences as well. Another interpretation of these findings is that the military might wish to revisit the issue of enlistment screening to identify persons with BPD traits because even individuals with sub-clinical cases of BPD have a greater likelihood of not succeeding in the military. Alternatively,

the military could use the data to encourage the early recognition and treatment of those with BPD symptoms to minimize their impact, for example, referring such individuals for cognitive-behavioral therapies known to be effective in the treatment of BPD.<sup>31,32</sup> One possibility is to use a quick screen for personality disorders and traits, such as one described by Langbehn and colleagues.<sup>33</sup> **CNS**

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