Prevalence, Correlates, Disability, and Comorbidity of DSM-IV Borderline Personality Disorder: Results from the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions

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Abstract

Objectives—To present nationally representative findings on prevalence, sociodemographic correlates, disability, and comorbidity of BPD among men and women.

Methods—Face-to-face interviews with 34,653 adults participating in the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions.

Results—Prevalence of lifetime BPD was 5.9% (99% CI: 5.4–6.4). There were no differences in the rates of BPD among men (5.6%, 99% CI: 5.0–6.2) and women (6.2%, 99% CI: 5.6–6.9). BPD was more prevalent among Native American men, younger and separated/divorced/widowed adults, and those with lower incomes and education, and less prevalent among Hispanic men and women and Asian women. BPD was associated with substantial mental and physical disability, especially among women. High co-occurrence rates of mood and anxiety disorders with BPD were similar. With additional comorbidity controlled, associations with bipolar disorder and schizotypal and narcissistic PDs remained strong and significant. Associations of BPD with other specific disorders were no longer significant or were considerably weakened.

Conclusions—Prevalence of BPD in the general population is much greater than previously recognized, equal prevalent among men and women, and associated with considerable mental and physical disability, especially among women. Unique and common factors may differentially contribute to disorder-specific comorbidity with BPD and some of these associations appear to be sex-specific. There is a need for future epidemiologic, clinical and genetically-informed studies to identify unique and common factors that underlie disorder-specific comorbidity with BPD. Important sex differences observed in rates of and associations with BPD can inform more focused, hypothesis-driven investigations of these factors.

Borderline personality disorder (BPD) is a complex, serious psychiatric disorder characterized by pervasive instability in regulation of emotion, self-image, interpersonal relationships, and impulse control.[1] BPD is the most prevalent personality disorder in clinical settings and is associated with severe functional impairment, substantial treatment utilization, and high rates

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of mortality by suicide.[2–5] Clinical studies have also shown BPD to be highly comorbid with most substance use, mood, anxiety, and other personality disorders (PDs).[6–12]

Although BPD is among the most frequently studied PDs in clinical settings, little is known about its prevalence, correlates, disability, and comorbidity in general population samples. Several earlier community studies[13–27] of BPD were limited by selection of small samples (n=133–799) not entirely representative of the general population. Others preselected individuals from larger general population samples based on responses to PD screening instruments or psychopathology,[15,19,20,24] further limiting the size of the survey samples on which to base prevalence estimates. Of the 2 larger-scale epidemiologic surveys, the one conducted in Norway[28] (n = 2,053) was compromised by a low response rate (57%), and the Australian survey[29] (n=10,641) used a PD screening measure rather than a diagnostic assessment instrument to assess PDs. Because of these limitations, very little is known about the sociodemographic characteristics, disability, and comorbidity of BPD with other psychiatric disorders. The 1 study that presented data on disorder-specific comorbidity[19] did not control for other comorbid disorders, thereby precluding analysis of common and unique factors underlying disorder-specific associations with BPD.

The lack of comprehensive and detailed information on DSM-IV BPD in the United States represents a gap in our knowledge relevant to prevention, treatment, and economic costs. The present study was designed to address this gap using data from the 2004–2005 Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC).[30] The Wave 2 NESARC covered DSM-IV alcohol and specific drug use disorders, and mood and anxiety disorders assessed in the 2001–2002 Wave 1 NESARC,[31, 32] in addition to BPD, schizotypal and narcissistic PDs, and posttraumatic stress disorder (PTSD). The remaining DSM-IV PDs (avoidant, dependent, obsessive-compulsive, paranoid, schizoid, histrionic, and antisocial), were assessed in the Wave 1 NESARC. The sample size and high response rate of the Wave 2 NESARC allow for reliable and precise estimation of lifetime prevalence of BPD, especially among important sociodemographic subgroups of the population. Furthermore, comorbidity of BPD with each Axis I and II disorder was examined while controlling for both sociodemographic characteristics and additional psychiatric disorders to determine the unique relationship of each specific disorder to BPD. The importance of controlling for other disorders that are highly comorbid with one another represents an advance in our understanding of comorbidity recently highlighted in the epidemiologic literature.[33, 34] This study also provides information on mental and physical disability associated with BPD. Because so little is known about sex differences in BPD, information on correlates, disability and comorbidity of BPD is presented for the total sample and by sex.

Methods

Sample

The 2004–2005 Wave 2 NESARC[30] is the second wave following upon the Wave 1 NESARC, conducted in 2001–2002 and described in detail elsewhere.[31, 32] The Wave 1 NESARC was a representative sample of the adult population of the United States. The target population was the civilian population, 18 years and older, residing in households and group quarters. Face-to-face interviews were conducted with 43,093 respondents. The NESARC oversampled Blacks, Hispanics, and young adults aged 18 to 24 years. The overall response rate was 81.0%.

In Wave 2, attempts were made to conduct face-to-face reinterviews with all 43,093 respondents to the Wave 1 interview. Excluding respondents ineligible for the Wave 2 interview because they were deceased, deported, on active military duty throughout the follow-up period, or mentally or physically impaired, the Wave 2 response rate was 86.7%, reflecting 34,653 completed Wave 2 interviews. The cumulative response rate at Wave 2 was the product

of the Wave 2 and Wave 1 response rates, or 70.2%. As in Wave 1, the Wave 2 NESARC data were weighted to reflect design characteristics of the survey and account for oversampling. Adjustment for nonresponse across sociodemographic characteristics and presence of any lifetime Wave 1 substance use disorder or psychiatric disorder was performed at the household and person levels. Weighted Wave 2 data were then adjusted to be representative of the civilian population on socioeconomic variables including region, age, race-ethnicity, and sex, based on the 2000 Decennial Census.

Personality Disorders

Diagnoses were made using the Wave 2 Alcohol Use Disorder and Associated Disabilities Interview Schedule DSM-IV Version (AUDADIS-IV),[35,36] a fully structured diagnostic interview designed for use by experienced lay interviewers. Avoidant, dependent, obsessive-compulsive, paranoid, schizoid, histrionic, and antisocial PDs were assessed in the Wave 1 NESARC and are described in detail elsewhere.[37–39] Borderline, schizotypal, and narcissistic PDs were assessed in Wave 2. These three PDs were not assessed in the Wave 1 NESARC due to their complexity and the associated number of symptom items necessary for their operationalization. All PD diagnoses were assessed on a lifetime basis.

The diagnosis of PDs requires evaluation of long-term patterns of functioning.[1] Diagnoses of BPD in the AUDADIS-IV were made accordingly. All NESARC respondents were asked a series of BPD symptom questions about how they felt or acted most of the time throughout their lives, regardless of the situation or whom they were with. They were instructed not to include symptoms occurring only when they were depressed, manic, anxious, drinking heavily, using medicines or drugs, experiencing withdrawal symptoms (defined earlier in the interview), or physically ill. To receive a diagnosis of BPD, respondents had to endorse the requisite number of DSM-IV symptom items, at least 1 of which must have caused social or occupational dysfunction. Diagnoses for other PDs were made similarly, except for antisocial PD. Respondents needed to endorse the requisite number of symptom items for both childhood conduct disorder before age 15 and the adult antisocial syndrome since the age of 15.

Multiple symptom items were used to operationalize the more complex criteria associated with DSM-IV PDs, including BPD (18 items). Most PD symptom items[36] were similar to those appearing in the Structured Clinical Interview for DSM-IV Disorders II,[40] the International Personality Disorder Examination,[41] and the Diagnostic Interview for DSM-IV Personality Disorders.[42]

The reliability of AUDADIS-IV PD diagnoses and symptom scales was assessed in large test-retest studies conducted as part of the Wave 1[43] and Wave 2[44] NESARC surveys. Reliability of BPD was 0.71; reliabilities of other PDs ranged from fair to good ($\kappa = 0.40 – 0.70$). Reliabilities of the associated symptom scales were much higher (intraclass correlation coefficients = 0.50–0.83). Reliabilities of AUDADIS-IV PD diagnoses compare favorably with those found in short-term test-retest studies using semistructured personality interviews in treated samples of patients.[45] Convergent validity of PDs assessed in Wave 1 was good to excellent and is reported in detail elsewhere.[37–39]

Other Psychiatric Disorders

Wave 2 AUDADIS-IV measures of substance use (alcohol and drug-specific abuse and dependence and nicotine dependence), mood (major depressive disorder, dysthymia, bipolar I, and bipolar II), and anxiety (panic disorder with and without agoraphobia, social phobia, specific phobia, and generalized anxiety) disorders were identical to those utilized in Wave 1, except for the time frames. Wave 2 diagnoses of these disorders were made for 2 time periods between Waves 1 and 2: (1) the year preceding the Wave 2 interview; and (2) the "intervening"

period of approximately 2 years following the Wave 1 interview but before the year preceding the Wave 2 interview. For this study, 12-month diagnoses reflect disorders occurring during the year preceding the Wave 2 interview, while lifetime diagnoses reflect those occurring over the life course as assessed in both Wave 1 and Wave 2.

Extensive questions covered DSM-IV criteria for alcohol and drug-specific abuse and dependence, including sedatives, tranquilizers, opioids other than heroin, cannabis, cocaine or crack, stimulants, hallucinogens, inhalants and solvents, heroin and other illicit drugs. Consistent with Wave 1 diagnoses, 12-month abuse required 1 or more of 4 abuse criteria and dependence required 3 or more of 7 dependence criteria to be met in the year preceding the Wave 2 interview. Similar to prior-to-the-past-year diagnoses in the Wave 1 NESARC, criteria for abuse or dependence during the intervening period must have clustered within 1 year. Drug-specific abuse and dependence were aggregated in this study to yield diagnoses of any drug abuse and any drug dependence.

The reliability of AUDADIS-IV alcohol and drug diagnoses is documented in clinical and general population samples,[43, 44, 46–49] with test-retest reliability ranging from good to excellent ($\kappa = 0.70$–0.91). Convergent, discriminant, and construct validity of AUDADIS-IV substance use disorder diagnoses were good to excellent,[50–54] including in the World Health Organization/National Institutes of Health International Study on Reliability and Validity,[55–60] where clinical reappraisals documented good validity of DSM-IV alcohol and drug use disorder diagnoses ($\kappa = 0.54$–0.76).[46,55]

Mood disorders included DSM-IV primary major depressive disorder (MDD), dysthymia, bipolar I, and bipolar II. Anxiety disorders included DSM-IV primary panic disorder with and without agoraphobia, social and specific phobias, and generalized anxiety disorder (GAD). A diagnosis of a mood disorder did not rule out an anxiety disorder, and in this sense these two types of diagnoses were non-hierarchical. AUDADIS-IV methods to diagnose these disorders are described in detail elsewhere.[32,61–66] In DSM-IV,[1] "primary" excludes substance-induced disorders and those due to general medical conditions. Diagnoses of MDD also ruled out bereavement. In addition, past-year and prior-to-the-past-year diagnoses of PTSD were assessed in the Wave 2 NESARC.

Test-retest reliabilities for AUDADIS-IV mood, anxiety, and PD diagnoses in general population and clinical samples were fair to good ($\kappa = 0.40$–0.77).[43, 44, 46] Convergent validity was good to excellent for all mood and anxiety diagnoses,[61–66] and selected diagnoses showed good agreement ($\kappa = 0.64$–0.68) with psychiatrist reappraisals.[46]

Disability

Disability was determined with the Short Form-12 Health Survey, version 2 (SF-12v2).[67] The SF-12v2 yields 8 profile scores that measure dimensions of physical and mental disability: social functioning; role emotional functioning (measuring role impairment); mental health; physical functioning; role physical functioning; bodily pain; general health; and vitality.

Statistical Analysis

All analyses presented here were conducted for the total sample and by sex. Weighted frequencies and cross-tabulations were computed to calculate: (1) lifetime prevalences of BPD by sociodemographic characteristics; (2) prevalences of BPD among respondents with other psychiatric disorders; and (3) prevalences of other psychiatric disorders among respondents with BPD. Adjusted odds ratios, derived from single multiple logistic regression analyses, assessed associations of BPD with sociodemographic characteristics. Chi-square statistics

were used to determine sex differences in rates of co-occurrence of BPD with other psychiatric disorders.

Associations of BPD with psychiatric comorbidity were calculated 2 ways. The first controlled for sociodemographic characteristics, comparable with other reports on comorbidity. The second way further controlled for all other psychiatric disorders. This analysis addresses the fact that analyses controlling only for sociodemographic characteristics do not yield information on the unique relationships of BPD to other disorders, that themselves have considerable comorbidity. Thus, control for other psychiatric disorders was necessary as these disorders confound the relationship between BPD and each target diagnosis. Although these other comorbid disorders are also highly comorbid with one other, their introduction into the model did not invoke significant collinearity.

Multiple linear regression analyses examined the relationships of BPD with each of the 8 SF-12v2 disability scores, controlling for all sociodemographic characteristics and other psychiatric disorders, to determine the independent contribution of BPD to disability. Analyses of physical disability scores also controlled for medical conditions. Standard norm-based scoring techniques were used to transform each score (range 0–100) to achieve a mean of 50 and a standard deviation of 10 in the U.S. general population. Lower scores indicated more disability.

All standard errors and 99% confidence intervals were estimated using SUDAAN,[68] which adjusts for design characteristics of complex surveys like the NESARC.

Results

Prevalence and Sociodemographic Characteristics

The prevalence of BPD in the NESARC sample was 5.9% (Table 1). Rates of BPD did not differ significantly between men (5.6%) and women (6.2%). For the total sample, an inverse relationship of prevalence with age was observed, with the greatest decrease found after age 44. The odds of BPD were also significantly ($p < 0.01$) greater among Native Americans, but lower among Hispanics. Respondents in the 3 lowest income brackets ($0–$69,999), and those who were separated/divorced/widowed, were more likely to have BPD. Further, the odds of BPD were greater among respondents with high school and less than high school educations.

With few exceptions, results among men and women mirrored those found in the total sample. However, less than a high school education was associated with increased odds of BPD among men. The odds of BPD was greater among Native American men, and lower among Hispanic men and women and Asian women.

Co-Occurrence of DSM-IV Lifetime BPD With Other 12-Month Psychiatric Disorders

Rates of co-occurrence of lifetime BPD with other 12-month psychiatric disorders are shown in Table 2 for the total sample and by sex. For the total sample, the prevalences of BPD among respondents with mood, anxiety, and substance use disorders were 29.4%, 21.5%, and 14.7%, respectively. Within these broad categories, rates of BPD were greatest among respondents with 12-month bipolar I (50.1%), panic disorder with agoraphobia (51.0%) and drug dependence (45.8%). The prevalence of BPD was significantly greater ($p < 0.01$) among women with nicotine dependence (17.6%) than among men with nicotine dependence (13.6%). By contrast, the rates of BPD among men with GAD (43.5%), any anxiety disorder (25.0%), and any mood disorder (34.5%) were greater than the corresponding rates among women (32.2%, 19.9%, and 26.7%).

Rates of any 12-month substance use, mood, and anxiety disorder among respondents with lifetime BPD were similar, 50.7%, 50.9%, and 59.6%, respectively. Alcohol dependence (18.0%), bipolar I (23.9%), and PTSD (31.6%) were the most prevalent disorders in their classes among respondents with BPD. All substance use disorders except drug dependence were greater among men with BPD than among women with BPD, whereas women with BPD had greater rates of all mood and anxiety disorders except bipolar I and II disorders, panic disorder without agoraphobia, and social phobia.

Co-Occurrence of DSM-IV Lifetime BPD With Other Lifetime Psychiatric Disorders

Prevalences of BPD among respondents with other lifetime disorders were similar to the corresponding rates for 12-month disorders (Table 3). In the total sample, prevalences of BPD among respondents with lifetime mood, anxiety, and substance use disorders were 17.2%, 14.8%, and 9.5%, respectively. Bipolar I disorder (35.9%), panic disorder with agoraphobia (36.0%) and drug dependence (30.9%) were the most prevalent disorders in their classes. Rates of BPD were consistently greater among men with any lifetime mood (19.0%) and any anxiety disorder (16.9%), compared with the corresponding rates among women (16.9%, 13.7%). Conversely, rates of BPD were greater among women than among men with all substance use disorders except drug dependence.

Prevalence of BPD among women with any other lifetime PD was 24.4%, greater than the corresponding rate among men (19.5%). However, rates of BPD among women with antisocial and narcissistic PDs were greater than the rates of BPD among men with these PDs.

The patterns of co-occurrence between lifetime BPD and other lifetime psychiatric disorders in the total sample mirrored those observed for 12-month comorbid disorders with 2 notable exceptions. MDD (32.1%) and bipolar I disorder (31.8%) were the most prevalent mood disorders, and specific phobia (37.5%), GAD (35.1%), and PTSD (39.2%) were the most prevalent anxiety disorders, among respondents with BPD. Generally consistent with the 12-month findings, rates of substance use disorders except nicotine dependence were greater among men than among women with BPD, whereas rates of MDD and dysthymia and anxiety disorders except panic disorder without agoraphobia were greater among women than among men with BPD.

Associations Between Lifetime BPD and Other 12-Month and Lifetime Psychiatric Disorders Controlling for Sociodemographic Characteristics and Other Psychiatric Disorders

Associations between lifetime BPD and other lifetime disorders controlling for sociodemographic characteristics and additional comorbid disorders are depicted in Table 4. When only sociodemographic characteristics were controlled, 99.0% of all associations between BPD and other psychiatric disorders were positive and significant, both for the total sample and among men and women. The only exception was alcohol abuse, which was negatively associated with BPD among men. In the total sample, BPD was most strongly related to any drug dependence, bipolar I disorder, panic disorder with agoraphobia, GAD, social phobia, and PTSD, and schizotypal, narcissistic, and dependent PDs. Results were similar among men and women.

Odds ratios were reduced when additional comorbidity was controlled. For the total sample, associations of lifetime BPD with bipolar I and II disorders and schizotypal and narcissistic PDs were reduced but remained strong and statistically and clinically significant (ORs ≥ 4.9). Lifetime BPD also remained associated with alcohol dependence, any drug abuse, nicotine dependence, MDD, panic disorder with and without agoraphobia, social phobia, GAD, PTSD, and histrionic and avoidant PDs, but with lower ORs that may not be clinically significant. These results were generally consistent among men and women with the following notable

exceptions. BPD remained significantly, but less strongly, associated with panic disorder without agoraphobia among men but not women. By contrast, associations of BPD with any drug abuse, nicotine dependence, panic disorder with agoraphobia, and histrionic and avoidant PDs remained significant, but modest, only among women. In addition, specific phobia and paranoid PD were significantly, but modestly, associated with BPD among women, a result not observed in the total sample or among men.

With few exceptions, patterns of associations between lifetime BPD and other lifetime psychiatric disorders were remarkably similar to those found for 12-month comorbid disorders (Table 5).

Disability

BPD was highly and significantly related to each SF-12*v2* disability score (Table 5). Respondents with lifetime BPD had greater disability than those without BPD, even when sociodemographic characteristics, medical conditions (for physical disability analyses) and other Axis I and II psychiatric disorders were controlled. The medical conditions measure was entered into the model as the number of medical conditions that included arteriosclerosis, hypertension, diabetes, cirrhosis of the liver, other forms of liver disease, angina pectoris, tachycardia, myocardial infarction, high cholesterol, other forms of heart disease, stomach ulcer, HIV positive, AIDS, other sexually transmitted disease, gastritis, arthritis, and stroke. The severity of mental disability was greater than that associated with physical disability. Women with BPD had significantly greater disability (p < 0.01) than men as assessed by each SF-12*v2* score.

Discussion

The prevalence of BPD was 5.9% in this general population sample, approximating values in the upper range of estimates (0.0%–5.4%) found in previous epidemiologic surveys.[13–29] The discrepancy in rates of BPD between this study and others may be partly due to limitations of prior surveys with respect to unrepresentative samples and small sample sizes. Differences in diagnostic criteria, assessment instruments, and survey designs and methodologies may also have contributed to the discrepancies.

Consistent with most epidemiologic surveys,[15,19,27–29] but not clinical studies,[69] the prevalence of BPD did not differ by sex. Although greater rates of BPD among women in clinical studies have been attributed to increases in criterion or assessment biases, research on these biases in the clinical diagnosis of BPD has been equivocal.[70, 71] Increased rates of BPD among women in clinical samples might also reflect increased treatment seeking among women with BPD, sampling biases,[72] or biological or sociocultural differences,[70] explanations that have not yet been thoroughly investigated.

Despite the sex difference in BPD observed in general population and clinical samples, this study found striking similarities to recent clinical research on sex differences in rates of co-occurrence of BPD. Consistent with this research,[9, 71, 73–76] the prevalences in the present study of substance use disorders, specifically alcohol dependence and any drug abuse, and narcissistic and antisocial PDs were greater among men with BPD, whereas rates of PTSD were greater among women. By contrast, previous studies found greater rates of paranoid PD among men with BPD, whereas rates in the present study were greater among women. Rates of MDD, dysthymia, panic disorder with agoraphobia, social and specific phobias, and GAD were also greater among women in this study, results not found in clinical studies. Taken together, these results are consistent with suggestions[71, 76] that men with BPD manifest impulsivity through externalizing disorders. Alternatively, observed sex differences in the prevalences of Axis I and II disorders may not be associated with the diagnosis of BPD, but,

rather, simply expressions of sex differences in psychopathology. Further prospective research is needed to address the role of BPD in the development of comorbidity among men and women.

Few clinical[77] or epidemiologic[19] studies have examined relationships between race-ethnicity and specific PDs. The absence of such data is striking,[77] given that culture is so intertwined with personality, influencing world views, interpersonal relationships, communication styles, coping mechanisms, and self-concept. In contrast to 1 epidemiologic study[19] that found no race-ethnic differences in the imputed rates of BPD and 1 clinical study[77] that found greater rates of BPD among Hispanics, this study found greater rates of BPD among Native American men and lower rates of BPD among Hispanic men and women and Asian women. Why these minorities were found to have differential risk of BPD raises questions regarding the influence of cultural experiences, including acculturation, on personality psychopathology. Whether culturally specific experiences protect against or increase vulnerability to BPD, or whether DSM-IV PD categories are culturally uninformed, are important questions for future clinical and epidemiologic research.

BPD was inversely related to age, with the greatest decline in rates occurring after age 44 years. These findings are consistent with the McLean Study of Adult Development,[78–80] a 10-year longitudinal follow-up of inpatients with BPD. At the time of the 2-year follow-up, 34.5% of patients who were 18 to 35 years old at baseline met criteria for remission; this rate increased to 49.4% at the 4-year follow-up, 68.6% at the 6-year follow-up, and 88.0% at the 10-year follow-up, when the patients were 28 to 45 years old. Consistency of the observed age gradient in the present study with the outcome of the McLean Study suggests that age differences observed in this study are, in part, real, and cannot be attributed solely to artifacts such as longer duration of illness, selective mortality, cohort effects or recall or other biases. Consistent with the clinical literature, it appears that BPD may not be as chronic as previously recognized. Further prospective epidemiological research is needed to address this issue more definitively. Determining whether remission of BPD is associated with the development of related, but different, psychopathology also appears warranted in future clinical research.

This study also identified sociodemographic characteristics associated with increased odds of BPD that were not generally reported in previous clinical and epidemiologic research due to limitations in sample size. The rates of BPD were significantly greater among individuals who were separated/divorced/widowed, and among those with low income and education, results that did not vary by sex. Whether being separated/divorced/widowed or of lower socioeconomic status represent true risk factors for BPD, or vice versa, are questions best addressed within a longitudinal framework.

At variance with most[6,81–86] but not all[9] clinical research, this study found that the prevalences of 12-month (59.6%) and lifetime (74.2%) anxiety disorders were similar to those of 12-month (50.9%) and lifetime (75.0%) mood disorders among individuals with BPD. The low to moderate degree of co-occurrence between BPD and anxiety disorders observed in most previous clinical research may reflect the lack of systematic study of a broad range of anxiety disorders. Further research is needed to characterize anxiety disorders more accurately among individuals with BPD, especially given the effectiveness of both pharmacologic[87–94] and cognitive-behavioral[95,96] treatments for many of the most common anxiety disorders. These results also suggest more vigilance in the assessment of anxiety disorders among individuals with BPD.

New findings in this study underscore the importance of controlling for other psychiatric disorders (that are highly comorbid with each other) when examining associations between BPD and other specific disorders.[33, 34] Consistent with previous epidemiologic surveys, strong and significant associations were found between BPD and other Axis I and II disorders

when sociodemographic characteristics were controlled. To understand further the unique relationships of other disorders to BPD, we additionally determined the associations controlling for all other disorders assessed in this study. Associations with bipolar I, bipolar II, and narcissistic and schizotypal PDs were reduced, but remained strong and significant. The drop in magnitude is analogous to results using twin and genetic study designs and suggests that common causal factors underlie associations between BPD and bipolar disorders and narcissistic and schizotypal PDs. However, the remaining associations remained strong after controlling for comorbidity suggesting that unique factors (e.g., genetic and/or environmental) underlie these disorder-specific associations; for example the unique factors underlying associations between BPD and bipolar I disorder are not necessarily the same as those underlying associations between BPD and schizotypal PD.

After control for additional comorbidity, significant but weaker associations remained with alcohol dependence, MDD, social phobia, GAD and PTSD among men and women. A similar pattern was observed between BPD and drug abuse, nicotine dependence, panic disorder with agoraphobia, specific phobia and paranoid, histrionic and avoidant PDs among women, and BPD and panic disorder without agoraphobia among men. Thus, while some unique disorder-specific associations were found, much of the association of BPD with these disorders appears due to factors common to these other disorders. Taken together, these findings suggest that unique and common factors may differentially contribute to disorder-specific comorbidity with BPD and that some of these associations appear to be sex-specific. These results highlight the importance of research on common and specific factors underlying the comorbidity of BPD and these disorders. Further, there is a continued need for future research to address sex differences in comorbidity with BPD.

Associations of BPD with alcohol abuse, drug dependence, dysthymia and schizoid, dependent and obsessive-compulsive PDs were no longer significant among men or women once comorbidity was controlled. These results strongly suggest that these associations sometimes observed among clinical samples were largely accounted for by other comorbid Axis I and II disorders.

That BPD was associated with a wide range of disability is consistent with the definition of BPD in the DSM-IV as well as with findings from clinical studies.[97, 98] Two epidemiologic surveys[99,100] that also controlled for sociodemographic characteristics, medical conditions (for physical disability measures), and Axis I disorders, found greater physical and mental disability among individuals with than among those without BPD. This study also found that disability is greater among women than men with BPD which might explain why females with BPD predominate in clinical samples. Further longitudinal research that builds upon a growing body of recent research in this area is needed to understand the impact of disability on outcome, course, and comorbidity of BPD.[78, 80, 101]

Potential study limitations are noted. This study is based on data from the Wave 2 NESARC. We were unable to interview respondents to the Wave 1 interview who were deceased or unable or unwilling to participate. However, the Wave 2 response rate, much higher than in most national surveys to date, combined with statistical adjustments for nonresponse at both the person and household levels on numerous sociodemographic characteristics and the presence of any lifetime Wave 1 Axis I or II disorder, considerably minimized the impact of nonresponse bias on study findings. Although we used data from the Wave 2 NESARC, the design of this study was cross-sectional, and associations may be subject to recall bias. However, data from the Wave 2 NESARC follow-up will be used to investigate further the temporal relationships between BPD and first incidence of other psychiatric disorders to confirm the observed associations.

In summary, the prevalence of BPD in the general population is greater than previously estimated from epidemiologic surveys. BPD was equally prevalent among men and women and associated with substantial mental and physical disability, especially among women. This study has also identified population subgroups at risk for BPD that have rarely been reported in previous studies. Importantly, BPD was inversely related to age, suggesting that the disorder may be less chronic than previously recognized. This study has also highlighted the need for future epidemiologic, clinical, and genetically-informed studies to identify unique and common factors underlying disorder-specific comorbidity with BPD found in the NESARC sample. Important sex differences in rates of and associations with BPD can inform more focused, hypothesis-driven investigations of those factors.

Acknowledgements

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Table 1

Lifetime Prevalence and Odds Ratios of DSM-IV Borderline Personality Disorder and Sociodemographic Characteristics and Sex

Characteristic	Total		Men		Women	
	% (SE)	OR (99% CI)	% (SE)	OR (99% CI)	% (SE)	OR (99% CI)
Total	5.9 (0.19)					
Sex						
Men	5.6 (0.24)	1.0 (0.83–1.12)				
Women	6.2 (0.25)					
Age, y						
20–29	9.3 (0.56)	**7.9** (5.69–10.83)	9.0 (0.79)	**5.8** (3.61–9.38)	9.6 (0.74)	**9.3** (5.90–14.57)
30–44	7.0 (0.37)	**6.7** (5.05–8.88)	6.1 (0.46)	**4.8** (3.11–7.41)	8.0 (0.49)	**8.3** (5.58–12.32)
45–64	5.5 (0.26)	**4.6** (3.43–6.20)	5.2 (0.39)	**3.7** (2.39–5.82)	5.7 (0.38)	**5.1** (3.48–7.62)
65+	2.0 (0.18)	1.0	2.1 (0.27)	1.0	2.0 (0.23)	1.0
Race-ethnicity						
White	5.6 (0.20)	1.0	5.1 (0.26)	1.0	6.0 (0.28)	1.0
Black	8.2 (0.50)	1.0 (0.80–1.20)	8.3 (0.69)	1.1 (0.85–1.48)	8.1 (0.60)	0.9 (0.70–1.13)
Native American	11.9 (1.54)	**1.8** (1.17–2.67)	13.2 (2.41)	**2.3** (1.26–4.07)	10.7 (1.92)	1.4 (0.80–2.55)
Asian	3.4 (0.72)	0.6 (0.30–1.03)	4.2 (1.26)	0.8 (0.34–1.86)	2.5 (0.66)	**0.4** (0.19–0.79)
Hispanic	5.3 (0.50)	**0.6** (0.44–0.81)	5.2 (0.64)	**0.6** (0.43–0.96)	5.3 (0.58)	**0.6** (0.39–0.82)
Family income, $						
0–19,999	9.8 (0.51)	**3.0** (2.28–4.02)	10.8 (0.79)	**3.3** (2.20–5.04)	9.1 (0.57)	**2.8** (1.90–4.05)
20,000–34,999	7.4 (0.38)	**2.3** (1.75–2.99)	7.4 (0.57)	**2.6** (1.69–3.88)	7.3 (0.46)	**2.0** (1.46–2.84)
35,000–69,999	5.2 (0.27)	**1.6** (1.22–2.00)	5.0 (0.36)	**1.7** (1.17–2.47)	5.3 (0.36)	**1.4** (1.03–1.98)
≥70,000	3.1 (0.22)	1.0	2.7 (0.29)	1.0	3.7 (0.33)	1.0
Marital status						
Married/cohabiting	4.4 (0.18)	1.0	3.8 (0.24)	1.0	5.0 (0.26)	1.0
Separated/divorced/widowed	8.4 (0.41)	**1.9** (1.56–2.20)	10.1 (0.82)	**2.3** (1.70–3.11)	7.5 (0.40)	**1.7** (1.35–2.07)
Never married	8.7 (0.52)	1.2 (0.98–1.50)	8.7 (0.66)	1.4 (0.98–1.91)	8.8 (0.68)	1.1 (0.86–1.46)
Education						
Less than high school graduate	8.0 (0.50)	**1.6** (1.24–1.95)	8.9 (0.76)	**1.7** (1.23–2.44)	7.1 (0.59)	**1.4** (1.04–1.87)
High school graduate	6.8 (0.32)	**1.3** (1.10–1.56)	6.3 (0.45)	1.2 (0.96–1.62)	7.3 (0.44)	**1.4** (1.11–1.70)
Some college or higher	5.0 (0.21)	1.0	4.4 (0.26)	1.0	5.4 (0.28)	1.0

Characteristic	Total		Men		Women	
	% (SE)	OR (99% CI)	% (SE)	OR (99% CI)	% (SE)	OR (99% CI)
Urbanicity						
Urban	6.0 (0.21)	1.1 (0.85–1.35)	5.7 (0.26)	1.1 (0.80–1.57)	6.2 (0.28)	1.0 (0.76–1.39)
Rural	5.6 (0.41)	1.0	5.1 (0.54)	1.0	6.0 (0.55)	1.0
Region						
Northeast	6.0 (0.42)	1.0 (0.75–1.20)	5.3 (0.50)	0.8 (0.57–1.10)	6.7 (0.54)	1.1 (0.82–1.48)
Midwest	5.8 (0.36)	0.9 (0.75–1.17)	5.4 (0.49)	0.9 (0.62–1.21)	6.2 (0.51)	1.0 (0.73–1.36)
South	5.6 (0.27)	0.9 (0.73–1.06)	5.3 (0.32)	0.8 (0.61–1.05)	5.9 (0.36)	1.0 (0.75–1.21)
West	6.2 (0.32)	1.0	6.3 (0.45)	1.0	6.2 (0.44)	1.0

Note: Estimates in **boldface** are statistically significant (p < 0.01).

Table 2

Co-occurrence Rates of DSM-IV Lifetime Borderline Personality Disorder and Other 12-Month Psychiatric Disorders by Sex.

Psychiatric Disorder	Prevalence of Borderline Personality Disorder Among Respondents with Other Psychiatric Disorder			Prevalence of Other Psychiatric Disorder Among Respondents with Borderline Personality Disorder		
	Total % (SE)	Men % (SE)	Women % (SE)	Total % (SE)	Men % (SE)	Women % (SE)
Any substance use disorder	14.1 (0.49)	12.2 (0.62)	16.9 (0.81)*	50.7 (1.33)	58.1 (2.15)	44.5 (1.76)*
Any substance abuse	11.6 (0.85)	10.6 (1.02)	14.6 (1.57)	12.9 (0.95)	18.6 (1.75)	8.2 (0.95)*
Any substance dependence	25.5 (1.30)	23.4 (1.47)	29.8 (2.60)	21.0 (1.06)	28.8 (1.66)	14.5 (1.32)*
Any alcohol use disorder	14.7 (0.76)	13.6 (0.86)	17.6 (1.55)	24.2 (1.18)	35.1 (1.91)	15.1 (1.29)*
Alcohol abuse	6.9 (0.67)	6.6 (0.78)	7.6 (1.23)	6.2 (0.62)	9.7 (1.17)	3.3 (0.55)*
Alcohol dependence	24.2 (1.36)	22.6 (1.57)	27.6 (2.61)	18.0 (1.01)	25.4 (1.64)	11.8 (1.14)*
Any drug use disorder	32.1 (2.07)	28.3 (2.40)	39.5 (3.76)	13.0 (0.95)	16.8 (1.57)	9.9 (1.26)*
Any drug abuse	26.5 (2.29)	22.8 (2.89)	34.9 (3.78)	7.7 (0.71)	10.0 (1.27)	5.7 (0.79)*
Any drug dependence	45.8 (3.99)	42.7 (4.65)	50.5 (6.53)	6.3 (0.68)	7.9 (1.05)	5.1 (0.99)
Nicotine dependence	15.4 (0.62)	13.6 (0.83)	17.6 (0.95)*	36.4 (1.22)	37.8 (1.94)	35.2 (1.70)
Any mood disorder	29.4 (0.92)	34.5 (1.66)	26.7 (1.10)*	50.9 (1.24)	45.2 (2.03)	55.7 (1.71)*
Major depressive disorder	19.9 (1.11)	24.5 (2.28)	18.0 (1.27)	19.3 (0.97)	15.4 (1.43)	22.5 (1.50)*
Dysthymia	36.3 (2.86)	34.6 (4.66)	37.1 (3.56)	7.2 (0.64)	4.8 (0.79)	9.2 (0.98)*
Bipolar I	50.1 (1.87)	54.3 (3.52)	47.2 (2.21)	23.9 (1.13)	22.7 (1.90)	25.0 (1.40)
Bipolar II	39.4 (3.57)	47.1 (6.28)	35.5 (4.05)	5.8 (0.65)	5.2 (0.94)	6.3 (0.85)
Any anxiety disorder	21.5 (0.69)	25.0 (1.27)	19.9 (0.79)*	59.6 (1.33)	50.1 (2.09)	67.6 (1.61)*
Panic with agoraphobia	51.0 (3.68)	43.1 (6.13)	54.2 (4.52)	6.9 (0.64)	3.6 (0.68)	9.6 (1.09)*
Panic without agoraphobia	26.9 (2.28)	32.4 (4.04)	24.0 (2.67)	8.1 (0.73)	7.3 (1.07)	8.8 (1.04)
Social phobia	40.6 (1.80)	40.2 (3.25)	40.9 (2.17)	17.5 (1.11)	15.0 (1.40)	19.5 (1.44)
Specific phobia	19.3 (0.96)	18.6 (1.72)	19.7 (1.07)	24.7 (1.17)	16.2 (1.40)	31.7 (1.61)*
Generalized anxiety	35.6 (1.63)	43.5 (3.37)	32.2 (1.83)*	22.9 (1.13)	18.7 (1.60)	26.4 (1.57)*
Posttraumatic stress	28.6 (1.16)	32.3 (2.58)	27.0 (1.14)	31.6 (1.21)	23.6 (1.74)	38.2 (1.66)*

Note: SE = standard error.

*Prevalence for women significantly different from prevalence for men (p < 0.01).

Table 3

Co-occurrence Rates of DSM-IV Lifetime Borderline Personality Disorder and Other Lifetime Psychiatric Disorders by Sex.

Psychiatric Disorder	Prevalence of Borderline Personality Disorder Among Respondents with Other Psychiatric Disorder			Prevalence of Other Psychiatric Disorder Among Respondents with Borderline Personality Disorder		
	Total % (SE)	Men % (SE)	Women % (SE)	Total % (SE)	Men % (SE)	Women % (SE)
Any substance use disorder	9.5 (0.31)	8.0 (0.37)	11.8 (0.51)[*]	72.9 (1.17)	80.9 (1.57)	66.2 (1.69)[*]
Any substance abuse	8.5 (0.37)	7.2 (0.44)	10.9 (0.66)[*]	37.8 (1.36)	46.7 (2.03)	30.5 (1.66)[*]
Any substance dependence	16.4 (0.66)	14.0 (0.77)	20.9 (1.17)[*]	45.3 (1.51)	55.5 (2.28)	36.8 (1.77)[*]
Any alcohol use disorder	9.8 (0.35)	8.3 (0.41)	12.5 (0.66)[*]	57.3 (1.43)	71.2 (1.93)	45.6 (1.89)[*]
Alcohol abuse	4.8 (0.33)	4.0 (0.37)	6.4 (0.56)[*]	15.7 (1.01)	18.9 (1.60)	12.9 (1.10)[*]
Alcohol dependence	16.1 (0.68)	13.9 (0.81)	20.3 (1.20)[*]	41.6 (1.52)	52.2 (2.36)	32.7 (1.74)[*]
Any drug use disorder	17.8 (0.77)	15.3 (0.95)	22.1 (1.43)[*]	36.2 (1.46)	44.0 (2.27)	29.8 (1.79)[*]
Any drug abuse	15.9 (0.79)	14.0 (0.98)	19.4 (1.34)[*]	27.4 (1.34)	34.6 (2.09)	21.3 (1.49)[*]
Any drug dependence	30.9(1.87)	28.2 (2.32)	35.3 (3.05)	17.7 (1.17)	22.1 (1.95)	14.0 (1.31)[*]
Nicotine dependence	12.4 (0.47)	11.1 (0.62)	14.0 (0.68)[*]	48.6 (1.40)	52.1 (2.14)	45.7 (1.77)
Any mood disorder	17.2 (0.52)	19.0 (0.81)	16.1 (0.61)[*]	75.0 (1.11)	68.7 (1.88)	80.2 (1.42)[*]
Major depressive disorder	11.5 (0.52)	13.5 (0.95)	10.5 (0.61)[*]	32.1 (1.24)	27.2 (1.80)	36.1 (1.80)[*]
Dysthymia	16.7 (1.24)	17.0 (2.38)	16.5 (1.42)	9.7 (0.71)	7.1 (0.99)	11.9 (0.98)[*]
Bipolar I	35.9 (1.47)	35.2 (2.35)	36.4 (1.66)	31.8 (1.25)	30.6 (2.06)	32.7 (1.59)
Bipolar II	26.7 (2.16)	26.6 (3.26)	26.8 (2.74)	7.7 (0.73)	6.7 (1.08)	8.5 (0.92)
Any anxiety disorder	14.8 (0.46)	16.9 (0.80)	13.7 (0.54)[*]	74.2 (1.24)	66.1 (2.04)	81.1 (1.31)[*]
Panic with agoraphobia	36.0 (2.31)	37.9 (4.39)	35.2 (2.75)	11.5 (0.89)	7.7 (1.12)	14.6 (1.30)[*]
Panic without agoraphobia	18.9 (1.10)	22.9 (1.98)	17.0 (1.24)	18.8 (1.01)	16.2 (1.38)	20.9 (1.42)
Social phobia	24.5 (1.09)	23.5 (1.74)	25.2 (1.40)	29.3 (1.33)	25.2 (1.73)	32.7 (1.81)[*]
Specific phobia	14.6 (0.62)	14.5 (1.05)	14.6 (0.74)	37.5 (1.44)	26.6 (1.77)	46.6 (1.91)[*]
Generalized anxiety	27.0 (1.02)	30.5 (2.00)	25.4 (1.17)	35.1 (1.29)	27.3 (1.89)	41.6 (1.68)[*]
Posttraumatic stress	24.3 (0.93)	27.7 (1.90)	22.9 (0.98)	39.2 (1.31)	29.5 (1.80)	47.2 (1.81)[*]
Any other personality disorder	21.8 (0.64)	19.5 (0.83)	24.4 (0.93)[*]	73.9 (1.17)	76.5 (1.70)	71.8 (1.47)
Any Cluster A	33.0 (1.13)	31.1 (1.51)	34.7 (1.51)	50.4 (1.38)	49.5 (2.06)	51.1 (1.71)
Paranoid	29.0 (1.47)	24.9 (2.28)	31.8 (1.86)	21.3 (1.17)	16.5 (1.57)	25.4 (1.56)[*]
Schizoid	23.8 (1.54)	20.0 (2.12)	27.5 (2.20)	12.4 (0.86)	11.1 (1.25)	13.5 (1.12)

Psychiatric Disorder	Prevalence of Borderline Personality Disorder Among Respondents with Other Psychiatric Disorder			Prevalence of Other Psychiatric Disorder Among Respondents with Borderline Personality Disorder		
	Total % (SE)	Men % (SE)	Women % (SE)	Total % (SE)	Men % (SE)	Women % (SE)
Schizotypal	54.9 (1.72)	51.3 (2.40)	58.8 (2.42)	36.7 (1.37)	38.9 (2.04)	34.9 (1.60)
Any other Cluster B	28.2 (0.94)	24.3 (1.18)	34.5 (1.54)*	49.2 (1.45)	57.8 (2.23)	42.1 (1.80)*
Antisocial	21.0 (1.40)	18.3 (1.62)	28.7 (2.79)*	13.7 (0.96)	19.4 (1.64)	9.0 (0.97)*
Histrionic	33.6 (2.26)	31.1 (3.43)	36.0 (2.97)	10.3 (0.84)	10.3 (1.43)	10.3 (0.99)
Narcissistic	37.0 (1.29)	34.2 (1.63)	41.3 (2.01)*	38.9 (1.44)	47.0 (2.23)	32.2 (1.71)*
Any Cluster C	18.6 (0.85)	16.4 (1.24)	20.5 (1.17)	29.9 (1.29)	27.0 (1.85)	32.3 (1.71)
Avoidant	34.0 (2.13)	31.6 (3.73)	35.5 (2.39)	13.4 (0.94)	10.8 (1.37)	15.6 (1.32)
Dependent	42.6 (4.57)	45.7 (8.92)	40.8 (5.67)	3.1 (0.47)	2.6 (0.77)	3.5 (0.62)
Obsessive-compulsive	16.6 (0.90)	14.9 (1.18)	18.1 (1.36)	22.7 (1.23)	21.7 (1.57)	23.6 (1.65)

Note: SE = standard error.

*Prevalence for women significantly different from prevalence for men (p < 0.01).

Table 4

Odds Ratios (OR) of Lifetime DSM-IV Borderline Personality Disorder and Other Lifetime Psychiatric Disorders by Sex.

Psychiatric Disorder	Odds Ratios Controlled for Sociodemographic Characteristics			Odds Ratios Controlled for Sociodemographic Characteristics and Other Psychiatric Disorders		
	Total OR[†] (99% CI[‡])	Men OR (99% CI)	Women OR (99% CI)	Total OR (99% CI)	Men OR (99% CI)	Women OR (99% CI)
Any substance use disorder	3.2 (2.73–3.79)	3.0 (2.26–3.96)	3.3 (2.69–4.07)	1.7 (1.43–2.02)	1.7 (1.25–2.24)	1.7 (1.34–2.1)
Any substance abuse	1.7 (1.46–2.03)	1.6 (1.23–2.00)	1.9 (1.51–2.32)	1.2 (0.96–1.39)	1.2 (0.88–1.57)	1.1 (0.87–1.45)
Any substance dependence	4.2 (3.59–5.01)	4.0 (3.11–5.15)	4.5 (3.63–5.63)	1.7 (1.43–2.12)	1.8 (1.30–2.38)	1.7 (1.32–2.27)
Any alcohol use disorder	2.7 (2.33–3.16)	2.7 (2.07–3.45)	2.7 (2.21–3.33)	1.2 (1.00–1.48)	1.3 (0.96–1.74)	1.1 (0.86–1.45)
Alcohol abuse	0.8 (0.64–1.00)	0.7 (0.50–0.93)	0.9 (0.71–1.22)	0.9 (0.73–1.18)	1.0 (0.68–1.38)	0.8 (0.62–1.15)
Alcohol dependence	3.9 (3.33–4.64)	3.8 (2.91–4.86)	4.2 (3.31–5.26)	1.5 (1.17–1.86)	1.5 (1.09–2.16)	1.4 (1.02–1.96)
Any drug use disorder	4.0 (3.30–4.72)	3.7 (2.85–4.86)	4.2 (3.27–5.50)	1.5 (1.22–1.96)	1.4 (1.01–1.99)	1.7 (1.25–2.42)
Any drug abuse	3.1 (2.51–3.74)	2.9 (2.22–3.88)	3.3 (2.50–4.29)	1.4 (1.09–1.77)	1.3 (0.94–1.81)	1.5 (1.11–2.14)
Any drug dependence	6.1 (4.66–7.93)	6.0 (4.15–8.54)	6.3 (4.30–9.23)	1.4 (1.00–1.96)	1.4 (0.94–2.21)	1.4 (0.86–2.21)
Nicotine dependence	2.8 (2.37–3.26)	2.6 (2.08–3.32)	2.9 (2.33–3.54)	1.3 (1.05–1.55)	1.2 (0.88–1.61)	1.3 (1.04–1.71)
Any mood disorder	9.1 (7.71–10.78)	9.0 (7.02–11.48)	9.3 (7.27–11.87)	3.5 (2.89–4.19)	3.4 (2.56–4.57)	3.6 (2.75–4.63)
Major depressive disorder	2.5 (2.07–2.90)	3.0 (2.27–3.89)	2.1 (1.72–2.66)	1.7 (1.40–2.09)	2.0 (1.46–2.68)	1.6 (1.23–2.00)
Dysthymia	3.2 (2.51–4.16)	3.3 (2.04–5.45)	3.2 (2.45–4.27)	1.1 (0.85–1.53)	1.1 (0.65–1.99)	1.1 (0.81–1.60)
Bipolar I	9.9 (8.11–12.01)	10.3 (7.41–14.33)	9.6 (7.57–12.14)	5.7 (4.41–7.25)	5.2 (3.48–7.61)	6.2 (4.54–8.56)
Bipolar II	4.3 (3.00–6.03)	4.6 (2.81–7.37)	4.1 (2.59–6.43)	4.3 (2.85–6.40)	4.3 (2.32–7.94)	4.4 (2.56–7.42)
Any anxiety disorder	7.7 (6.51–9.19)	7.8 (6.09–9.99)	7.7 (6.13–9.69)	2.7 (2.22–3.35)	2.8 (2.12–3.79)	2.6 (2.01–3.40)
Panic with agoraphobia	8.4 (6.26–11.18)	9.1 (5.38–15.53)	8.1 (5.74–11.34)	1.8 (1.31–2.46)	1.7 (0.89–3.15)	1.9 (1.28–2.73)
Panic without agoraphobia	4.0 (3.25–4.85)	5.7 (4.15–7.77)	3.3 (2.53–4.16)	1.4 (1.08–1.77)	1.8 (1.19–2.82)	1.2 (0.88–1.61)
Social phobia	6.2 (5.24–7.41)	6.2 (4.60–8.24)	6.3 (5.01–7.88)	1.7 (1.35–2.04)	1.6 (1.09–2.28)	1.7 (1.32–2.21)
Specific phobia	3.8 (2.97–4.09)	3.2 (2.48–4.22)	3.7 (3.03–4.43)	1.2 (0.99–1.44)	1.1 (0.77–1.44)	1.3 (1.07–1.64)
Generalized anxiety	8.3 (6.95–9.85)	9.2 (6.74–12.42)	7.8 (6.34–9.63)	2.3 (1.88–2.82)	2.4 (1.67–3.36)	2.3 (1.76–2.90)
Post-traumatic stress	7.3 (6.11–8.65)	8.0 (6.08–10.55)	6.9 (5.60–8.52)	2.7 (2.20–3.23)	2.7 (1.94–3.73)	2.7 (2.10–3.39)
Any other personality disorder	12.5 (10.54–14.86)	12.4 (9.44–16.18)	13.0 (10.57–15.86)	5.8 (4.73–7.01)	5.7 (4.20–7.74)	6.0 (4.81–7.43)
Any Cluster A	12.1 (10.14–14.34)	11.4 (8.82–14.62)	12.9 (10.43–15.96)	3.9 (3.07–4.89)	3.4 (2.40–4.91)	4.4 (3.27–5.82)
Paranoid	5.8 (4.69–7.25)	4.6 (3.11–6.66)	6.9 (5.38–8.84)	1.2 (0.93–1.53)	0.9 (0.57–1.31)	1.5 (1.09–1.94)
Schizoid	4.5 (3.55–5.76)	3.8 (2.62–5.64)	5.2 (3.82–7.08)	1.0 (0.75–1.32)	0.8 (0.51–1.22)	1.2 (0.85–1.67)
Schizotypal	26.5 (21.53–32.68)	23.6 (17.35–31.96)	31.3 (23.51–41.52)	9.4 (7.40–11.95)	8.5 (5.89–12.13)	11.0 (7.79–15.39)

Psychiatric Disorder	Odds Ratios Controlled for Sociodemographic Characteristics			Odds Ratios Controlled for Sociodemographic Characteristics and Other Psychiatric Disorders		
	Total OR[†] (99% CI[‡])	Men OR (99% CI)	Women OR (99% CI)	Total OR (99% CI)	Men OR (99% CI)	Women OR (99% CI)
Any other Cluster B	**10.1** (8.52–11.98)	**9.6** (7.30–12.60)	**11.1** (8.88–13.84)	**3.8** (3.06–4.74)	**3.8** (2.72–5.25)	**4.1** (3.08–5.39)
Antisocial	**3.5** (2.71–4.40)	**3.3** (2.40–4.54)	**3.9** (2.68–5.73)	1.0 (0.71–1.27)	0.9 (0.62–1.33)	1.0 (0.66–1.58)
Histrionic	**6.5** (4.90–8.52)	**6.1** (3.90–9.39)	**6.9** (4.67–10.04)	**1.4** (1.01–1.89)	1.2 (0.75–1.86)	**1.6** (1.03–2.38)
Narcissistic	**14.5** (12.12–17.42)	**14.5** (10.96–19.09)	**15.3** (11.92–19.57)	**7.5** (6.00–9.27)	**7.6** (5.46–10.65)	**7.8** (5.77–10.44)
Any Cluster C	**4.5** (3.76–5.28)	**4.0** (3.05–5.29)	**4.9** (3.91–6.06)	0.9 (0.71–1.13)	0.8 (0.52–1.13)	1.0 (0.72–1.34)
Avoidant	**7.2** (5.45–9.56)	**6.5** (3.95–10.77)	**7.6** (5.58–10.38)	**1.4** (1.03–1.84)	1.2 (0.71–2.03)	**1.4** (1.02–2.03)
Dependent	**8.2** (4.65–14.46)	**8.8** (3.09–24.96)	**7.3** (3.84–15.94)	1.2 (0.67–2.15)	1.1 (0.38–3.13)	1.2 (0.57–2.59)
Obsessive-compulsive	**3.7** (3.06–4.52)	**3.5** (2.60–4.62)	**4.0** (3.05–5.19)	0.9 (0.72–1.12)	0.8 (0.58–1.14)	1.0 (0.70–1.32)

Note: Estimates in **boldface** are statistically significant (p < 0.01).

[†] OR = odds ratio.

[‡] CI = confidence interval.

Table 5

Odds Ratios (OR) of Lifetime DSM-IV Borderline Personality Disorder and Other 12-Month Psychiatric Disorders by Sex.

Psychiatric Disorder	Odds Ratios Controlled for Sociodemographic Characteristics			Odds Ratios Controlled for Sociodemographic Characteristics and Other Psychiatric Disorders		
	Total OR† (99% CI‡)	Men OR (99% CI)	Women OR (99% CI)	Total OR (99% CI)	Men OR (99% CI)	Women OR (99% CI)
Any substance use disorder	3.4 (2.89–3.93)	3.2 (2.51–4.10)	3.5 (2.84–4.30)	1.9 (1.61–2.29)	1.9 (1.46–2.56)	1.9 (1.48–2.4)
Any substance abuse	1.8 (1.37–2.32)	1.8 (1.28–2.54)	1.8 (1.27–2.66)	1.4 (1.04–1.92)	1.5 (1.01–2.26)	1.3 (0.76–2.06)
Any substance dependence	4.9 (4.00–5.95)	4.7 (3.68–6.08)	5.3 (3.75–7.45)	2.3 (1.73–2.94)	2.4 (1.74–3.33)	2.1 (1.35–3.33)
Any alcohol use disorder	2.7 (2.22–3.25)	2.8 (2.20–3.56)	2.6 (1.90–3.59)	1.6 (1.20–2.02)	1.7 (1.24–2.36)	1.4 (0.88–2.16)
Alcohol abuse	1.0 (0.71–1.32)	1.1 (0.72–1.53)	0.9 (0.52–1.41)	1.0 (0.68–1.51)	1.2 (0.72–1.91)	0.8 (0.37–1.59)
Alcohol dependence	4.4 (3.62–5.44)	4.4 (3.39–5.63)	4.7 (3.27–6.77)	2.1 (1.52–2.76)	2.3 (1.59–3.20)	1.9 (1.09–3.13)
Any drug use disorder	5.6 (4.14–7.46)	5.0 (3.45–7.33)	6.7 (4.25–10.39)	2.0 (1.32–3.05)	1.9 (1.09–3.28)	2.2 (1.20–3.84)
Any drug abuse	4.0 (2.79–5.61)	3.5 (2.11–5.64)	5.1 (3.15–8.35)	1.9 (1.16–3.04)	1.7 (0.87–3.19)	2.3 (1.13–4.71)
Any drug dependence	8.8 (5.45–14.08)	8.1 (4.51–14.63)	9.6 (4.73–19.62)	1.8 (0.91–3.37)	1.8 (0.79–4.29)	1.6 (0.68–3.96)
Nicotine dependence	3.0 (2.57–3.57)	2.7 (2.14–3.45)	3.3 (2.63–4.13)	1.5 (1.25–1.89)	1.5 (1.07–1.97)	1.6 (1.21–2.07)
Any mood disorder	10.6 (9.04–12.39)	12.4 (9.39–16.28)	9.4 (7.69–11.53)	4.2 (3.44–5.11)	4.5 (3.23–6.29)	4.0 (3.17–5.07)
Major depressive disorder	4.1 (3.38–5.07)	5.2 (3.61–7.54)	3.6 (2.83–4.67)	2.6 (2.02–3.35)	2.6 (1.67–4.11)	2.6 (1.89–3.55)
Dysthymia	7.9 (5.59–11.18)	6.9 (3.77–12.61)	8.6 (5.66–13.01)	1.5 (0.91–2.46)	1.0 (0.45–2.20)	1.9 (1.01–3.51)
Bipolar I	16.0 (12.75–20.08)	20.6 (13.19–32.02)	11.5 (10.40–17.64)	6.5 (4.93–8.50)	7.5 (4.35–12.81)	5.9 (4.32–7.97)
Bipolar II	7.5 (4.69–11.94)	10.5 (5.14–21.33)	6.3 (3.51–11.26)	4.9 (2.86–8.37)	6.4 (2.67–15.44)	4.3 (2.24–8.30)
Any anxiety disorder	8.5 (7.39–10.34)	9.2 (7.03–11.95)	8.5 (6.85–10.42)	3.3 (2.62–4.03)	3.4 (2.42–4.64)	3.2 (2.43–4.13)
Panic with agoraphobia	13.7 (8.91–20.93)	10.9 (4.95–23.83)	15.1 (9.00–25.25)	2.1 (1.17–3.58)	1.2 (0.42–3.31)	2.6 (1.37–5.07)
Panic without agoraphobia	5.2 (3.70–7.20)	7.6 (4.27–13.50)	4.2 (2.78–6.24)	1.5 (0.97–2.36)	2.0 (0.93–4.33)	1.3 (0.77–2.26)
Social phobia	10.7 (8.53–13.52)	10.9 (7.36–16.20)	10.6 (7.95–14.14)	2.3 (1.67–3.02)	2.0 (1.22–3.37)	2.4 (1.65–3.44)
Specific phobia	4.3 (3.55–5.22)	4.0 (2.84–5.62)	4.5 (3.60–5.60)	1.6 (1.22–2.03)	1.2 (0.78–1.95)	1.8 (1.38–2.38)
Generalized anxiety	10.4 (8.22–13.19)	13.8 (8.85–21.46)	9.0 (6.89–11.84)	2.4 (1.80–3.24)	2.7 (1.60–4.70)	2.3 (1.59–3.17)
Posttraumatic stress	7.9 (6.54–9.53)	9.0 (6.29–13.00)	7.4 (6.06–9.10)	2.5 (2.00–3.19)	2.5 (1.56–4.05)	2.5 (1.97–3.27)
Any other personality disorder	---	---	---	7.0 (5.75–8.50)	7.1 (5.24–9.61)	7.1 (5.68–8.87)
Any Cluster A	---	---	---	4.2 (3.26–5.35)	3.7 (2.55–5.50)	4.7 (3.44–6.29)
Paranoid	---	---	---	1.5 (1.12–1.95)	1.2 (0.75–1.93)	1.7 (1.23–2.28)
Schizoid	---	---	---	1.2 (0.86–1.60)	1.0 (0.59–1.59)	1.4 (0.95–1.93)
Schizotypal	---	---	---	8.3 (6.41–10.85)	7.3 (4.91–10.99)	9.9 (6.92–14.1)

Psychiatric Disorder	Odds Ratios Controlled for Sociodemographic Characteristics			Odds Ratios Controlled for Sociodemographic Characteristics and Other Psychiatric Disorders		
	Total OR[†] (99% CI[‡])	Men OR (99% CI)	Women OR (99% CI)	Total OR (99% CI)	Men OR (99% CI)	Women OR (99% CI)
Any other Cluster B	---	---	---	**4.2** (3.31–5.21)	**4.1** (2.91–5.79)	**4.4** (3.31–5.89)
Antisocial	---	---	---	1.2 (0.87–1.65)	1.2 (0.78–1.76)	1.2 (0.75–2.03)
Histrionic	---	---	---	**1.7** (1.20–2.32)	1.5 (0.94–2.42)	**1.8** (1.17–2.73)
Narcissistic	---	---	---	**6.8** (5.43–8.46)	**6.9** (4.86–9.69)	**7.1** (5.17–9.62)
Any Cluster C	---	---	---	1.1 (0.87–1.47)	1.1 (0.71–1.64)	1.2 (0.83–1.63)
Avoidant	---	---	---	**1.6** (1.16–2.33)	1.7 (0.87–3.19)	**1.6** (1.06–2.27)
Dependent	---	---	---	1.3 (0.64–2.43)	1.3 (0.40–4.00)	1.2 (0.48–2.83)
Obsessive–compulsive	---	---	---	1.1 (0.85–1.41)	1.1 (0.74–1.60)	1.1 (0.77–1.55)

Note: Estimates in **boldface** are statistically significant (p < 0.01).

[†] OR = odds ratio.

[‡] CI = confidence interval.

Table 6

Associations[*] Between Lifetime Borderline Personality Disorder and Mental and Physical Disability.

SF12-v2 Score	Total		Men		Women	
	x̄ (SE)	β (SE)	x̄ (SE)	β	x̄ (SE)	β
Mental disability						
Social functioning	42.8 (0.37)	−5.0 (0.39)[†]	44.3 (0.59)	−4.3 (0.60)[†]	41.5 (0.46)	−5.5 (0.50)[†]
Role emotional functioning	41.6 (0.36)	−4.9 (0.38)[†]	42.5 (0.55)	−4.4 (0.59)[†]	39.7 (0.46)	−5.2 (0.53)[†]
Mental health	41.7 (0.34)	−5.3 (0.37)[†]	43.3 (0.54)	−5.3 (0.60)[†]	40.4 (0.39)	−5.3 (0.47)[†]
Physical disability						
Physical functioning	47.5 (0.34)	−1.3 (0.32)[†]	48.7 (0.48)	−1.0 (0.46)[‡]	46.5 (0.44)	−1.4 (0.46)[†]
Role physical functioning	44.9 (0.32)	−2.3 (0.31)[†]	45.9 (0.46)	−2.0 (0.49)[†]	44.2 (0.41)	−2.6 (0.42)[‡]
Bodily pain	44.9 (0.36)	−1.9 (0.37)[†]	46.1 (0.53)	−1.1 (0.52)[‡]	43.9 (0.50)	−2.5 (0.54)[†]
General health	44.1 (0.37)	−2.1 (0.39)[†]	44.2 (0.57)	−2.3 (0.57)[†]	43.9 (0.45)	−2.0 (0.48)[‡]
Vitality	46.5 (0.32)	−2.6 (0.35)[†]	48.4 (0.50)	−2.2 (0.56)[†]	45.0 (0.41)	−2.7 (0.47)[†]

[*] Multivariate linear regression analyses controlled for all sociodemographic characteristics and other Axis I and II psychiatric disorders. Medical conditions additionally controlled for in analyses related to physical disability scores.

[†] $p < 0.0002$.

[‡] $p < 0.03$.