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Estimating the prevalence of borderline personality disorder in psychiatric outpatients using a two-phase procedure

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Abstract

The prevalence of borderline personality disorder (BPD) in outpatient clinics varies greatly (7%-27%) depending on the setting and methodology. We examined the cross-sectional rate of BPD in a general adult outpatient university clinic using a 2-phase procedure: (1) we screened all registered patients with the self-report SCID-II-PQ and (2) we administered the Revised Diagnostic Interview for Borderlines (DIB-R). Sixty-six percent (239/360) of the clinic patients completed the screening: About 72.4% (173/239) (95% confidence interval [CI] = 66.7%, 78.1%) were positive for BPD on the Structured Clinical Interview for DSM-IV Personality Disorders–Patient Questionnaire (SCID-II-PQ), and 22.6% (54/239) (95% CI = 17.3%, 27.9%) were positive for BPD on the DIB-R. Our BPD rate was somewhat higher than recent semistructured interview studies (9%-18%). We believe this is due, in part, to our cross-sectional design and our decision not to exclude acute Axis I disorders. Mostly, however, we believe that our 22.6% incidence of BPD arises from the high morbidity of our sample. Demographic data from 130 of 131 DIB-R completers reveal the following: mean age was 40.2 years, 75.4% were female, most patients were unable to work, and they averaged 3.8 lifetime hospitalizations.

1. Introduction

Borderline personality disorder (BPD) is a pervasive pattern of impulsiveness, self-destructive threats or behaviors, instability of moods, chaotic interpersonal relationships, and unstable sense of identity [1]. Patients with BPD have disproportionately high rates of health care resource utilization, high rates of self-injurious behavior, and a suicide rate of about 10% [2]. Since the advent of effective psychotherapies [3], it is imperative that outpatient clinics have an accurate estimate of the number of BPD patients in their care to plan resources and services.

The literature on the epidemiology of personality disorders is plagued by numerous methodological problems. First, the diagnostic criteria for BPD changed from the 1980 to the 1994 editions of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM), making early studies less relevant. Second, different diagnostic tools produce very different estimates of the prevalence of BPD. That is, compared with semistructured interviews, unstructured clinical assessments are less reliable, with more false negatives [4]. Conversely, self-report questionnaires produce too many false positives [5]. Third, research samples can be biased by clinical setting, access to treatment, help seeking, severity of illness, and comorbidity issues [6].

In the general population, looking at the studies with the broadest community random sample selection, the prevalence of BPD varied from 0.4% to 1.8%, with a pooled rate of 1.1% [7-10]. In clinical samples, BPD is usually the most common personality disorder [11]. The rates of BPD in pre-1989 clinical interview psychiatric inpatients studies are 15% [11]. More recent inpatient studies with semistructured interviews have reported rates of 40% to 44% [12,13].

The prevalence of BPD in outpatient samples varies depending on whether the clinic serves insured or uninsured

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patients or specialized populations. In outpatient samples, the rates of BPD have varied from 8% to 27%. The average prevalence across 8 pre-1989 clinical interview outpatient studies is 8% [11]. The average prevalence of BPD in outpatient studies that use self-report questionnaires is 27.7% to 30.3% [7,14]. Recent semistructured interview studies have reported rates of 9.3% to 18% in consecutively enrolled subjects, with a pooled rate of 11.9% (n = 1657) [4,15-17]. These 4 studies were conducted in a catchmented clinic serving a more affluent and educated part of the city, psychoanalysis applicants, and university clinics where patients were insured.

The 2-phase procedure (ie, screening with a self-report questionnaire and then interviewing those who screened positive) is an efficient methodology to identify cases of personality disorder. Nussbaum and Rogers [18] screened an inpatient forensic population with the Structured Clinical Interview for DSM-IV Personality Disorders–Patient Questionnaire (SCID-II-PQ) [19], followed by the Structured Clinical Interview for DSM-IV Personality Disorders (SCID–II) interview. They obtained a 2.4% false-negative rate of BPD and a 30.5% false-positive rate of BPD. Lenzenweger et al [5] screened university students with the Personality Disorder Examination (PDE) self-report screen, followed by the PDE interview. They obtained a 0% false-negative rate and an 84.3% false-positive rate for all the personality disorders. Thus, self-report questionnaires perform remarkably well in screening for personality disorders, as very few cases are missed [18].

The goal of the present study was to estimate the point prevalence of BPD in a general adult outpatient university clinic by screening with the BPD section of the SCID-II-PQ and then assessing the positive cases with the Revised Diagnostic Interview for Borderlines (DIB-R) [20]. The DIB-R has been used extensively to diagnose BPD, but never in prevalence studies. It is time consuming (1 hour) and requires substantial clinical experience to administer and score [20].

2. Methodology

The subjects were the 360 patients registered on May 1, 2005, in a general adult outpatient university clinic, catchmented to serve the downtown third of an industrial city of 500 000. All patients had government health insurance, regardless of social class. The study was approved by the hospital research ethics board. After giving informed consent, patients were screened with the BPD criteria from the DSM-IV version of the SCID-II-PQ. The SCID-II is a widely used instrument that closely adheres to the DSM-IV criteria. It has good reliability and internal consistency [21]. The SCID-II-PQ BPD questions were reorganized to give a score of 0 to 9. The 8 outpatient therapists kept a log of patients who refused or were unable to complete the questionnaire. To make the survey shorter and less intrusive, we ascertained only one demographic variable (sex) during phase 1 of the study. There were no exclusion criteria.

In the second phase of the study, patients who scored 5 or more on the SCID-II-PQ were invited to give a second informed consent for the DIB-R interview. An earlier version of this instrument (ie, the DIB [22]) provided much of the basis for the DSM-III BPD criteria [23]. Moreover, the DIB-R appears to have improved correspondence with the DSM-IV criteria [23]. The DIB-R interview assesses 4 symptom clusters thought to be of critical importance in diagnosing BPD: affect, cognition, impulse action patterns, and interpersonal relationships. The DIB-R contains 108 questions and 22 summary statements. The summary statements in each of the 4 sections are converted to a "scaled score" by means of a scoring algorithm that is unique to each section. For example, the affect section scaled score is reduced by the absence of anger and scored zero if hypomania is diagnosed. The cognition scaled score is reduced by the presence of overt psychosis or mania and increased by "quasi-psychotic" phenomena. The impulse action section heavily weights self-harm and suicide attempts and threats. The DIB-R has a sensitivity of 82%, a specificity of 80%, a positive predictive power of 74%, and a negative predictive power of 87% for differentiating BPD from other personality disorders [20] and has excellent reliability [24]. Most of our clinic therapists have received DIB-R training (because a positive DIB-R interview is the prerequisite for admission into the clinic's BPD treatment programs). The training consisted of attending a workshop and completing enough interviews observed by the trainers until 2 consecutive interviews agreed on the DIB-R total score. The trainers had been trained by local experts who had been trained by the authors of the DIB. Patients scored positive for BPD if they obtained a DIB-R score of 8, 9, or 10. The second-phase interview also included demographic questions.

3. Statistical analysis

We surveyed the whole clinic (n = 360) cross-sectionally to estimate the point prevalence of BPD in an outpatient clinic. The prevalence estimates were expressed as percentages (95% confidence intervals [CIs]). Descriptive statistics in phase 2 were reported by count (percentage) for categorical variables and mean (SD) or median (minimum, maximum) for continuous variables. We asked whether demographic variables would distinguish the more severely ill DIB-R–positive subjects from the DIB-R–negative subjects using the χ^2 test for categorical variables and t test for continuous/discrete variables depending on the distribution of the data. We used normal probability plots to check for normality and used the Mann-Whitney test for non-normal data. The criterion for significance was set at $\alpha = .008$, adjusted using the Bonferroni method for multiple analyses. All analyses were performed using SPSS version 9 (Chicago, IL).

4. Results

Three hundred sixty patients were registered in the general clinic on the start date. Fig. 1 summarizes the flow of patients in the study. One hundred twenty-one were not screened with the SCID-II-PQ, resulting in a completion rate of 66.4% (239/360). Lacking demographic data, we cannot determine whether those who completed the screening differed significantly from those who did not. In a post hoc interview, 21.5% (26/121) of the noncompleters were considered to have BPD by their therapists (including 10 who had previous positive DIB-R tests); these probable BPD patients were overrepresented among the refused, seen too infrequently, and discharged categories. Thus, 239 patients completed phase 1 of the study. A total of 173 patients or 48.1% (173/360) of the clinic population, or 72.4% (173/239) (95% CI = 66.7%, 78.1%) of those tested, screened positive for DSM-IV BPD. There was no sex difference between those who screened positive and those who screened negative. The distribution of DSM-IV criteria is displayed in Fig. 2.

Of the 173 patients who screened positive in phase 1, 42 did not participate in phase 2. Consequently, 131 completed the DIB-R interview and 130 completed the demographic portion of the interview. This is a completion rate of 75.7%. A total of 54 patients or 15.0% of the clinic, or 22.6% (95% CI = 17.3%, 27.9%) of those screened, scored positive for BPD on the DIB-R. Using the DIB-R as the criterion

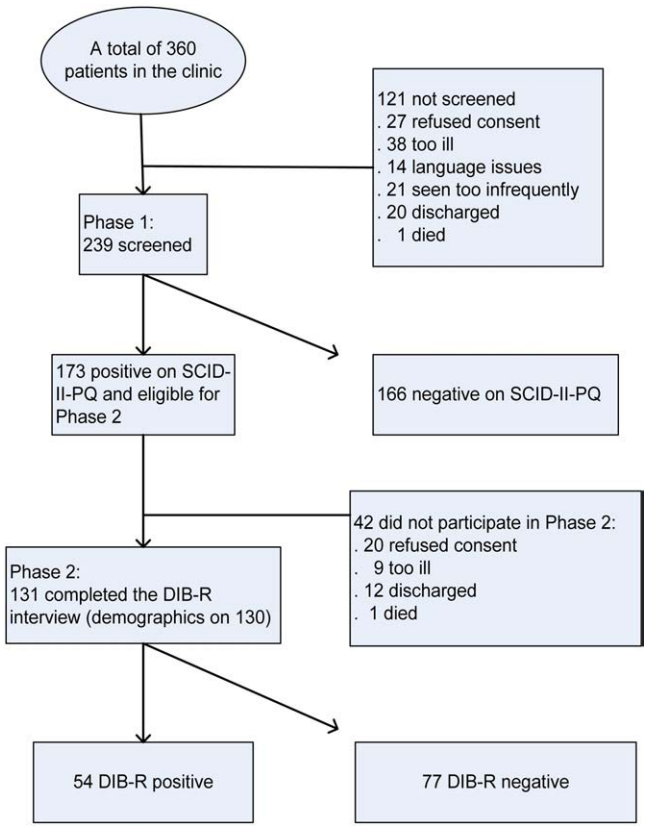

Fig. 1. Flow of patients in the study.

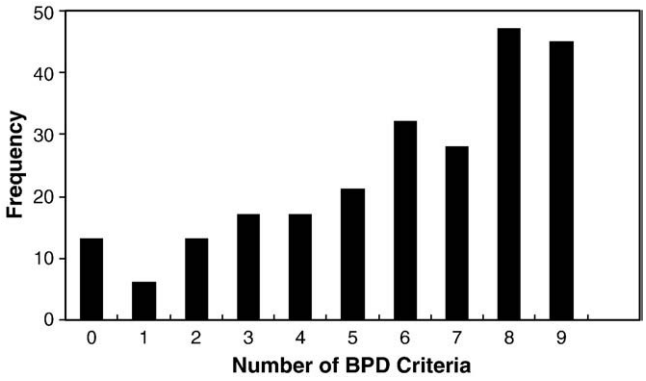

Fig. 2. SCID-II-PQ: frequency of BPD criteria (n = 239).

standard, the positive predictive value of the SCID-II-PQ was 41.2% (54/131) and the false-positive rate was 58.8% (77/131). The negative predictive value could not be determined because we did not administer the DIB-R interview to SCID-II-PQ–negative cases.

Subjects who were diagnosed with BPD on the DIB-R (DIB-R positive) were predominately female (74.1%), had a mean age of 36.9 years of age, and averaged 4.4 lifetime hospitalizations (Table 1). Forty-four percent had never been married, more than half had graduated from high school, and they had achieved a variety of occupations. Compared with those with DIB-R scores of 7 or less (DIB-R negative), the DIB-R–positive patients were significantly younger (P = .003, t test). All other demographic comparisons were not significant.

The distribution of DIB-R scores is illustrated in Fig. 3. The scores seemed to cluster around the cutoff of 8, with the number who obtained scores of 5 to 7 (n = 49) about equal to the number who scored 8 to 10 (n = 54). The distribution of scaled scores for the 4 sections of the DIB-R is illustrated in Fig. 4 (DIB-R positive) and Fig. 5 (DIB-R negative). The DIB-R section scores for the DIB-R–positive subjects are not surprising; the maximum scores for each section are overrepresented (ie, 2 for affect, 2 for cognition, 3 for impulse action, and 3 for interpersonal relationships). Seven subjects received a score of zero on the affect section because they endorsed the exclusion question about hypomania. The section scores for the DIB-R–negative subjects (Fig. 5) were interesting. These subjects had scored positive on the SCID-II-PQ screening but negative on the DIB-R. About half of these SCID-II–positive patients received a maximum score on the affect section of the DIB-R (ie, depression, anger, anxiety, intolerance of being alone). Their cognition scores (odd thinking, unusual perceptual experiences, nondelusional paranoia, quasi delusions and hallucinations) were fairly evenly distributed. More than half received a score of zero on the impulse action section. The interpersonal relationships scaled scores were evenly distributed (given the constraints of the scoring algorithm—a score of “1” is not possible). Overall, 68% of DIB-R–negative subjects received a significant score (ie, greater than zero) on the affect section,

Table 1
Demographics of DIB-R completers

	DIB-R negative (n = 76)	DIB-R positive (n = 54)	Total (n = 130)	Analysis χ^2/t/MW; df; P value
Age in years[a], mean (SD)	42.5 (11.5)	36.9 (8.4)	40.2 (10.7)	3.07; 128; .003[a]
Sex, n (%) female	58 (76.3)	40 (74.1)	98 (75.4)	0.09; 1; .770
Marital status, n (%)				1.40; 1; .237
Never married	26 (34.2)	24 (44.4)	50 (38.5)	
Ever married	50 (65.8)	30 (55.6)	80 (61.5)	
Education in years, mean (SD)	26 (34.2)	12.6 (2.4)	13.0 (2.6)	1.37; 118; .173
Occupation, n (%)				12.71; 8; .122
Professional	17 (22.4)	10 (18.5)	27 (20.8)	
Managerial	6 (7.9)	1 (1.9)	7 (5.4)	
Technical	11 (14.5)	1 (1.9)	12 (9.2)	
Clerical/sales	15 (19.7)	12 (22.2)	27 (20.8)	
Skilled labor	13 (17.1)	10 (18.5)	23 (17.7)	
Unskilled labor	7 (9.2)	10 (18.5)	17 (13.1)	
Student	1 (1.3)	3 (5.6)	4 (3.1)	
House person	1 (1.3)	1 (1.9)	2 (1.5)	
None	5 (6.6)	6 (11.1)	11 (8.5)	
Lifetime hospitalizations, median (minimum, maximum)	1 (0, 40)	1 (0, 30)	1 (0, 40)	2032; –; .922

χ^2/t/MW indicates absolute value of χ^2 test (age and education), Student t test (sex, marital status, and occupation), or Mann-Whitney test (lifetime hospitalizations); df, degrees of freedom.
[a] Significant using Bonferroni correction (α = .05/6 = .008).

67% on cognition, 43% on impulse action, and 68% on interpersonal relationships.

It is worth noting that none of the questionnaires or research interviews precipitated a crisis. Instead, most of these newly diagnosed patients were relieved to receive a label for their symptoms and valued the educational materials and treatment options provided. A few patients required a significant amount of health teaching and educational resources. Both consent forms described the purpose of the study, that is, to diagnose BPD. On the self-report SCID-II-PQ questionnaire, 2 therapists thought that a few of their patients minimized their symptoms (to avoid the diagnosis of BPD or to prove that they had improved in therapy). Conversely, most therapists believed that several patients had overendorsed items (because they were in crisis, to appear more ill, or because they had a mild version of the symptom and thought it applied to them). On the DIB-R, each therapist had a few patients with previous DIB-R scores of 8 or higher who now fell below that cutoff score, presumably because of treatment effects.

5. Discussion

A 22.6% point prevalence of BPD in a general adult outpatient clinic is somewhat higher than reported by other semistructured interview studies in the literature. Our study is unique in that we surveyed the entire clinic population at one time, rather than consecutive admissions. Our patients were diagnosed by 2 instruments: the SCID-II-PQ and the DIB-R. To our knowledge, the DIB-R has not been used before in a prevalence study of a clinical population.

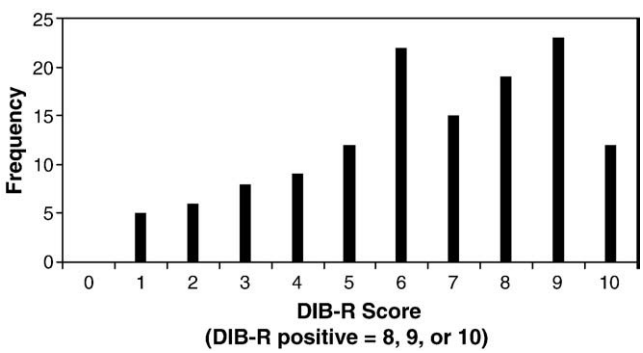

Fig. 3. Frequency of DIB-R scores (n = 131).

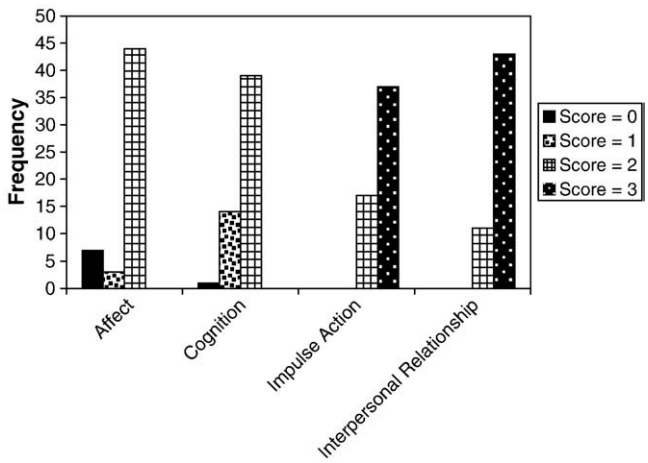

Fig. 4. DIB-R positive: frequency of scaled scores (n = 54).

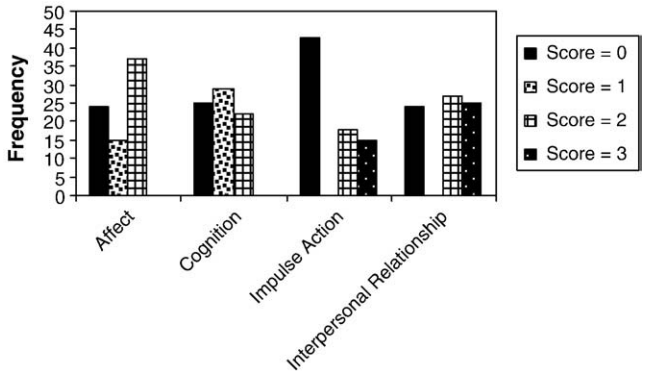

Fig. 5. DIB-R negative: frequency of scaled scores (n = 76).

The demographics of our sample are comparable with those reported in the literature, for example, predominantly female, younger, less often married [9,10]. The underrepresentation of men in clinical samples is thought to be due to the tendency of women to seek treatment more readily [10]. We performed a small substudy that compared 5 male and 16 female DIB-R–positive patients with the SCID-I and SCID-II and found that men had significantly more substance abuse and more antisocial personality disorder, fewer anxiety disorders, and a similar incidence of mood disorders. These data support the hypothesis that BPD men have different patterns of comorbidity that may lead to more frequent involvement with the substance abuse and criminal justice systems (compared with female BPD patients) [9]. The fact that our BPD subjects are younger may be a result of the natural history of BPD. Symptoms of BPD often develop before age 18 years [25], the highest prevalence of BPD is found in the group younger than 40 years [9,10], and BPD remits in most cases by the time of follow-up at 10 to 15 years [2,25]. Although our DIB-R–positive subjects did not differ significantly from the negative subjects (who endorsed BPD on the SCID-II-R) on marital status, their 44% never-married rate is clearly greater than never-married rates in the general population [9]. This may be a result of relationship instability or an "avoidance of intimacy" [2] in BPD. Our study is also more representative of the general outpatient population than other university hospital outpatient clinics because all of our patients have government health insurance. Although our study did not specifically inquire about socioeconomic status, we know that our clinic population spans the range of socioeconomic groups.

The prevalence of DIB-R BPD in our clinic may be higher than 4 recent comparable studies because we did not exclude psychosis, organic syndromes, and substance abuse, as have others [15]. There is some evidence that the presence of acute Axis I conditions can inflate the estimates of Axis II morbidity [26]; but 3 factors mitigate against the problem: (1) our patients were in all stages of treatment, (2) the clinic does not accept patients with a primary diagnosis of substance abuse, and (3) it is very difficult to receive a diagnosis of BPD on the DIB-R in the presence of psychosis or mania. We may also have missed healthier subjects whose treatment was rapidly completed; however, we also screened many recently registered patients. Would many of the 121 clinic patients who did not participate in phase 1 of the study have screened positive for BPD on the SCID-II-PQ? We attempted to answer this question by interviewing their clinicians, who estimated that 26 of 121 of the phase 1 noncompleters had BPD. Adding these 26 estimated cases to the 54 DIB-R–positive cases produces a total clinic prevalence of 22.2% for BPD. This is virtually identical to the prevalence of 22.6% that we obtained from patients who participated in the entire study. This suggests that the most likely explanation for the high rate of positive DIB-R interviews is simply that many of our clinic patients do, in fact, have BPD. The high morbidity level of the patients in our clinic is confirmed by clinic statistics: most of our patients are unable to work, and most are referred to the clinic from emergency or inpatient services. There is also some evidence that the prevalence of personality disorders is higher in city centers [10].

Some researchers have noted that the content of the DIB-R does not correspond exactly with the DSM-IV criteria for BPD and have argued that the DIB-R should not be used to make a DSM-IV diagnosis of BPD [23]. Zimmerman [26] investigated this issue and reported that some DIB-positive cases do not meet the DSM criteria, whereas some DIB-negative cases do. The diagnostic efficiency of the DIB-R has been found to be superior to that of the DIB. Furthermore, the DIB-R diagnoses a more homogeneous and severe subset of borderline patients than do interviews that are based on DSM criteria [24].

The proportion of SCID-II-PQ false positives in our study was fairly high. Hyler et al [27] examined the validity of the Personality Diagnostic Questionnaire–Revised in comparison with 2 structured interviews and concluded that self-report questionnaires are an inadequate substitute for structured interviews, precisely because self-report questionnaires have a high rate of false positives. At least 4 factors may have affected the high rate of SCID-II false positives in phase 1 of our study. First, perhaps the high rate of false positives was influenced by the fact that we only asked questions about BPD, without other questions to distract from our goal. Second, the instructions for the SCID-II-PQ are somewhat vague (eg, "the kind of person you generally are, that is, how you have usually felt or behaved over the past years"). In addition, the SCID-II-PQ does not assess the severity of each criterion; it simply asks for a "yes" or "no" answer. Anecdotally, many subjects told us that they answered "yes" to SCID-II-PQ questions if that question had *ever* applied to them, regardless of how mildly or infrequently it occurred. The SCID-II-PQ was designed to identify the diagnostic criteria that the test-taker thinks he or she may have; "yes" answers are then evaluated during the

SCID-II interview [19]. In our study, the DIB-R interview assessed the accuracy, pervasiveness, seriousness, and disability of these patients' putative BPD symptoms. Third, because the DIB-R strictly focuses on the previous 2 years, quite a few patients who have either improved with treatment or lived a less impulsive lifestyle might have endorsed a lifetime symptom on the SCID-II-PQ, but did not achieve a significant score in the last 2 years on the DIB-R. Fourth, we surveyed everyone in the clinic, regardless of Axis I diagnosis (unless they were unable to understand the questionnaire because of illness or a language issue). Because the scoring rules of the DIB-R force a reduction in scaled score when psychosis, mania, or hypomania is diagnosed, the DIB-R in phase 2 may have functioned as a de facto Axis I screening tool.

The near-linear increase in the frequency of SCID-II-PQ criteria in our outpatient population (Fig. 2) is consistent with the view that BPD is a dimensional construct [28]. The DIB-R section scores for the DIB-R–negative subjects also support this (Fig. 5): most of these SCID-II-PQ–positive patients endorsed significant BPD symptoms on the DIB-R, except for impulsive behaviors. Because many therapists consider impulsive behaviors to be a marker of BPD severity [29], it is not surprising that impulsive behavior distinguishes the true BPD subjects from the SCID-II-PQ false positives.

The main weakness of our study is probably our failure to formally assess interrater reliability. In our clinic, however, therapists have many years of experience in diagnosing and treating BPD. They have also attended workshops given by trainers who were trained by local experts trained by the authors of the DIB, and they understand the scoring rules of the DIB-R. Another major shortcoming was the fact that only 66% of the clinic patients were screened. Nevertheless, we estimate that the rate of BPD in study participants does not differ from those who did not participate. The lack of Axis I data hinders our ability to identify the role that comorbid illnesses might play in confounding our results. The screening methodology precluded interviewing the phase 1 subjects who screened negative on the SCID-II-PQ; thus, we were unable to determine the false-negative rate for the SCID-II-PQ. Lack of phase 1 demographic information has limited our ability to compare the DIB-R–positive patients with the rest of the clinic. Finally, the lack of data on socioeconomic class limits our ability to compare our prevalence estimate to other studies.

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