Published in final edited form as:

J Pers Disord. 2014 December ; 28(6): 767–777. doi:10.1521/pedi_2014_28_141.

Severity of Anxiety Symptoms Reported by Borderline Patients and Axis II Comparison Subjects: Description and Prediction over 16 Years of Prospective Follow-Up

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Abstract

The first purpose of this study was to determine the severity of anxiety symptoms reported by borderline patients and axis II comparison subjects over 16 years of follow-up. The second was to determine the most salient predictors of the severity of anxiety symptoms of borderline patients. Initially, 290 borderline inpatients and 72 comparison subjects were assessed using measures of anxiety, childhood adversity, and normal personality. The severity of anxiety symptoms was reassessed every two years. Borderline patients reported approximately twice as severe symptoms of anxiety as comparison subjects. However, these symptoms decreased significantly over time for those in both groups. Among borderline patients, two variables were found to be significant multivariate predictors of severity of overall anxiety: non-sexual childhood abuse and trait neuroticism. The results of this study suggest that anxiety symptoms form a distinct profile for borderline patients--a profile related to both childhood adversity and a vulnerable temperament.

Introduction

Clinical experience suggests that patients with borderline personality disorder (BPD) often suffer from comorbid anxiety disorders. Despite this, only four cross-sectional studies have assessed rates of these disorders in samples of carefully diagnosed patients with BPD. In general, these studies have found that panic disorder, social phobia, simple phobia, and PTSD are the most common disorders (McGlashan et al., 2000; Zanarini, Frankenburg, Dubo, et al., 1998; Zanarini, Gunderson & Frankenburg, 1989; Zimmerman & Mattia, 1999). In addition, high rates of lifetime anxiety disorders have been found in a large-scale community sample (Grant et al., 2008).

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The authors report no conflicts of interest.

Three follow-up studies have assessed the course of these disorders over time. In the Collaborative Longitudinal Personality Disorders Study (CLPS), Ansell et al. (2011) found at seven-year follow-up that those with BPD at baseline were significantly more likely than those with other baseline diagnoses to have a new onset of panic disorder with agoraphobia and generalized anxiety disorder (GAD) as well as a recurrence of obsessive-compulsive disorder (OCD). In the McLean Study of Adult Development (MSAD), there have been two studies of the course of anxiety disorders. Over six years of follow-up, Zanarini, Frankenburg, Hennen, Reich, and Silk (2004) found that patients with BPD were significantly more likely than axis II comparison subjects to have panic disorder, social phobia, and PTSD. These investigators also found that the prevalence rates of all anxiety disorders studied except GAD declined significantly over time. At 10-year follow-up, Silverman, Frankenburg, Reich, Fitzmaurice, and Zanarini (2012) studied the course of all anxiety disorders other than PTSD and found that remissions were very common for those with these disorders at baseline, while rates of recurrences and new onsets were more moderate.

Clinical experience also suggests that borderline patients often experience severe and persistent anxiety symptoms. Comtois, Cowley, Dunner, and Roy-Byrne (1999) reported that self-report anxiety ratings of borderline patients with an anxiety diagnosis were not significantly different from those without an anxiety diagnosis. Clinical ratings and self-report measures for this study indicated that borderline patients were more anxious than patients with other personality disorders, who were rated as more anxious than patients with no personality disorder. Two other studies from the McLean Study of Development focused on the symptoms of anxiety (Zanarini, Frankenburg, DeLuca, et al., 1998; Zanarini, Frankenburg, Hennen, & Silk, 2003). The first of these studies, which was cross-sectional in nature, found that borderline patients reported significantly more severe symptoms of anxiety than axis II comparison subjects (Zanarini, Frankenburg, DeLuca, et al., 1998). The second of these studies found that rates of anxiety declined significantly over six years of follow-up but remained significantly more common among borderline patients than axis II comparison subjects (Zanarini et al., 2003). A study by Reisch, Ebner-Priemer, Tschacher, Bohus, and Linehan (2008) assessed the perceived emotions of borderline patients and healthy controls over 24 hours using a hand held computer system and found that borderline patients reported persistent anxiety more than the healthy controls as well as more frequently switched from anxiety to sadness, anxiety to anger, and sadness to anxiety.

The current study has two main objectives. The first is to examine the reported severity of anxious affects in borderline patients and axis II comparison subjects over 16 years of prospective follow-up. The second objective of this study is to assess predictors of the overall severity of anxiety symptoms among borderline patients over time using childhood experiences of adversity and aspects of temperament assessed at baseline.

Method

The current study is part of a multifaceted longitudinal study of the course of borderline personality disorder--the McLean Study of Adult Development (MSAD) (Zanarini et al., 2003). The methodology of this study was reviewed and approved by the McLean Hospital

Institutional Review Board. All subjects were initially inpatients at McLean Hospital in Belmont, Massachusetts. Each patient was screened to determine that he or she: (a) was between the ages of 18–35; (b) had a known or estimated IQ of 71 or higher; (c) had no history or current symptoms of schizophrenia, schizoaffective disorder, or bipolar I disorder or an organic condition that could cause serious psychiatric symptoms (e.g., lupus, MS); and (d) was fluent in English.

After the study procedures were carefully explained, written informed consent was obtained. Each patient then met with a masters-level interviewer blind to the patient's clinical diagnoses for a thorough psychosocial/treatment history and diagnostic assessment. Four semistructured interviews were administered: (1) the Background Information Schedule (BIS) (Zanarini, Frankenburg, Khera, & Bleichmar, 2001), (2) the Structured Clinical Interview for DSM-III-R Axis I Disorders (SCID-I) (Spitzer, Williams, Gibbon, & First, 1992), (3) the Revised Diagnostic Interview for Borderlines (DIB-R) (Zanarini, Gunderson, Frankenburg, & Chauncey, 1989), and (4) the Diagnostic Interview for DSM-III-R Personality Disorders (DIPD-R) (Zanarini, Frankenburg, Chauncey, & Gunderson, 1987). The inter-rater and test-retest reliability of the BIS (Zanarini et al., 2001) and of the three diagnostic measures (Zanarini & Frankenburg, 2001; Zanarini, Frankenburg, & Vujanovic, 2002;) have all been found to be good-excellent.

In the current study, anxiety symptoms were assessed using the items “anxious,” “scared,” “terrified,” and “completely panicked” from the Dysphoric Affect Scale at baseline and each of the eight waves of follow-up (DAS) (Zanarini & Deluca, 1993). The DAS is a self-report measure consisting of 50 items that describe dysphoric inner states (affective and cognitive states) found to be common and/or discriminating for borderline personality disorder (Zanarini, Frankenburg, DeLuca, et al., 1998). Participants are asked to report the percentage of the time that they have experienced each dysphoric affect or cognition over the past month and thus, scores range from 0–100% of the time. The psychometric properties of the DAS are excellent, with very high internal consistency (Cronbach's $\alpha = 0.97$). The one-week test-retest reliability of the DAS was found to be 0.97 when examined in a sample of 15 nonpsychotic outpatients. The interclass correlation of the items used in this study were found to be $r = 0.82$ for anxious, $r = 0.78$ for scared, $r = 0.81$ for terrified, and $r = 0.26$ for completely panicked. For our predictor analyses, we created a composite anxiety score from the average of the four DAS anxiety symptoms.

In addition, childhood experiences of adversity were assessed using the Revised Childhood Experiences Questionnaire (CEQ-R) (Zanarini et al., 1997) by a separate team of raters blind to diagnostic status. For the current study, we are using three forms of childhood adversity: any sexual abuse, severity of other forms of abuse (emotional, verbal, and physical abuse) (scores of 0–18), and severity of neglect (physical neglect, emotional withdrawal, inconsistent treatment, denial of feelings, lack of real relationship, placing patient in parental role, and failure to protect) (scores of 0–42) at baseline. Temperament was assessed using data from the NEO Five-Factor Inventory (NEO-FFI) (Costa & McCrae, 1992). We analyzed raw scores for each of the five factors: neuroticism, extraversion, openness, agreeableness, and conscientiousness using baseline data. We choose these families of predictors as they are the most commonly thought of precursors to the severe anxiety

suffered by many borderline patients. They also represent in a rough manner aspects of the nature vs. nurture paradigms of the etiology of BPD.

Statistical Analyses

Descriptive statistics were used to report the frequencies, means, standard deviations (SD), and range of the predictor and outcome variables. Categorical variables are reported as % (n) and continuous variables are reported as means (SD). Statistical significance was determined by two-tailed $p < 0.05$. All analyses were performed using Intercooled Stata 9.2 (StataCorp, 2005).

The generalized estimating equations (GEE) approach was used in longitudinal analyses to assess the severity of anxiety symptoms, as measured by the DAS variables, over 16 years of follow-up. These models included the effects of diagnostic group (borderline patients vs. axis II comparison subjects), time, and their possible interaction; all analyses included a quadratic time trend to allow for the discernible non-linear decline in severity of anxiety symptoms over time. The GEE method used for these analyses appropriately accounts for the correlation among the repeated measures of the DAS over time. Because the DAS variables are positively skewed, these analyses are based on logarithmically transformed scores and the results on the original scales of the scores have interpretations in terms of relative, rather than absolute, differences.

To assess predictors of the severity of anxiety symptoms among borderline patients, we used the composite anxiety score described above; the composite score was log transformed prior to all analyses. The generalized estimating equations (GEE) approach was also used in analyses of the predictors of the severity of anxiety symptoms. In all predictor analyses, we controlled for assessment period by the inclusion of a quadratic time trend to allow for the discernible non-linear decline in severity of anxiety symptoms over time. Initially each predictor was considered in separate analyses of its relation to overall severity of anxiety symptoms; this was followed by a multivariable analysis to select the best subset of predictors of the severity of anxiety symptoms.

The development of the DAS was completed, and the measure was introduced into our assessment battery about halfway through recruitment of the baseline MSAD sample. As a result, DAS data for 174 of 362 subjects (140 with borderline personality disorder and 34 with non-BPD axis II diagnoses) were collected at baseline. A multiple imputation procedure was used to conduct analyses including observed and imputed baseline data. The imputation procedure incorporated both diagnostic group and follow-up DAS data as predictors of the missing baseline DAS data. Specifically, the missing baseline values were replaced by a set of 10 plausible values randomly drawn from the imputation model. Results from the 10 imputed datasets were then appropriately combined to provide a single estimate of the parameters of interest, together with standard errors and test statistics that reflect the uncertainty inherent in the imputation of the unobserved data. It should also be noted that these imputations were only conducted for missing DAS data at baseline.

Results

Two hundred and ninety patients met both DIB-R and DSM-III-R criteria for BPD and 72 met DSM-III-R criteria for at least one non-borderline axis II disorder (and neither criteria set for BPD). Of these 72 comparison subjects, 4% met DSM-III-R criteria for an odd cluster personality disorder, 33% met DSM-III-R criteria for an anxious cluster personality disorder, 18% met DSM-III-R criteria for a non-borderline dramatic cluster personality disorder, and 53% met DSM-III-R criteria for personality disorder not otherwise specified (which was operationally defined in the DIPD-R as meeting all but one of the required number of criteria for at least two of the 13 axis II disorders described in DSM-III-R).

Baseline demographic data have been reported elsewhere (Zanarini et al., 2003). Briefly, 77% (N=279) of the subjects were female and 87% (N=315) were white. The average age of the subjects was 27 years (SD=6.4), the mean socioeconomic status was 3.3 (SD=1.5) (where 1=highest and 5=lowest) and their mean GAF score was 39.8 (SD=7.8) (indicating major impairment in several areas, such as work or school, family relations, judgment, thinking, or mood).

With respect to continuing participation, 87.5% (N=231/264) of surviving borderline patients (13 died by suicide and 13 died of other causes) were reinterviewed at all eight follow-up waves. A similar rate of participation was found for axis II comparison subjects, with 82.9% (N=58/70) of surviving patients in this study group (one died by suicide and one died of other causes) being reassessed at all eight follow-up waves.

Table 1 details mean scores (based on untransformed data) for five anxiety symptom over time for patients with BPD and axis II comparison subjects. The results of the regression analyses of log transformed scores can be interpreted in terms of relative differences (RD) between diagnostic groups and relative change over time. For example, the results for anxious indicate that those with BPD had severity of anxiety symptom scores that were approximately twice as high (RD = 2.1) as those with OPD. In terms of change over 16 years of follow-up, the relative decline was 38% ($1 - 0.19 \times 3.24 \times 100\%$). For each of the other four anxiety symptoms studied, similar differences between borderline patients and axis II comparison subjects were found. More specifically, each symptom or our composite score for overall anxiety was about twice as severe among borderline patients as among axis II comparison subjects. In addition, relative rates of decline over 16 years of follow-up were 70% for scared, 60% for completely panicked, 74% for terrified, and 58% for overall anxiety.

Table 2 details predictors of overall anxiety symptoms for borderline patients. For ease of interpretation of the RDs, severity of other forms of abuse was scaled in five point units, severity of neglect in ten point units, and NEO scales in ten point units. As can be seen, all three forms of childhood adversity were significant bivariate predictors of the severity of our aggregate measure of anxiety. As might be expected, borderline patients with greater childhood adversity had higher anxiety symptom scores. For example, those who experienced any childhood sexual abuse had anxiety symptom scores that were 27% higher than those who did not. Similarly, a five point increase in severity of other forms of abuse

was associated with anxiety symptom scores that were 19% higher. As can also be seen, neuroticism and extraversion were significant bivariate predictors of our outcome measure. Borderline patients with higher neuroticism or lower extraversion scores had greater severity of overall anxiety symptoms.

Next we considered the joint effects of these predictors on our aggregate measure of anxiety. As can be seen in Table 3, only one form of childhood adversity (other forms of abuse) and one aspect of temperament (neuroticism) were found to be significant multivariate predictors. These results indicate that borderline patients with higher neuroticism scores and who experienced greater severity of other forms of childhood abuse had greater severity of overall anxiety symptoms. Specifically, a five point increase in severity of other forms of abuse was associated with anxiety symptom scores that were 15% higher. A ten point increase in the neuroticism scale was associated with anxiety symptom scores that were 43% higher.

Finally, we note that two out of the twelve items that comprise the neuroticism scale (“I often feel tense and jittery” and “I rarely feel fearful or anxious”) are indicators of anxiety. To assess the sensitivity of the observed relationship between neuroticism scores and severity of overall anxiety symptoms we re-ran analyses using a neuroticism scale that excluded these two items. The results of these analyses were similar to those reported in Tables 2 and 3.

Discussion

Three main findings have emerged from this study. The first is that borderline patients have significantly more severe anxiety symptoms than patients with other forms of personality disorder. This is not a new finding as cross-sectional studies have found this before (Comtois et al., 1999; Zanarini, Frankenburg, DeLuca, et al., 1998). However, this study is the first longitudinal study to confirm this common clinical observation. More specifically, borderline patients reported feeling each specific type of anxiety and the overall anxiety variable about twice as often over time as axis II comparison subjects.

The second main finding is that the anxiety symptoms reported by those in both diagnostic groups decreased significantly over time. More specifically, borderline patients reported feeling anxious 38% less of the time, scared 70% less of the time, terrified 74% less of the time, and completely panicked 60% less of the time. And the percentage of time they reported overall anxiety decreased by 58%. This finding joins the prior finding of our group that dysphoric affects in general decline significantly over time (Reed, Fitzmaurice, & Zanarini, 2012; Zanarini et al., 2003).

The third main finding is that both childhood adversity and one aspect of the five factor model of normal personality were significant multivariate predictors of the severity of overall anxiety over time. More specifically, both the severity of other forms of childhood abuse (verbal, emotional and/or physical abuse) and higher neuroticism scores together predicted the severity of overall anxiety reported by borderline patients. This set of predictors make clinical sense as neuroticism has long been associated with the borderline

diagnosis (Widiger, Trull, Clarkin, Sanderson, & Costa, 1994) and the severity of other forms of abuse contains forms of childhood adversity that can often be daily occurrences (verbal and/or emotional abuse). Thus, an already anxious nature may have been kindled and kindled anew day after day.

Clinical Implications

These findings have clinical implications. First, they point to the subjective suffering of borderline patients caused by these high levels of anxiety. Second, our group (Zanarini, Frankenburg, Reich, & Fitzmaurice, 2010) and another (Gunderson et al., 2011) have noted that a sizeable minority of borderline patients cannot function well vocationally, particularly on a full-time basis. Clinical experience suggests that high levels of anxiety and the wish to avoid feeling even more anxious are associated with avoidance of obtaining and keeping full-time work or being enrolled as a full-time student.

Limitations

Several limitations to this study must be taken into account when interpreting its findings. First, the study was conducted on inpatients with BPD and other axis II disorders. Second, about 90% of those in both patient groups were in individual therapy and taking psychotropic medication at baseline and about 70% were in individual therapy and taking standing medications at each wave of follow-up (Hörz, Zanarini, Frankenburg, Reich, & Fitzmaurice, 2010). Therefore, the results may not generalize to less severely ill patients with BPD or to individuals with BPD who are not in treatment—which in almost all cases was treatment as usual in the community and not an evidence-based form of psychotherapy. In addition, our sample was primarily white and female. Second, we used a relatively short four-item scale to assess symptoms of anxiety. It would have been preferable if we had used a self-report measure that assessed a complete array of anxiety symptoms; however, potential subject burden and our desire to assess a wide range of dysphoric inner states characteristic of and distinguishing for BPD prevented us from doing so.

Conclusions

Taken together, the results of this study suggest that anxiety symptoms form a distinct but diminishing profile for those with BPD. In addition, both childhood adversity of a nonsexual nature and trait neuroticism seem to be strong predictors of the overall severity of these symptoms over time.

Acknowledgments

This study was supported by NIMH grants MH47588 and MH62169.

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Table 1
Percentage of Time Borderline Patients and Axis II Comparison Subjects Reported Feeling Anxiety Symptoms (Mean and SD)

	BL	2 YR FU	4 YR FU	6 YR FU	8 YR FU	10 YR FU	12 YR FU	14 YR FU	16 YR FU	Rel. Diff. Diagnosis Time Time ²	95% CI Diagnosis Time Time ²
Anxious											
BPD	57.9 (29.4)	46.6 (31.6)	42.9 (31.2)	40.92 (30.0)	39.3 (30.4)	37.5 (29.2)	37.7 (23.2)	34.9 (29.4)	37.1 (29.1)	2.11	1.68, 2.66
OPD	36.1 (28.7)	23.3 (21.4)	22.1 (22.4)	20.25 (20.8)	19.0 (20.9)	21.5 (24.7)	22.5 (23.2)	22.0 (25.6)	34.3 (25.1)	0.19	0.11, 0.31
Scared											
BPD	49.5 (30.6)	37.2 (32.5)	31.2 (31.1)	27.5 (28.2)	26.9 (15.5)	21.4 (24.9)	20.9 (25.1)	20.6 (25.8)	19.8 (24.3)	2.23	1.74, 2.87
OPD	30.8 (29.2)	16.1 (19.1)	11.0 (15.5)	10.7 (15.1)	10.3 (15.5)	13.1 (21.5)	8.35 (15.9)	9.5 (18.4)	11.2 (18.3)	0.06	0.04, 0.10
Terrified											
BPD	31.5 (29.1)	20.1 (15.5)	16.7 (25.1)	12.8 (21.6)	11.3 (20.9)	9.0 (24.9)	9.4 (18.5)	8.4 (17.0)	7.4 (16.4)	2.30	1.88, 2.81
OPD	16.3 (23.8)	6.7 (15.5)	2.9 (6.4)	2.7 (4.9)	1.9 (7.8)	18.2 (2.6)	1.2 (3.2)	2.3 (13.0)	3.5 (13.7)	0.03	0.02, 0.05
Completely Panicked											
BPD	26.5 (29.0)	15.4 (24.3)	12.3 (19.5)	10.3 (18.3)	10.2 (19.6)	8.3 (17.5)	8.6 (16.6)	8.0 (16.2)	9.0 (17.1)	2.30	1.87, 2.82
OPD	14.7 (23.8)	5.4 (15.3)	2.1 (6.9)	3.2 (8.1)	1.9 (7.8)	2.1 (4.1)	1.3 (3.3)	2.4 (11.2)	2.3 (11.1)	0.05	0.03, 0.09
Overall Anxiety											
BPD	41.4 (23.2)	29.8 (25.5)	25.8 (22.9)	22.9 (21.0)	21.9 (20.9)	19.1 (18.6)	19.2 (19.3)	18.0 (18.8)	18.3 (18.2)	2.21	1.81, 2.70
OPD	24.5 (21.6)	12.9 (14.7)	9.5 (10.9)	9.2 (10.5)	8.3 (11.4)	9.8 (12.1)	8.3 (9.6)	9.0 (14.7)	10.3 (14.7)	0.08	0.06, 0.12
										5.27	3.76, 7.40

Note: P-value for diagnosis and time are all <0.001 for each of the anxiety symptoms

Table 2

Predictors of Overall Anxiety Symptoms in BPD Patients

	Mean ^I (or percent)	Relative Difference	95% CI	P-value
Childhood Adversity				
Any sexual abuse	62.4%	1.27	1.04, 1.54	0.017
Severity of other forms of abuse/5	7.3	1.19	1.09, 1.29	<0.001
Severity of neglect/10	14.7	1.19	1.09, 1.31	<0.001
Temperament				
Neuroticism/10	35.1	1.47	1.30, 1.65	<0.001
Extraversion/10	22.6	0.79	0.69, 0.90	<0.001
Openness/10	29.8	0.91	0.79, 1.05	0.184
Agreeableness/10	30.4	0.88	0.77, 1.01	0.075
Conscientiousness/10	28.6	0.97	0.86, 1.10	0.646

^I Means are values prior to rescaling for childhood adversity and temperament variables

Table 3

Multivariate Analysis of Predictors of Overall Anxiety Symptoms in BPD Patients

Predictor	Relative Difference	95% CI	P-value
Severity of other forms of abuse/5	1.15	1.06, 1.25	0.001
Neuroticism/10	1.43	1.27, 1.60	<0.001