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Prevalence of DSM-IV Borderline Personality Disorder in Two Community Samples: 6,330 English 11-year Olds and 34,653 American Adults

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Abstract

This study had two main objectives. The first was to assess the prevalence of DSM-IV borderline personality disorder and its constituent symptoms in a community sample of late-latency children. The second was to compare these rates to those found in a community sample of American adults. A birth cohort of 6,330 11-year old children in Bristol, England was interviewed concerning borderline psychopathology in 2002–2004. A community sample of 34,653 American adults was interviewed about borderline psychopathology in 2004–2005. Rates of chronic emptiness, physically self-damaging acts, and stormy relationships were very similar in both samples (<2% difference). However, a significantly higher percentage of children than adults reported being angry and moody. In contrast, a significantly higher percentage of adults than children reported being paranoid/dissociated, having a serious identity disturbance, being impulsive, and making frantic efforts to avoid abandonment. In addition, a significantly higher percentage of adults than children met DSM-IV criteria for BPD (5.9% vs. 3.2%). Statistically significant but clinically minor gender differences were also found between girls and boys as well as men and women. Taken together, the results of this study suggest that late-latency children are about half as likely as adults to meet DSM-IV criteria for BPD. They also suggest that gender does not play a defining role in symptom expression.

Hundreds of research reports concerning some aspect of borderline personality disorder (BPD) in adults have been published in the past twenty years. In general, these studies have found that BPD is a very serious psychiatric disorder that is often associated with a good deal of psychosocial impairment and high levels of treatment utilization as well as symptomatic disturbance (Skodol et al., 2002; Zanarini, Frankenburg, Hennen, & Silk, 2004). More recently, two prospective longitudinal studies have found that BPD has a better prognosis than previously thought (Grilo et al., 2004; Zanarini, Frankenburg, Reich, & Fitzmaurice, in press). More specifically, these studies have found that remissions of BPD are quite common and recurrences are relatively rare.

Much less research effort has focused on children (and adolescents) thought to have BPD. Four studies have been published which report on “borderline” children in some type of psychiatric treatment (Goldman, D’Angelo, & DeMaso, 1993; Greenman, Gunderson, Cain,

& Salzman, 1986; Guzder, Paris, Zelkowitz, & Marchessault, 1996; Lofgren, Bemporad, King, Lindem, & O'Driscoll, 1991). In general, these studies have found that most of these borderline children are male and generally meet criteria for a number of other psychiatric disorders. These studies have also found that these children come from chaotic homes and have a heightened risk of depression, substance abuse, and antisocial personality disorder in their families.

Two other studies have been published which report on the psychiatric symptoms of the children of mothers with a current or lifetime diagnosis of BPD (Barnow, Spitzer, Grabe, Kessler, & Freyberger, 2006; Weiss et al., 1996). One of these "high risk" studies has found that a third of these children, half of whom are male, meet criteria for BPD (Weiss et al., 1996). This study also found that these children come from highly disruptive backgrounds. The second study found that the children of mothers with BPD or BPD features had significantly higher scores than the children of mothers with depression, cluster C personality disorders, or no disorders on measures of harm avoidance, overprotection, and low self-esteem (Barnow, Spitzer, Grabe, Kessler, & Freyberger, 2006).

Several studies have assessed borderline psychopathology in samples of school children. Crick, Murray-Close, and Woods (2005) found that a self-report measure of borderline psychopathology, which was based on a widely used self-report measure of adult borderline psychopathology, had good construct validity and was relatively stable in a sample of 400 fourth grade students. Rogosch and Cicchetti (2005) found that childhood maltreatment was significantly associated with a measure of borderline psychopathology in a sample of 360 children aged 6–12 who were attending a summer camp research program.

Given the intense clinical and research interest in BPD, it is not surprising that seven methodologically rigorous epidemiological studies of the prevalence of BPD in adults have been conducted (Coid, Yang, Tyrer, Roberts, & Ullrich, 2006; Crawford et al., 2005; Grant et al., 2008; Lenzenweger, Lane, Loranger, & Kessler, 2007; Samuels et al., 2002; Swartz, Blazer, George, & Winfield, 1990; Torgersen, Kringlen, & Cramer, 2001). The prevalence rates of BPD in the two European studies were both 0.7% (Coid, Yang, Tyrer, Roberts, & Ullrich, 2006; Torgersen, Kringlen, & Cramer, 2001). Prevalence rates in the five American studies ranged from 0.5–5.9% (median=2.8%) (Crawford et al., 2005; Grant et al., 2008; Lenzenweger, Lane, Loranger, & Kessler, 2007; Samuels et al., 2002; Swartz, Blazer, George, & Winfield, 1990).

In contrast, only one study has assessed the prevalence of BPD in a community-based sample (N=733) of children and adolescents (Bernstein et al., 1993). This study—the Children in the Community (CIC)—found that the prevalence rate of moderate BPD was 7.8% and the prevalence rate of severe BPD was 3% when the subjects were 9–19 years of age. However, the replicability of the results of the CIC study may have been limited by its reliance on a complex compilation of items from multiple instruments to determine the presence or absence of a rough version of DSM BPD.

The borderline diagnosis is controversial in children because they are not fully developed psychologically. However BPD has been shown to be a symptomatic disorder, characterized

by remissions and recurrences. If other complex psychiatric disorders, such as mood disorders and psychotic disorders, can be diagnosed in children and adolescents, it is important to determine if children meet criteria for BPD.

The current study, which is the first study to assess the prevalence of the nine DSM-IV criteria for BPD as well as the prevalence of DSM-IV BPD itself in children and adults, assessed participants in two existing community samples. Child participants were recruited from the Avon Longitudinal Study of Parents and Children (ALSPAC)—a well-established birth cohort study of children's health and development being conducted in Bristol, England (Golding, Pembrey, Jones, & ALSPAC Study Team, 2001). Adult participants were interviewed as part of an American study of the prevalence of a variety of axis I and axis II disorders in the community—the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) (Grant et al., 2004). The target population was the civilian population, 18 years and older, residing in households and group quarters. The resulting comparisons of the ALSPAC data and the NESARC data (which were collected by separate research teams in unrelated studies) allow us to place the results for children, where the borderline diagnosis is controversial due to developmental concerns, into a more meaningful context.

Methods

Approval of the appropriate medical ethics committees was obtained prior to data collection in both samples. After a thorough explanation of the study, parental consent and child assent were obtained for each participant in the ALSPAC study. Each child was then interviewed using the UK Childhood Interview for DSM-IV Borderline Personality Disorder (UK-CI-BPD) (Zanarini, Horwood, Waylen, & Wolke, 2004). This interview is based on the borderline module of the Diagnostic Interview for DSM-IV Personality Disorders (DIPD-IV)—a widely used semistructured interview for all DSM-IV axis II disorders (Zanarini, Frankenburg, Sickel, & Yong, 1996). The inter-rater and test-retest reliability of the DSM-III, DSM-III-R, and DSM-IV versions of this measure have all proven to be good-excellent (Zanarini & Frankenburg, 2001; Zanarini, Frankenburg, Chauncey, & Gunderson, 1987; Zanarini et al., 2000).

The UK-CI-BPD, which has the same two-year time frame as the adult interview, differs from the adult interview in four ways. The first is that the language is somewhat simpler and adapted for a UK sample (e.g., being angry was changed to being cross). The second is that two forms of impulsivity (i.e., promiscuity and reckless driving) were omitted because it was thought that they would not be applicable to children. Third, the interview is more structured than its adult counterpart in that the answer to each question (and not just the rating for each of the nine criteria) was entered into the data set. Fourth, a predetermined computer algorithm was used to score the data recorded by the study's raters.

Each adult in the second wave of the NESARC study was interviewed using the Wave 2 Alcohol Use Disorder and Associated Disabilities Interview Schedule – DSM-IV Version (AUDADIS-IV), a fully structured diagnostic interview designed for use by experienced lay interviewers (Ruan et al., 2008). All NESARC respondents were asked a series of 18 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. These items were based on a review of the major axis II interviews for adults, including the BPD module of the DIPD-IV. Subjects were instructed not to include symptoms occurring only when they were depressed, manic, anxious, drinking heavily, using medicines or drugs, experiencing withdrawal symptoms, or physically ill. To receive a diagnosis of BPD, respondents had to endorse the requisite number of DSM-IV criteria, at least 1 of which must have caused social or occupational dysfunction.

Statistical Analyses

Prevalence rates (and standard errors), expressed as percentages, for each of the study's 10 outcome variables (nine DSM-IV criteria for BPD and DSM-IV borderline diagnosis) were computed for each study group. The differences in these rates were then compared, yielding a percent difference, a 95% confidence interval, a z-statistic, and a p-value for each outcome. As the study involved multiple comparisons, Bonferroni-type corrections were applied to these p-values. As there were 30 such comparisons (i.e., child vs. adult, female vs. male children, female vs. male adults), this resulted in an adjusted p-value of $0.05/30 = 0.001$.

Results

At the 11-year wave of data collection, 6,410 children were interviewed in person by a trained rater using the UK-CI-BPD. This yielded 6,330 (98.8%) interviews with complete data. Of those with complete data, 3,273 (51.7%) were girls and 3,057 (48.3%) were boys. The mean age of the children with complete data was 11.96 (SD=0.26).

We conducted an inter-rater reliability sub-study involving taped interviews of 30 children. Kappa values for the questions of the UK-CI-BPD ranged from .36–1.0, with a median value of .88. Overall, 86% of the kappa values were in the excellent range of $>.75$.

In Wave 2 of NESARC, 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 (81%) 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 of Blacks, Hispanics, and young adults aged 18 to 24 years. 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.

Of these 34,653 adults, 14,564 (42%) were male and 20,089 (58%) were female. Taken together, their mean age was 48.5 (SD=31.6).

The reliability of AUDADIS-IV BPD diagnosis and symptom scale was assessed in a large test-retest study conducted as part of the Wave 2 NESARC survey (Ruan et al., 2008). Test-retest reliability of the BPD diagnosis was 0.71. Test-retest reliability of the associated BPD symptom scale was slightly higher (intraclass correlation coefficient=.75).

Table 1 details the prevalence rates for the symptoms of DSM-IV BPD and for the disorder itself in both study samples. As can be seen, the rates of chronic emptiness, physically self-damaging acts, and stormy relationships were very similar in both samples (<2% difference). However, a significantly higher percentage of children than adults reported feeling angry and moody. In contrast, a significantly higher percentage of adults than children reported being paranoid/dissociated, having a serious identity disturbance, being impulsive, and making frantic efforts to avoid abandonment. In addition, a significantly higher percentage of adults than children met DSM-IV criteria for BPD (5.9% vs. 3.2%).

However, it should be noted that only three of the seven variables found to significantly discriminate children from adults seem to represent clinically important differences. More specifically, twice as many adults as children endorsed having a serious identity disturbance, being generally impulsive, and making frantic efforts to avoid being abandoned. The other four statistically significant differences (anger, moodiness, paranoia/dissociation, and the BPD diagnosis) seem to be due more to the large size samples being compared rather than to clinically important differences between children and adults in the community.

We also analyzed the data for gender differences. Table 2 details the percentage of girls and boys who met criteria for each of the symptoms of BPD and for the disorder itself. As can be seen, five of these 10 comparisons were significant at the Bonferroni-corrected level of $p<0.001$. More specifically, a significantly higher percentage of girls than boys were found to have mood reactivity, profound abandonment concerns, and unstable relationships. In contrast, a significantly higher percentage of boys than girls were found to have engaged in physically self-destructive acts and at least two other forms of impulsivity. There was no significant gender difference in the percentage of girls and boys meeting DSM-IV criteria for BPD, although there was a trend indicating that girls were more likely to meet DSM-IV criteria for BPD than boys.

Table 3 details the percentage of women and men who met criteria for each of the symptoms of BPD and for the disorder itself. As can be seen, three of these 10 comparisons were significant at the Bonferroni-corrected level of $p<0.001$. More specifically, a significantly higher percentage of women than men were found to have mood reactivity and chronic feelings of emptiness. In contrast, a significantly higher percentage of men than women were found to have engaged in at least two forms of impulsivity other than self-destructive acts. In addition, there was no significant gender difference in the percentage of women and men meeting DSM-IV criteria for BPD.

Discussion

Three main findings have emerged from this study. The first is that a small but not insubstantial percentage of late-latency children met DSM-IV criteria for BPD. This finding is consistent with the overall findings of the CIC (Bernstein et al., 1993). However, the prevalence rate found in the current study is considerably lower than that found in the CIC study for BPD of moderate severity but equal to that found for severe BPD.

The second main finding is that meeting criteria for BPD appears to be less common in the current study among 11–12 year olds than among adults 18 years of age or older. The reason for this difference in juvenile and adult prevalence rates is unknown. It may be that children or adolescents are less reliable in their self-assessments. It may also be that the children studied had not had time to manifest some of the symptoms of BPD. This is perhaps best evidenced by the fact that the adults we studied were twice as likely to report being generally impulsive as the children we studied. In this regard, it is important to note that, as mentioned above, we did not assess whether the children we studied had a pattern of promiscuity or reckless driving—two of the more common forms of impulsivity in adult borderline patients. Both serious identity disturbance and frantic efforts to avoid abandonment were also twice as common among adults as children. These findings are not surprising as late-latency children are still defined in large measure by their family relationships. In this view, they may not have been called upon to evidence an identity separate from their parents and siblings. In a like manner, children of this age may not have relationships outside the home that are so intense that they stir up profound abandonment concerns. In addition, they may not need to resort to desperate measures to avoid feeling or being abandoned within their family.

However, the percentage of children (and adults) meeting DSM-IV criteria for BPD is higher in the current study than in other studies of adult community samples (Coid, Yang, Tyrer, Roberts, & Ullrich, 2006; Crawford et al., 2005; Lenzenweger, Lane, Loranger, & Kessler, 2007; Samuels et al., 2002; Swartz, Blazer, George, & Winfield, 1990; Torgersen, Kringlen, & Cramer, 2001). Yet the reasons for this are unclear. It may also be that milder cases resolve during early to mid adolescence and thus, would not be picked up in epidemiological studies of adults. Another possible explanation is that certain features of BPD, such as intense, inappropriate anger, mood lability, and general impulsivity, may be associated with puberty and may be of early adolescent onset (Waylen & Wolke, 2004). Similar to increased conduct disorder problems, these may be self-limiting and may decrease during later adolescence (Moffitt, Caspi, Rutter, & Silva, 2004).

The third main finding is that statistically significant but clinically minor gender differences were found between girls and boys as well as men and women. In general, females were more likely to report the affective symptoms of BPD, while males were more likely to report the impulsive symptoms of BPD. Whether this distribution of symptoms is linked to social role expectations, underlying biological factors, or some combination of the two is as yet unknown. However, only one of these gender differences seems clinically significant. More specifically, male children were twice as likely as female children to be generally impulsive.

The other between-gender differences seem to be more a result of the large size samples in this study and their attendant statistical power than clinically meaningful differences.

The main limitation of this study is that all of the information pertaining to the borderline psychopathology of the subjects in the ALSPAC study came from the children's own report. One might have more confidence in these results if an informant, such as a parent or teacher, had also been interviewed. However, time and funding constraints precluded using informants. A second limitation is that we did not collect data on co-occurring disorders in the ALSPAC sample. Without a complete assessment of co-occurring disorders it is impossible to know if the symptoms we assessed were actually reflective of BPD or would be better understood as part of another psychiatric disorder (e.g. feeling empty because of chronic major depression). A third limitation is that somewhat different interviews were used in the two studies to assess the DSM-IV BPD construct.

Yet, it is important to note that the prevalence rates we found for most symptoms (or the BPD diagnosis) were quite similar for children and adults. This is important given the methodological sophistication of the NESARC study. However, it is not clear if 3.2% of these children met criteria for BPD or have BPD. Clinicians are understandably reluctant to give children and young adolescents a borderline diagnosis, believing that personality disorder diagnoses should be reserved for adults. However given the availability of five empirically validated psychosocial treatments for BPD in adults (Bateman & Fonagy, 1999; Blum et al., 2008; Clarkin, Levy, & Lenzenweger, 2007; Giesen-Bloo et al., 2006; Linehan, Armstrong, Heard, & Suarez, 1991), it might help to alleviate suffering and the hardening of maladaptive behaviors into rigid patterns if clinicians considered the possibility that they were observing a case of emerging BPD.

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Table 1

Percentages of Children and Adults Who Met DSM-IV Criteria for Borderline Personality Disorder and BPD Diagnosis

	Child Sample		Adult Sample		Comparison of Adult and Child Samples		p-value ^a
	N	% (SE)	N	% (SE)	% Difference Between Adult and Child Samples	95%CI	
Affective Criteria							
Intense, Inappropriate Anger	1,508	23.8 (0.54)	5,415	15.3 (0.28)	-8.5	-9.7, -7.3	<0.00001
Mood Reactivity	745	11.8 (0.41)	2,458	6.6 (0.19)	-5.2	-6.1, -4.3	<0.00001
Chronic Feelings of Emptiness	542	8.6 (0.35)	3,625	9.4 (0.23)	0.8	0.0, 1.6	0.05611
Cognitive Criteria							
Stress-related Dissociation/Paranoia	386	6.1 (0.30)	3,063	8.4 (0.22)	2.3	1.6, 3.0	<0.00001
Serious Identity Disturbance	421	6.7 (0.31)	5,939	15.8 (0.28)	9.1	8.3, 9.9	<0.00001
Impulsive Criteria							
Physically Self-destructive Acts	275	4.3 (0.26)	1,401	4.0 (0.16)	-0.3	-0.9, 0.3	0.32576
Two Other Forms of Impulsivity	675	10.7 (0.39)	9,927	27.8 (0.38)	17.1	16.0, 18.2	<0.00001
Interpersonal Criteria							
Frantic Efforts to Avoid Abandonment	287	4.5 (0.26)	4,341	12.0 (0.23)	7.5	6.8, 8.2	<0.00001
Unstable Relationships	976	15.4 (0.45)	6,384	16.7 (0.31)	1.3	0.2, 2.4	0.01736
DSM-IV BPD	203	3.2 (0.22)	2,231	5.9 (0.19)	2.7	2.1, 3.3	<0.00001

^a Bonferroni correction for multiple comparisons yielded significance level of 0.001 (0.05/30).

Table 2

Percentages of Female and Male Children Who Met DSM-IV Criteria for Borderline Personality Disorder and BPD Diagnosis

	Female Child Sample		Male Child Sample		Comparison of Child Samples			
	N	% (SE)	N	% (SE)	% Difference Between Child Samples	95% CI	z	p-value ^a
Affective Criteria								
Intense, Inappropriate Anger	766	23.4 (0.74)	742	24.3 (0.78)	0.9	-1.2, 3.0	0.81	0.41800
Mood Reactivity	473	14.5 (0.61)	272	8.9 (0.51)	-5.6	-7.1, -4.0	-6.85	<0.00001
Chronic Feelings of Emptiness	297	9.1 (0.50)	245	8.0 (0.49)	-1.1	-2.4, 0.3	-1.51	0.13200
Cognitive Criteria								
Stress-related Dissociation/Paranoia	209	6.4 (0.43)	177	5.8 (0.42)	-0.6	-1.8, 0.6	-0.99	0.32200
Serious Identity Disturbance	238	7.3 (0.45)	183	6.0 (0.43)	-1.3	-2.5, -0.1	-2.05	0.04000
Impulsive Criteria								
Physically Self-destructive Acts	112	3.4 (0.32)	163	5.3 (0.41)	1.9	0.9, 2.9	3.73	<0.00001
Two Other Forms of Impulsivity	242	7.4 (0.46)	433	14.2 (0.63)	6.8	5.2, 8.3	8.72	<0.00001
Interpersonal Criteria								
Frantic Efforts to Avoid Abandonment	178	5.4 (0.40)	109	3.6 (0.34)	-1.8	-2.9, -0.9	-3.58	<0.00001
Unstable Relationships	598	18.3 (0.68)	378	12.4 (0.60)	-5.9	-7.7, -4.1	-6.50	<0.00001
DSM-IV BPD	118	3.6 (0.33)	85	2.8 (0.30)	-0.8	-1.7, 0.00	-1.86	0.06300

^a Bonferroni correction for multiple comparisons yielded significance level of 0.005 (0.05/10).

Table 3

Percentages of Female and Male Adults Who Met DSM-IV Criteria for Borderline Personality Disorder and BPD Diagnosis

	Female Adult Sample		Male Adult Sample		Comparison of Adult Samples			
	N	% (SE)	N	% (SE)	% Difference Between Adult Samples	95%CI	z	p-value ^a
Affective Criteria								
Intense, Inappropriate Anger	3062	14.3 (0.35)	2353	16.4 (0.35)	2.1	0.5, 3.7	2.51	0.01207
Mood Reactivity	1617	7.7 (0.25)	841	5.4 (0.22)	-2.3	-3.6, -1.0	-3.35	0.00079
Chronic Feelings of Emptiness	2322	10.7 (0.31)	1303	8.0 (0.29)	-2.7	-4.2, -1.2	-3.49	0.000049
Cognitive Criteria								
Stress-related Dissociation/Paranoia	1770	8.4 (0.28)	1293	8.4 (0.30)	0.0	-1.5, 1.5	0.00	1.00000
Serious Identity Disturbance	3417	15.3 (0.34)	2522	16.3 (0.40)	1.0	-0.7, 2.7	1.16	0.24504
Impulsive Criteria								
Physically Self-destructive Acts	897	4.6 (0.22)	504	3.4 (0.21)	-1.2	-2.5, 0.1	-1.83	0.06725
Two Other Forms of Impulsivity	4956	23.4 (0.42)	4971	32.7 (0.51)	9.3	7.4, 11.2	9.64	<0.00001
Interpersonal Criteria								
Frantic Efforts to Avoid Abandonment	2457	11.7 (0.28)	1884	12.3 (0.34)	0.6	-0.9, 2.1	0.76	0.44606
Unstable Relationships	3733	16.8 (0.36)	2651	16.6 (0.41)	-0.2	-1.9, 1.5	-0.23	0.81970
DSM-IV BPD	1337	6.2 (0.25)	894	5.6 (0.24)	-0.6	-2.0, 0.8	-0.86	0.39137

^a Bonferroni correction for multiple comparisons yielded significance level of 0.005 (0.05/10).