

THE CRITERION VALIDITY OF THE BORDERLINE PERSONALITY FEATURES SCALE FOR CHILDREN IN AN ADOLESCENT INPATIENT SETTING

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The purpose of the current study was to examine the criterion validity of the Borderline Personality Features Scale for Children (BPFS-C) by assessing the performance of the self-report and a newly developed parent report version of the measure (BPFS-P) in detecting a borderline personality disorder (BPD) diagnosis in adolescent inpatients. This study also examined parent-child agreement and the internal consistency of the BPFS subscales.

An inpatient sample of adolescents ($n = 51$) ranging from ages 12–18 completed the BPFS and were administered the Child Interview for DSM-IV Borderline Personality Disorder (CI-BPD) by trained clinical research staff. ROC analyses revealed that the BPFS-C has high accuracy (AUC = .931; Se = .856; Sp = .840) in discriminating adolescents with a diagnosis of BPD, as measured by the CI-BPD, while the BPFS-P has moderate accuracy (AUC = .795; Se = .733; Sp = .720). Parent-child agreement on total scores was significant ($r = .687$; $p < .005$). Cronbach's alphas suggested internal consistency for the four subscales of the BPFS. These findings support the criterion validity of this measure, particularly the self-report version, in adolescent inpatient settings.

Borderline personality disorder (BPD) is a serious, complex condition characterized by a pervasive pattern of instability and significant deficits in affective, cognitive, behavioral, and interpersonal functioning. Criteria (DSM-IV-TR; American Psychiatric Association, 2000) include chronic feelings of emptiness, identity disturbance, unrealistic fears of abandonment, paranoid ideation, and suicidal gestures. Community-based surveys indicate an overall prevalence rate ranging from 0.7% (Torgersen, Kringlen, & Cramer, 2001) to 1.8% (Swartz, Blazer, George, & Winfield,

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1990), with a recent study suggesting a lifetime prevalence rate of 5.9% (Grant et al., 2008). Rates among clinical samples are significantly higher. According to the American Psychiatric Association (2000), approximately 10% of psychiatric outpatients and 20% of inpatients carry the diagnosis. Women appear to be overrepresented, making up 74% of all adult patients with BPD (Widiger & Frances, 1989).

Despite DSM provision for diagnosing BPD in individuals under the age of 18, BPD is still a controversial diagnosis in children and adolescents and a topic of heated debate. The common belief that personality lacks cohesiveness and stability in children and adolescents has made some reluctant to diagnose personality disorders in this age group (Miller, Muehlenkamp, & Jacobson, 2008). For instance, some believe the diagnosis, which was originally developed for adults, should not be used for adolescents because it doesn't take into account developmental issues associated with that stage of life (Shapiro, 1990). The lack of stability as well as changes in symptom profiles over time, have led some researchers to question the validity and reliability of the diagnosis (Miller et al., 2008).

Other clinicians and researchers assert that early signs of personality disorders are apparent before the age of 18, and that identification of these maladaptive features in children and adolescents is important and necessary (Crick, Murray-Close, & Woods, 2005; Miller et al., 2008; Sharp & Romero, 2007). While research has shown that there are adolescents who seem to move in and out of the diagnosis, a group of adolescents that have a stable diagnosis of BPD also appears to exist (Miller et al., 2008).

Since the identification of BPD in youth has generally been discouraged, there is a lack of systematic, empirical understanding about the developmental precursors, course, correlates, risk factors, and rates of BPD in children and adolescents as compared to adults (Crick et al., 2005; Sharp & Romero, 2007). Further research is needed to establish the utility of the BPD diagnosis in children and adolescents and shed light onto its course and development. Since much of our understanding about the precursors and etiology of BPD has relied on adult retrospective studies, there is a large need for prospective and longitudinal follow-up studies to be conducted in children (Crick et al., 2005). Consequently, there is a need for reliable and valid assessment tools to examine borderline pathology in children and adolescents. Studies that develop and validate these measures are key in both identifying at-risk children and helping us better understand the developmental precursors of BPD. With more knowledge about the etiology and development of BPD, researchers and clinicians will be better equipped to develop preventive measures and provide treatment before problems become crystallized and more difficult to treat (Sharp & Romero, 2007).

To assess borderline pathology, semi-structured interviews may present several difficulties in research because they are time-consuming, expensive to administer, and often require specialized training on the part of the

interviewer. As a result, self-report questionnaire measures are becoming increasingly popular among researchers (Sharp & Kine, 2008). Moreover, studies have demonstrated difficulties in working with the DSM framework for diagnosing BPD (Sharp & Romero, 2007). A review of BPD diagnostic criteria conducted by Skodol and colleagues (2002) highlighted criticisms against the DSM's categorical method of diagnosis, including the lack of empirical support for diagnostic thresholds and the heterogeneity of the BPD diagnosis. In fact, the current diagnostic algorithm produces over 200 variations, which can make quick and accurate identification of the disorder difficult (Jacobo, Blais, Baity, & Harley, 2007). As a result, some researchers have advocated a dimensional or continuous approach, in which the disorder is seen as the extreme expression of common personality traits.

The Borderline Personality Features Scale for Children (BPFS-C) is the only dimensional measure to date specifically developed to assess borderline personality features in children and adolescents. Crick et al. (2005) developed this self-report instrument by modifying the BPD scale of the Personality Assessment Inventory (PAI; Morey, 1997), which is a reliable and valid tool used to assess borderline personality features among adults. The BPFS-C adapted age-appropriate items to reflect the original four domains of the PAI (affective instability, identity problems, negative relationships, and self-harm). Crick et al. established evidence for the construct validity of the measure, but as of yet, it has not yet been examined for its criterion validity in detecting BPD in youth as determined by structured clinical interview. The first aim of the present study was therefore to establish the criterion validity of the BPFS-C in an adolescent inpatient setting by examining how well it discriminates patients with BPD (as measured by the Child Interview for *DSM-IV* Borderline Personality Disorder, or CI-BPD; Zanarini, 2003).

The second aim of the study was to examine the correlation between youth self-report and parent report on the BPFS. Parents and youth often disagree on the presence and severity of problem behaviors (Verhulst & van der Ende, 1992). Low cross-informant correlations have often led researchers to cast doubt on one or both informants and have also been equated with unreliability; however, it is important to keep in mind that different informants may validly contribute different information (Achenbach, McConaughy, & Howell, 1987). Multiple informants are needed to obtain a comprehensive picture of an individual's functioning (Verhulst & van der Ende, 1992). As of yet, no comparisons have been made between parent and youth report for any measure of borderline personality features in youth. Recently, a parent-report version of the BPFS-C was developed (Sharp, Mosko, Chang, & Ha, 2010). The second aim of the current study was therefore to determine the level of agreement between parents and adolescents in their endorsement of items on the BPFS.

We expected, first, that the BPFS-C and BPFS-P demonstrate adequate sensitivity and specificity in detecting a CI-BPD diagnosis of BPD. Second,

that the self-report will have greater sensitivity and specificity than the parent report, due to the fact that children, especially as they grow older, may have unique access to their internal states and more emotional distance from their parents, who can only report based on their observations. Third, we expected that there would be a moderate, but significant positive correlation between parent and self-report on the BPF5-C, based on previous research that has shown low-to-moderate parent-adolescent correlations. Fourth, we expected that self-report mean scores will be higher compared to parent-report mean scores, due to empirical evidence that children and adolescents often report more problems than their parents do about them. Fifth, we hypothesized that the BPF5 subscales will have adequate internal consistency, due to preliminary evidence by Crick and colleagues (2005) for the construct validity of the BPF5-C and due to the fact the BPF5-C was based on the subscales of the BPD scale of the PAI, which has been shown to be a valid and reliable instrument for assessing borderline personality features in adults. We also expected that there would be greater parent-adolescent agreement on externalizing subscales (Self-Harm and Negative Relationships) than on internalizing subscales (Affective Instability and Identity Problems), based on the fact that parents often lack access to their children's internal states but can more readily observe their external behavior.

METHOD

PARTICIPANTS

The study was approved by the relevant Institutional Review Board, and parents and adolescents voluntarily signed informed consent forms. Adolescents ($n = 51$) were recruited from an inpatient unit in Houston, Texas. Patients who are admitted to this Adolescent Treatment Program are typically treatment refractory and suffer from severe behavior difficulties, complex psychiatric disorders, substance abuse, and/or multiple diagnoses. The adolescents' ages ranged from 12 to 18, with a mean age of 16. There were 29 (54.7%) females and 24 (45.3%) males. The sample had an ethnic breakdown of 86.8% White, 7.5% Hispanic, 4% Asian, and 2% Black, reflecting the ethnic proportions of the clinic's patient population. There was missing data for one self-report BPF5 and 13 parent-report BPF5. These were excluded from relevant analyses.

MEASURES

Borderline Personality Features Scale for Children (BPF5-C). The BPF5-C is a questionnaire measure that assesses borderline personality features in children ages nine and older, including adolescents. Adapted from the BPD scale of the Personality Assessment Inventory (PAI), it has the same four subscales (Affective Instability, Identity Problems, Negative Relationships, and Self-harm), and six items per subscale. Though the BPF5-C

subscales have not been validated, the BPD scale of the PAI has been shown to be valid and reliable for assessing borderline personality features in adults. Responses are scored on a 5-point Likert scale, ranging from 1 (not at all true) to 5 (always true). After four of the responses are reverse-scored, individual item scores for each of the 24 items are summed to yield a total score. Higher scores indicate greater levels of borderline personality features. The BPFSS-P is the parent-rated version of the questionnaire which was recently adapted from the youth-report version by Sharp, Mosko, Chang, and Ha (2010).

Childhood Interview for DSM-IV Borderline Personality Disorder (CI-BPD). The CI-BPD is a semi-structured interview that assesses *DSM-IV* BPD in latency-age children and adolescents. It was adapted for use in youth from the Diagnostic Interview for Personality Disorders (Zanarini, 2003). It is comprised of nine criteria that reflect symptoms of BPD. After asking a series of corresponding questions, the interviewer rates each criterion with a score of 0 (absent), 1 (probably present), or 2 (definitely present). The patient meets criteria for BPD (receiving an overall score of 2) if five or more criteria are met at the 2-level. Meeting four criteria at the 2-level yields an overall score of 1. If the patient meets three or fewer criteria at the 2-level, then an overall score of 0 is given.

The CI-BPD has adequate psychometric characteristics. Interrater reliability analyses have yielded the following kappa values for each criterion: inappropriate, intense anger or difficulty controlling anger (.93), affective instability (.90), chronic feelings of emptiness (.78), identity disturbance (.91), transient stress-related paranoid ideation or severe dissociative symptoms (.77), frantic efforts to avoid real or imagined abandonment (.67), recurrent suicidal behavior, gestures, or threats, or self-mutilating behavior (.85), impulsivity (.65), a pattern of unstable and intense interpersonal relationships (.82) (M. Zanarini, personal communication, October, 2009). In our sample, chi-square analyses revealed that the CI-BPD is significantly related to clinician diagnosis at time of discharge ($\chi^2 = 12.539$, $p = .0003$). In addition, internal consistency was good with a Cronbach's alpha of .81.

PROCEDURES

All adolescents who were admitted to the inpatient psychiatric unit and their parents were asked whether they would like to participate in the study. Both informed consent and child assent were obtained from parents and adolescents in person.

The interview measures were administered by clinically trained research staff. Staff was trained to administer the CI-BPD by the second author who was trained in administering and scoring the DIPD by its developer. Given the real-life setting in which the research occurred, it was not possible to conduct a test-retest reliability study in which the interview is repeated with the same subject within a short period of time by a second

interviewer to determine interrater reliability. Neither was it possible to video or audiotape interviews. Therefore, interviewers were each observed by the trainer (second author) while contemporaneously making her own ratings. At the conclusion of the interviews, ratings were compared with a discussion focusing on those ratings where there were disagreements. The second author remained available for consultation throughout the study period. Although not ideal, this practice insured that the interviewers were in agreement with respect to their understanding of the diagnostic criteria and CI-BPD methodology.

DATA ANALYSIS

ROC (Receiver Operating Characteristic) analyses were used to assess and compare the performances of the BPF5-C and the BPF5-P in predicting a CI-BPD diagnosis of BPD. A ROC curve is obtained by plotting true positive rate (sensitivity) against the false positive (1—specificity) rate on a graph. The area under the curve (AUC) is the most commonly used index of accuracy. SPSS calculates AUCs for each ROC curve according to the nonparametric trapezoid method (Hanley & McNeil, 1982), which has been used by a number of other studies (Fombonne, 1991; Thapar & McGuffin, 1998). A good test will deviate from the Random ROC, where no discrimination exists (an area of 0.5), and approach the Ideal Test Point (an area of 1.0), which indicates 100% sensitivity and 100% specificity (Kraemer, 1992). Visually, the closer the ROC curve is to the upper left-hand corner of the graph, the better the performance of the instrument (Fombonne, 1991; Kraemer, 1992). An AUC <.7 suggests low diagnostic accuracy, from .7–.9 moderate accuracy, and \geq .9 high accuracy (Swets & Pickett, 1982). ROC analyses were completed using SPSS for Mac 16.0 (SPSS, Inc.) and MedCalc for Windows, version 9.5.0.0 (MedCalc Software).

The correlation between parent and self-reports was assessed using Pearson product moment correlations. Paired *t* tests were also carried out to determine differences between means, since it is possible for scores to be strongly correlated but have significantly different means. These analyses indicate the correlation between parent and adolescent scores as well as the direction of the discrepancies. Cronbach's alpha was used to measure internal consistency of the subscales and of the overall measure.

With the exception of the ROC analyses, all analyses were completed using SPSS-Mac Version 16.0.

RESULTS

COMPARISON OF BPD AND NON-BPD GROUPS

Table 1 displays the demographic and clinical characteristics of the BPD and non-BPD subgroups. Twenty (39%) of the 51 participants met criteria for BPD, as measured by the CI-BPD, of whom 4 were male and 16 were

TABLE 1. Demographic and Clinical Characteristics Across BPD Subgroups

	No BPD (<i>n</i> = 31)	BPD (<i>n</i> = 20)
Demographics		
Age in years: Mean (<i>SD</i>)	16 (1)	16 (1)
Males: <i>n</i> (%)	18 (58.1)	4 (20)
Females: <i>n</i> (%)	13 (41.9)	16 (80)
White: <i>n</i> (%)	28 (90.3)	16 (80)
Hispanic: <i>n</i> (%)	1 (3.2)	3 (15)
Asian: <i>n</i> (%)	1 (3.2)	1 (5)
African American: <i>n</i> (%)	1 (3.2)	0 (0)
Comorbid diagnoses: <i>n</i> (%)		
Mood disorder	21 (67.7)	17 (85)
Anxiety disorder	19 (61.3)	11 (55)
Substance use disorder	13 (41.9)	10 (50)
GAF: Mean (<i>SD</i>)	49.4 (5.8)	49.7 (6.4)
Total scores: Mean (<i>SD</i>)		
BPFS-C	59.45 (11.88)	79.45 (12.50)
BPFS-P	64.67 (14.51)	78.20 (9.68)

Notes. Subgroup determined by CI-BPD diagnosis. Comorbid diagnoses and GAF were evaluated at time of discharge.

female. Given the low frequency of a positive diagnosis of BPD for boys, analyses will not be carried out for boys and girls separately. The mean age of participants that met criteria for BPD was 16 years. Co-morbid diagnoses at the time of discharge included mood disorders ($n = 17$; 85%), anxiety disorders ($n = 11$; 55%), and substance use disorders ($n = 10$; 50%). At discharge, their DSM-IV-TR Global Assessment of Functioning (GAF) mean was 49.4.

The 31 participants (61%) that did not meet criteria for BPD according to the CI-BPD comprised of 18 males and 13 females. Their mean age was 16 years. Co-morbid diagnoses included mood disorders ($n = 21$; 67.7%), anxiety disorders ($n = 19$; 61.3%), and substance use disorders ($n = 13$; 41.9%). Their mean GAF score was 49.7 at the time of discharge, suggesting that the non-BPD and BPD groups had similar levels of functioning.

The BPD and non-BPD groups had mean BPFS-C scores of 79.5 and 59.5, respectively, yielding a significant difference ($t = -5.752$; $df = 49$; $p < .001$). The mean BPFS-P scores for the BPD and non-BPD groups were 78.2 and 64.7, yielding a significant difference ($t = -3.189$; $df = 37$; $p = .003$).

SENSITIVITY AND SPECIFICITY OF THE BPFS-C AND BPFS-P

The ROC curves for the BPFS-C and BPFS-P are shown in Figure 1. ROC analyses showed that AUCs and standard errors (SE) were significant ($p < .05$). The BPFS-C had an AUC of .931, indicating high diagnostic accuracy. The BPFS-P had an AUC of .795, indicating moderate accuracy. The BPFS-C discriminated BPD significantly better than BPFS-P scores ($z = 2.157$, $p = .031$). Figures 2 and 3 show the sensitivity and specificity at different cut-points (cut-off scores) on the BPFS-C and BPFS-P, respec-

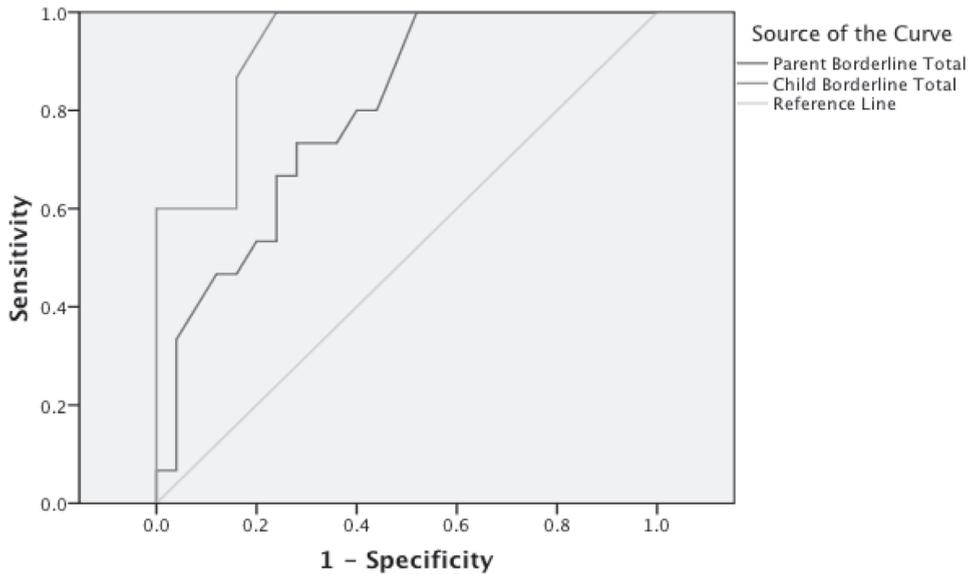


FIGURE 1. ROC curve of the overall sample. There were 15 positive cases and 25 negative cases for BPD (based on the CI-BPD diagnosis). Thirteen adolescents were missing either a BPFSS-C or BPFSS-P. The AUC of the BPFSS-P is .795 (SE = .070; $p = .002$), indicating moderate accuracy in discriminating adolescents with BPD. The AUC of the BPFSS-C is .931 (SE = .038; $p < .001$), indicating high accuracy.

tively. The optimal cut-points for discriminating BPD were determined by the intersect point of sensitivity and specificity. The optimal cut-off score was 66 for the BPFSS-C (Se = .856; Sp = .840) and 72 for the BPFSS-P (Se = .733; Sp = .720).

PARENT-ADOLESCENT AGREEMENT

The correlation between adolescent and parent total scores in the overall sample was $r = .687$, indicating a high correlation. The mean BPFSS-P score was 69.7 ($SD = 14.22$), while the mean BPFSS-C score was 66.6 ($SD = 15.42$). This difference was not significant.

Parent-adolescent agreement on subscales was also examined. Correlation coefficients showed the highest agreement on the Self-Harm subscale (.728), followed by .673 on the Negative Relationships subscale, .486 on the Affective Instability subscale, and .454 on the Identity Problems subscales. The parents' mean subscale scores did not differ significantly from their children's on any subscale.

INTERNAL CONSISTENCY OF THE SUBSCALES SCORES

Both the total and subscale scores for parent- and youth-reported borderline features demonstrated adequate internal consistency. Based on total

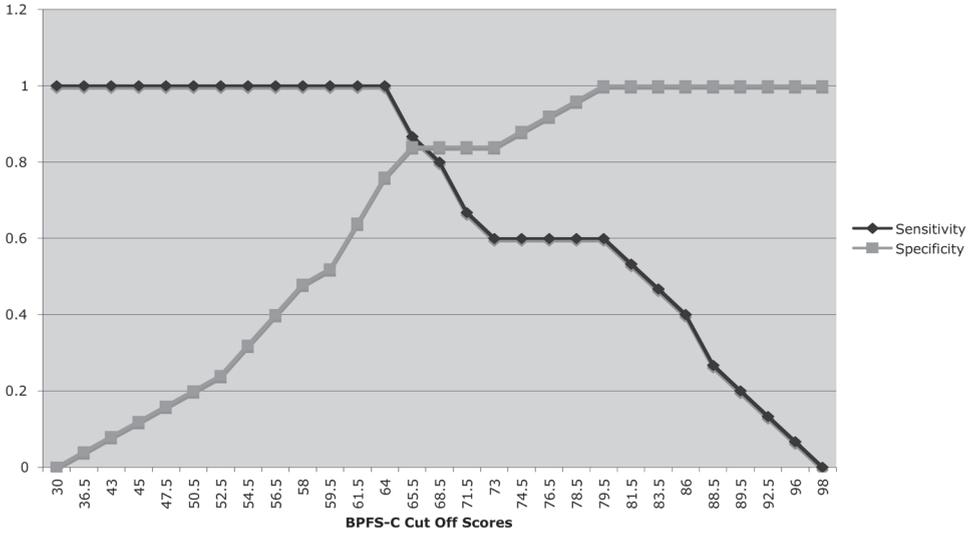


FIGURE 2. Sensitivity and specificity plotted against different cut-off scores on the BPFS-C. The optimal cutpoint is determined by the intersect point of sensitivity and specificity.

scores, youth self-report (Cronbach's alpha = .892) showed higher internal consistency than parent-report (.885). Of all the subscales, the Self-Harm subscale had the best internal consistency (Child-report = .857; Parent-report = .803). Affective Instability had the second best internal consistency (Child-report = .719; Parent-report = .727). Negative Relation-

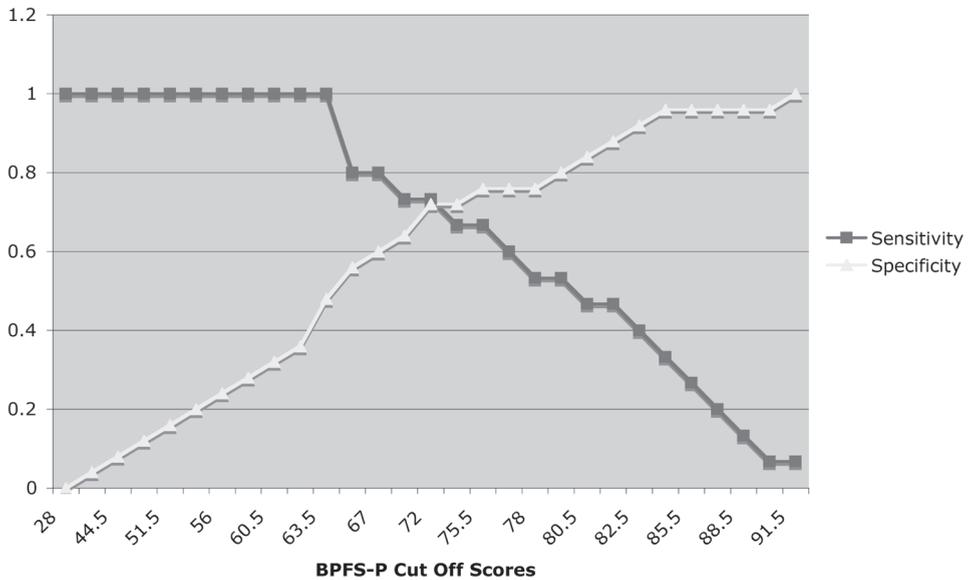


FIGURE 3. Sensitivity and specificity plotted against different cut-off scores on the BPFS-P. The optimal cutpoint is determined by the intersect point of sensitivity and specificity.

ships (Child-report = .651; Parent-report = .704) and Identity Problems (Child-report = .722; Parent-report = .654) had slightly lower Cronbach's alphas.

DISCUSSION

The validation of measurements that assess borderline pathology in children and adolescents is essential for deepening our understanding of the course and development of this disorder and for screening purposes. The current study examined the criterion validity of the BPFS-C, a relatively new measure developed to assess borderline personality features in children and adolescents (Crick et al., 2005), in an adolescent inpatient setting.

Results indicate the utility value of the BPFS-C for use in adolescent inpatient settings, where borderline pathology is commonly seen. ROC analyses revealed that the BPFS-C has high accuracy in discriminating patients with a CI-BPD diagnosis of BPD, while the BPFS-P has moderate accuracy. As predicted, the BPFS-C outperformed the parent version. This may be due to the fact that adolescents have better access to and understanding of their internal states than their parents do. These findings suggest that self-report alone may be sufficient for discriminating adolescents with BPD.

Correlational analyses showed that parent-adolescent agreement was higher than predicted. This is noticeably higher than the mean r of .25 that Achenbach et al. (1987) found in their meta-analyses of parent-adolescent agreement on adolescent behavioral and emotional problems. The prediction that adolescent mean scores would be greater than parent mean scores was not supported by the results. There was no significant difference between adolescent and parent means in either subgroup (BPD and non-BPD), and in the non-BPD group, the mean BPFS-P score was actually higher than the mean BPFS-C score.

Results also showed the BPFS-C subscales (affective instability, negative relationships, identity problems, and self-harm) had adequate internal consistency. It is also important to note that the BPFS-C subscales were based on subscales from the borderline scale of the PAI, which has been shown to be a valid and reliable measure. Though these provide preliminary support for the utility of the BPFS-C subscales, additional studies using larger samples are needed to examine the validity and reliability of these subscales.

Assuming that these subscales are valid, the correlations found for each subscale were such that parents and adolescents agreed more on externalizing symptoms than on internalizing symptoms. Higher parent-adolescent correlations were found for self-harm and negative relationships, while lower correlations were found for affective instability and identity problems. These findings suggest that parents may be better raters of their children's relationships and self-harm behavior, but poorer raters of their emotional states and identity issues.

Several limitations should be taken into account when interpreting the results of this study. Our main limitation was the use of the CI-BPD as the criterion measure. While the reliability and validity of this measure appears to be promising (good internal consistency, adequate interrater reliability, and clear association with clinician diagnosis) its validity has yet to be well-established in the literature. Another limitation is the small sample size, in particular, the small number of boys meeting criteria for BPD mitigated against an investigation of gender differences. The study could also be improved by using a greater number of racial/ethnic minorities to assess cross-cultural validity as well as a greater number of younger adolescents to assess the performance of the BPFS in detecting BPD in younger adolescent populations.

Taken together, the results of this study suggest that the BPFS-C may be a useful tool for detecting BPD in adolescent inpatient populations. It may also be used for early identification purposes in inpatient populations, so that children and adolescents with sub-clinical levels can be identified and treated at an early stage of the disorder. The findings of this study may not be applicable to other populations, such as younger children or community populations, as demonstrated by the variability of AUCs and optimal cut-points across different subgroups. Future validation studies on this measure could include a larger sample size and a greater number of younger adolescents so that the effect of age on the performance of this measure could be examined.

These results also have important implications for the use of the BPFS-C in longitudinal follow-up studies, which are greatly needed to shed light on the developmental precursors of BPD. While structured or semi-structured interviews are time-consuming and inefficient for research in most clinic and community settings, questionnaire measures that have adequate criterion validity may be more useful to researchers. With greater understanding of the etiology, risk factors, and development of BPD, researchers and clinicians will be better equipped to develop proactive preventive measures, provide more effective treatment, and ultimately, lessen the burden of this debilitating disorder on society, families, and individuals.

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