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The Validity of the MSI-BPD Among Inpatient Adolescents

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Abstract

Although the McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD) has shown validity in adult samples, only one study has explored its validity in adolescents and, to our knowledge, the measure has not been validated with inpatient adolescents. The aim of the current study was to evaluate the reliability, and convergent and criterion validity, of the MSI-BPD in an effort to establish the clinical utility of the MSI-PBD as a screening measure for BPD in inpatient adolescents. A total of 121 adolescents from an acute care inpatient unit were recruited for the study. Convergent validity was examined with established measures of BPD in adolescents, including the use of receiver operating characteristics analyses to establish a clinical cutoff score for the MSI-BPD in predicting a diagnosis of BPD. Criterion validity was examined by using this clinical cutoff to investigate group differences in suicidal ideation and Axis I symptoms, known correlates of BPD. Findings demonstrated support for validity of the MSI-BPD when used among inpatient adolescents, and established a clinical cutoff of 5.5. Taken together, this study demonstrates adequate validity for the MSI-BPD, and suggests it is a valuable screening measure for BPD in adolescent inpatients.

Keywords

adolescents, borderline personality disorder, receiver operating characteristic, inpatient

Borderline personality disorder (BPD) is a chronic psychological disorder characterized by pervasive patterns of unstable interpersonal relationships, extreme emotion dysregulation and psychological disturbance, prolonged identity disturbance and self-image, and impulsivity (American Psychiatric Association [APA], 2000). The emotional and financial costs associated with BPD are taxing for individuals with the disorder, their families, and the mental health system at large, given the higher rates of suicide in this population (Oldham, 2006), poorer therapy outcomes (Bateman & Fonagy, 2009; Reus, Berg, & Emmelkamp, 2011), higher rates of chronic medical illness (Frankenburg & Zanarini, 2004), higher rates of Axis I comorbidity (Eaton et al., 2011; Grant et al., 2008), and significantly greater utilization of mental health care services than the general population. The prevalence of BPD is estimated to be between 2% in clinical samples (Swartz, Blazer, George, & Winfield, 1990) and 5.9% in the general population (Grant et al., 2008) in the United States, although many individuals who meet diagnostic criteria for the disorder are never formally diagnosed (Chanen et al., 2004, 2008; Zanarini et al., 2003). BPD often emerges during childhood and adolescence, and evidence suggests that BPD in adolescence is predictive of the disorder persisting into adulthood (Miller, Muehlenkamp, & Jacobson, 2008; Netherton, Holmes, & Walker, 1999). However, many clinicians are hesitant to diagnose personality disorders during adolescence given that an individual's personality is still developing during this life stage (Paris, 2003). This conservative diagnostic approach has raised concerns by many in the field who note that individuals with BPD, who display symptoms at an early age, are often being overlooked or underdiagnosed in clinical settings, and are therefore missing the window for early interventions and targeted treatments (Chanen et al., 2008).

Recently, the field of personality disorder assessment has seen a dramatic push toward the integration of a more dimensional conceptualization of personality disorders, and the integration of dimensional approaches to assessment is expected to be included in the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (*DSM-5*). Inclusion of dimensional assessment approaches, in addition to the traditional categorical methods, provide clinicians with improved methods to assist in assessment, treatment planning, and treatment monitoring for individuals with

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personality disorders. However, this push toward the use of dimensional assessment models does not undermine the utility of the categorical approach to personality disorder assessment when used as a screening method, particularly when considering the benefits of early detection of BPD risk in adolescents. Given the high emotional and financial costs associated with BPD, clinicians in both medical and mental health settings should be carefully screening for the presence of BPD in adolescents regardless of their decision to assign a formal BPD diagnosis (Sharp, Ha, Michonski, Venta, & Carbonne, 2012) using a dimensional model of assessment at a later date. Early interventions and effective treatment strategies for this population would reduce the overall costs associated with the disorder, but early identification of BPD is entirely dependent on the availability of valid and reliable screening instruments that are both time- and cost-effective for use in a variety of settings. In addition, screening instruments should not be limited to any theoretical orientation, and should be able to identify BPD based on the most current standardized diagnostic definitions (Patel, Sharp, & Fonagy, 2011).

The McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD; Zanarini et al., 2003) was developed to serve as a screening measure based on *DSM-IV* diagnostic criteria (APA, 2000), and set out to improve the reliability, sensitivity, and specificity of existing BPD screening measures. The MSI-BPD demonstrated diagnostic efficiency in the initial validation study (see Zanarini et al., 2003) with a sample of 200 subjects between the ages of 18 and 60 years, and has been used in subsequent studies to identify BPD in treatment and epidemiological research (e.g., Glenn & Klonsky, 2009; Rothrock et al., 2007; Sansone, McLean, & Wiederman, 2008). Gardner and Qualter (2009) found that the MSI-BPD correlated highly with other BPD screening tools in a mixed community and student sample, and reported that confirmatory factor analysis suggested that the MSI-BPD is an appropriate measure for assessing BPD as a global construct. Since initial validation of the MSI-BPD, the instrument has been translated to other languages for international use (e.g., Kröger, Vonau, Kliem, & Kosfelder, 2010), and has demonstrated promise for use in both population-based treatment studies and primary care settings for clinical and nonclinical adult samples (Gardner & Qualter, 2009).

In addition, several studies (Chanen et al., 2008; Gardener & Qualter, 2009; Patel et al., 2011; Zanarini et al., 2003) have now established the validity of the MSI-BPD against structured diagnostic interviews, and reported suggested cutoff scores for the MSI-BPD with multiple populations. In the initial validation study, Zanarini et al. (2003) demonstrated good sensitivity (.81) and specificity (.85), with a cutoff score of greater than 7 for their adult sample on the MSI-BPD when compared with the Diagnostic Interview for *DSM-IV* Personality Disorders–Borderline Scale (DIPD-BDP), and found even greater diagnostic efficacy when limiting logistic regression analyses to younger subjects in their sample. Based on the latter finding, the authors suggested that the MSI-BPD might be ideal as a screening instrument in late adolescent and young adult samples. However, Chanen et al. (2008) found weaker sensitivity (.68), specificity (.75), and diagnostic accuracy (.73) when using a receiver operating characteristic (ROC) analysis to compare the MSI-BPD with the Structured Clinical Interview for *DSM-IV*–Axis II in a sample of outpatient adolescents and young adults. Similar to the initial study by Zanarini et al. (2003), Chanen et al. (2008) suggested a cutoff score of 7 on the MSI-BPD with their study population. To our knowledge, Chanen et al. is the only group that has thus far examined the validity of the MSI-BPD in a sample that included adolescents; and as yet, the MSI-BPD has not been examined for use in inpatient adolescent settings, or with a sample of only adolescent subjects.

Against this background, the aim of the current study was to evaluate the reliability, and convergent and criterion validity of the MSI-BPD in an effort to establish the diagnostic effectiveness of the MSI-BPD as a screening measure for prediction of BPD in adolescents. In this study, scale reliability was evaluated through internal consistency and interitem correlations. Convergent validity, defined as correlations between the MSI-BPD and other measures of BPD (Crocker & Algina, 2008), was examined through use of *DSM-IV* BPD (Childhood Interview for *DSM-IV* Borderline Personality Disorder [CI-BPD]; Zanarini, Frankenburg, Chauncey, & Gunderson, 1987), and the Borderline Personality Disorder Features Scale for Children (BPFSC; Zanarini, 2003). Both of these measures have been validated for use in adolescents (Chang, Sharp, & Ha, 2011; Sharp et al., 2012; Sharp, Mosko, Chang, & Ha, 2011).

Furthermore, convergent validity was examined through the use of the CI-BPD by applying ROC analyses to determine a clinical cutoff point for the MSI-BPD with an adolescent population. Criterion validity, defined as correlations between the MSI-BPD and important behaviors that are related to BPD but cannot be directly captured by the MSI-BPD (Crocker & Algina, 2008), was examined by using the clinical cutoff determined through the ROC analyses to investigate whether adolescents above the cutoff would display higher rates of suicidal ideation and Axis I symptomatology. When compared with the general population, rates of suicidal ideation have been shown to be higher in those diagnosed with BPD in both adult (American Psychiatric Association, 2001) and adolescent populations (Rathus & Miller, 2002). Similarly, studies have shown that a BPD diagnosis is associated with higher rates of Axis I symptomatology (Chanen, Jovev, & Jackson, 2007; Grant et al., 2008; Sharp & Romero, 2007; Zanarini et al., 1998, 2004; Zimmerman & Mattia, 1999).

In summary, establishing the validity of the MSI-BPD for use in adolescents would add to a growing literature base

demonstrating that BPD can be reliably and validly assessed in adolescents (e.g., Chang et al., 2011; Crick, Murray-Close, & Woods, 2005; Mosko et al., 2011; Sharp et al., 2012). Evidence of the valid assessment and screening of BPD in adolescents also contributes to the further establishment of the borderline construct in youth.

Method

Participants

Two hundred adolescents admitted to the adolescent unit of a county psychiatric hospital were approached on the day of admission for consent. The average length of stay on the unit is 3 to 4 days and therefore the predominant purpose of this inpatient unit is acute crisis intervention and stabilization. Of these adolescents, 11 declined, 3 revoked consent during assessments, and 42 were discharged prior to being assessed. The study adopted the following inclusion criteria: age between 12 and 17, English fluency, and voluntary admission. Adolescents were excluded if the attending psychiatrist determined that they did not have capacity to participate in the study (active psychosis, mental retardation, and adolescents who posed a physical risk to research assistants). On the basis of these criteria, 23 were excluded, leaving 121 adolescents in the sample. Adolescents with missing data were excluded from all analyses, which included two participants with missing data on the CI-BPD (Zanarini, 2003), and one participant with missing data on the MSI-BPD (Zanarini et al., 2003). Therefore, the final sample included 118 adolescents with complete data.

The average age of participants was 14.64 years (SD = 1.45) and 64.4% of the sample was female. The ethnic breakdown of the sample was as follows: 38.1% Hispanic, 30.5% African American, 27.1% White, 2.5% multiracial, and 0.8% who described their race as none of the above. Psychopathology was highly prevalent in this sample with 43.9% reporting clinically significant affective problems, 17.1% reporting clinically significant anxiety problems, 29.3% reporting clinically significant somatic problems, 17.1% reporting clinically significant ADHD problems, 14.6% reporting clinically significant oppositional defiant problems, and 36.6% reporting clinically significant conduct problems. Clinically significant problems in this context are defined as those cases that are above cutoff on the standardized norms of the Youth Self-Report (YSR; Achenbach & Rescorla, 2001).

Measures

Borderline Personality Disorder

McLean Screening Instrument for Borderline Personality Disorder. The MSI-BPD (Zanarini et al., 2003) is a 10-item questionnaire designed to screen for BPD. Sample items include, "Have any of your closest relationships been troubled by a lot of arguments or repeated breakups?" and "Have you often felt that you had no idea of who you are or that you have no identity?" Each item requires a "yes" or "no" response. All items are written such that positive responses indicate the presence of BPD symptoms. Previous research has suggested that a useful clinical cutoff score in predicting BPD among adults is 7 (Patel et al., 2011; Zanarini et al., 2003) or greater than 7 (Chanen et al., 2008).

Childhood Interview for DSM-IV Borderline Personality Disorder. The CI-BPD (Zanarini, 2003) is a semistructured interview adapted from the Diagnostic Interview for Personality Disorders (Zanarini et al., 1987) for use with children and adolescents. It assesses nine *DSM-IV* criteria of BPD, including inappropriate and/or intense anger, affective instability, chronic feelings of emptiness, identity disturbance, stress-related paranoid ideation or dissociation, efforts to avoid abandonment, recurrent suicidal behaviors, impulsivity, and a pattern of unstable interpersonal relationships. Each one of these criteria has a set of corresponding prompts that the interviewer uses to investigate that criterion. Based on these prompts, the interviewer rates each DSM-based BPD criterion with a score of 0 (*absent*), 1 (*probably present*), or 2 (*definitely present*). For instance, the impulsivity criterion is informed by questions concerning drinking, driving, drug use, anger, delinquency, and so on. In this interview, an adolescent meets criteria for BPD only if five or more criteria are met at the 2-level. All interviews were conducted by doctoral-level graduate students who had been trained on the measure by the third author. The doctoral students were all required to undergo a training period in which they shadowed more experienced interviewers before being permitted to conduct assessments independently. In addition, all interviewers routinely met as a group and reviewed videotaped sessions of an experienced interviewer conducting the CI-BPD under the supervision of the senior third author. The internal consistency of the CI-BPD in this sample was .72 (Cronbach's alpha). Excellent psychometric properties for this measure were recently demonstrated by Sharp et al. (2012).

Borderline Personality Features Scale for Children. The BPFSC (Crick et al., 2005) is a 24-item self-report measure developed to assess borderline features in children. It was adapted from the BPD scale of the Personality Assessment Inventory (PAI; Morey, 1991) and assesses affective instability, identity problems, negative relationships, and self-harm. Sample items include, "I get so mad I can't let all my anger out" and "I worry that people I care about will leave and not come back" rated on a 5-point Likert-type scale ranging from *not at all true* (1) to *always true* (5). Higher scores indicate greater borderline features. In the present sample the internal consistency of the BPFSC was .83 (Cronbach's alpha). Criterion validity for this measure was demonstrated by Chang et al. (2011).

Psychopathology and Suicide Ideation

Youth Self Report. The YSR (Achenbach & Rescorla, 2001) was used to assess Axis I psychopathology in order to explore the convergent validity of the MSI-BPD cutoff identified in this study. Following the procedure used by Sharp et al. (2012), the broad scales for internalizing, externalizing, and total problems were used. These scales are based on 112 problem items rated on a 3-point Likert-type scale ranging from *not true* (0) to *very or often true* (2). Sample items include, "I am afraid of going to school" and "I don't have much energy." Internal consistency of the YSR in this sample was .96 (Cronbach's alpha).

Modified Scale for Suicidal Ideation. The MSSI (Miller, Norman, Bishop, & Dow, 1986) is a semistructured interview assessing suicidal ideation across 18 items rated from 0 to 3. Greater scores represent greater suicide ideation. Sample items include, "Do you want to die now" and "Do you care if you live or die?" In this study, the MSSI was used to explore the convergent validity of the MSI-BPD cutoff score, in light of evidence suggesting higher prevalence of suicidal behavior among individuals with BPD (Sharp et al., 2012). Internal consistency of the MSSI was .92 (Cronbach's alpha).

Procedures

The study was approved by the appropriate institutional review boards. Adolescents admitted to an inpatient psychiatric unit at a county hospital were approached on the day of admission about participating in this study. Informed consent from the parents was collected first, and if granted, assent from the adolescent was collected after capacity to participate was documented by the treating psychiatrist. Whereas parents were able to consent in either English or Spanish, adolescents were only eligible for participation if they were fluent in English and, therefore, were only consented in English. Adolescents were then assessed by one of five trained doctoral-level clinical psychology students while on the unit. Doctoral-level clinicians were routinely required to attend continued training on appropriate protocol for administration of all measures used for collection of data in this study. All assessments were completed in private and, in most cases, took place within 2 days of admission.

Results

Preliminary Analyses

Preliminary analyses were conducted to determine whether a significant relationship existed between sex and/or age and the MSI-BPD at a level that would require the evaluation of these demographic variables as covariates in subsequent analyses. An independent-samples t test revealed no significant sex differences on the MSI-BPD ($t = 1.94$, $p = .06$); therefore, gender was not included in subsequent analyses. Additionally, there were no significant sex differences on the BPFSC ($t = 0.84$, $p = .40$), on the number of criteria met on the CI-BPD ($t = 1.01$, $p = .31$), or in CI-BPD diagnostic status ($\chi^2 = 3.11$, $p = .08$). A Pearson correlation between age and MSI-BPD score did not reveal a significant correlation ($r = .01$); therefore, age was also excluded as a covariate in subsequent analyses.

Reliability Statistics

Internal consistency was .73 (Cronbach's alpha) for the 10 items of the MSI-BPD. The average inter-item correlation was .21 for the MSI-BPD.

Convergent Validity With Dimensional and Categorical Measures of BPD

The mean MSI-BPD score in the sample was 4.97 ($SD = 2.66$). The mean BPFSC score in the sample was 46.04 ($SD = 13.88$). Pearson correlations were used to investigate the convergent validity with dimensional measures of BPD. The MSI-BPD was highly correlated with the BPFSC total score ($r = .52$, $p < .001$), and with the number of criteria met on the CI-BPD ($r = .38$, $p < .001$). These correlations are presented in Figure 1.

To assess the convergent validity of the MSI with an interview-based, categorical measure of BPD, an independent-samples t test and ROC analyses were used. The median and modal number of criteria met on the CI-BPD were 3 and 1, respectively. In all, 26.3% ($n = 31$) of the sample endorsed at least five criteria on the CI-BPD, indicating that they meet *DSM-IV* criteria for BPD on the CI-BPD. An independent-samples t test revealed that the BPD group scored significantly higher than the non-BPD group on the MSI-BPD (BPD, $M = 6.45$, $SD = 2.39$; non-BPD, $M = 4.44$, $SD = 2.56$; $t = -3.82$, $p < .001$; $d = -0.81$).

ROC analyses were used to confirm this result and to determine the clinical cutoff score for the MSI-BPD in predicting a positive diagnosis of BPD on the CI-BPD. An ROC curve is created when the true positive rate (sensitivity) is plotted against the false positive (1 − specificity) rate. The area under the curve (AUC) can then be calculated using the nonparametric trapezoid method (Hanley & McNeil, 1982) that yields an index of accuracy, which has been used in several other studies to establish criterion validity (Fombonne, 1991; Thapar & McGuffin, 1998). A measure is thought to have low diagnostic accuracy if its AUC is below .7, moderate accuracy from .7 to .9, and high accuracy when greater than .9 (Swets & Pickett, 1982). The measure's cutoff score can be established by finding the intersection of the measure's sensitivity and specificity curves. All analyses were completed using SPSS, Release 19.

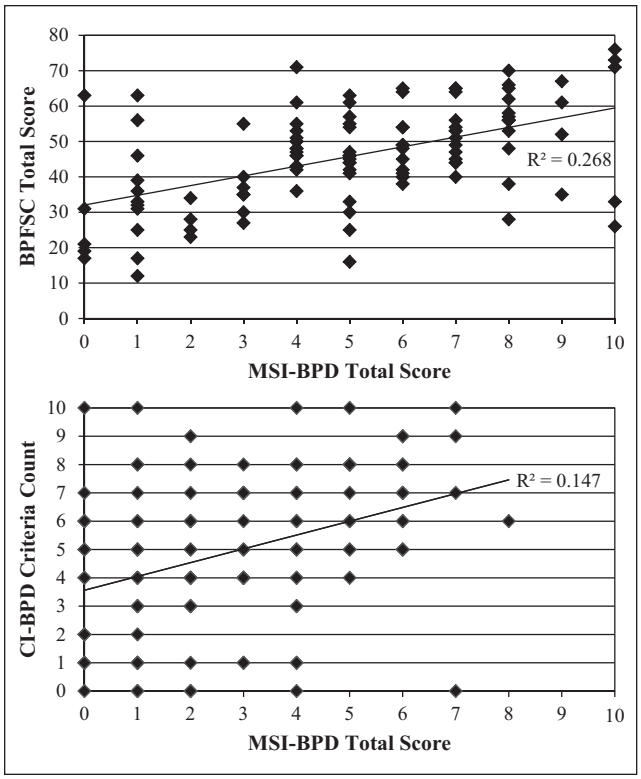

Figure 1. Scatterplot illustrating the correlations between the MSI-BPD continuous score and convergent validity measures
Note. BPFSC = Borderline Personality Features Scale for Children; MSI-BPD = McLean Screening Instrument for Borderline Personality Disorder; CI-BPD = Childhood Interview for *DSM-IV* Borderline Personality Disorder.

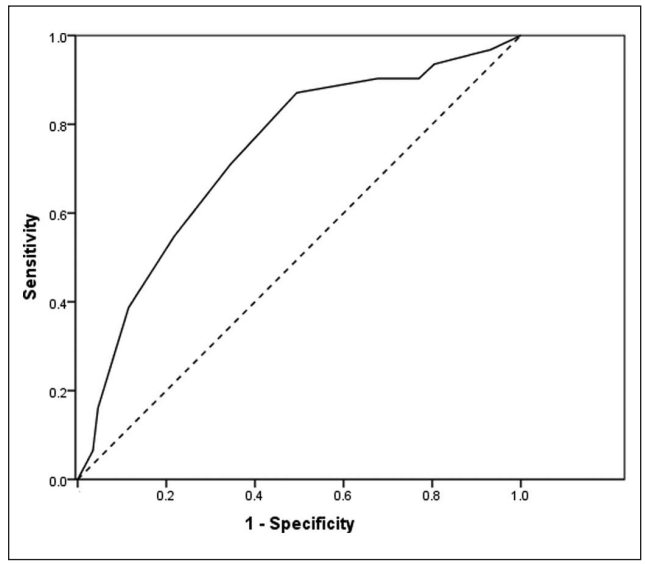

Figure 2. ROC curve of MSI-BPD in predicting CI-BPD
Note. There were 31 cases positive and 87 cases negative for BPD in this analysis. The AUC is .73 (*SE* = .05, $p < .001$), indicating moderate accuracy in discriminating adolescents who met criteria on the CI-BPD. ROC = receiver operating characteristic; CI-BPD = Childhood Interview for *DSM-IV* Borderline Personality Disorder; AUC = area under the curve.

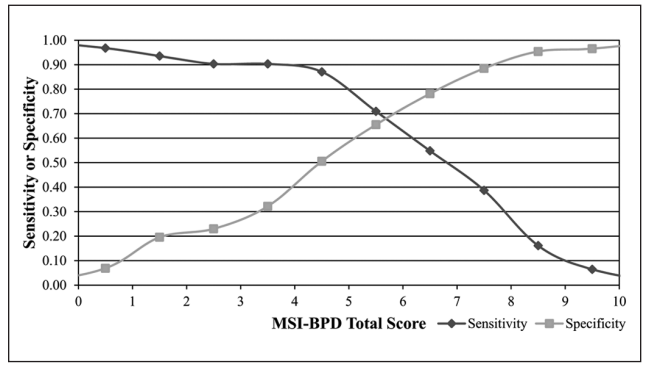

Figure 3. Sensitivity and specificity plotted against different cutoff scores on the MSI in reference to BPD
Note. The optimal cutoff score is determined by the intersection of the sensitivity and specificity lines. In predicting BPD, the optimal cutoff score is 5.5 (sensitivity = .71, specificity = .66). MSI-BPD = McLean Screening Instrument for Borderline Personality Disorder.

The ROC curve with MSI-BPD total score predicting CI-BPD group status is shown in Figure 2. Both the AUC and standard error were significant ($p < .001$), with an AUC of .73, indicating moderate diagnostic accuracy. Additionally, plotting sensitivity and specificity (Figure 3) at different cutoff scores on the MSI-BPD indicated that the optimal cutoff point, the intersection of sensitivity (Sn) and specificity (Sp), for the measure is 5.5 (Sn = .71, Sp = .66) when predicting BPD.

Criterion Validity

We assessed criterion validity of this MSI-BPD cutoff score (5.5) by conducting independent-samples *t* tests with MSI-BPD group status and Axis I psychopathology and suicidality, in light of evidence that both are highly prevalent among individuals with BPD (Sharp et al., 2012). The whole sample mean YSR internalizing *t*-score was 64.73 (*SD* = 12.96), the mean YSR externalizing *t*-score was 62.63 (*SD* = 10.75), and mean YSR total problems *t*-score was 77.12 (*SD* = 35.22). The mean MSSI score in the total sample was 17.95 (*SD* = 13.95). As expected, adolescents who scored above 5.5 on the MSI-BPD endorsed higher externalizing ($t = -2.55$, $p = .015$, $M_{BPD} = 67.17$, $M_{NotBPD} = 59.09$; $d = -0.81$) and total problems ($t = -2.09$, $p = .043$, $M_{BPD} = 69.61$, $M_{NotBPD} = 62.04$; $d = -0.66$) on the YSR and greater suicide ideation on the MSSI ($t = -3.55$, $p = .001$, $M_{BPD} = 22.85$, $M_{NotBPD} = 14.09$; $d = -0.66$). Dimensional analyses revealed significant Pearson correlations between the MSI-BPD total score and YSR internalizing *t*-score ($r = .40$, $p = .01$), YSR externalizing *t*-score

(r = .31, p = .04), YSR total problems t-score (r = .38, p = .01), and MSSI total score (r = .33, p < .001).

Discussion

This study investigated the reliability, and convergent and criterion validity, of the MSI-BPD in an effort to establish the diagnostic effectiveness of the MSI-PBD as a screening measure of BPD in adolescents. This was the first study to evaluate the MSI-BPD as it compared with the CI-BPD, which is a clinically validated measure, free from theoretical orientation, and established based on up-to-date BPD criteria. It is also the first study to examine a categorical BPD screening measure as it relates to a dimensional measure in an adolescent inpatient population, as well as the first study to evaluate the MSI-BPD's criterion validity through association with Axis I symptoms and suicidal ideation.

We found that the MSI-BPD demonstrated significant bivariate relations with both the CI-BPD and the BPFSC, although the significant correlations were moderate in size, most likely due to the differing methods of assessment between the measures (i.e., self-report vs. interview based). The MSI-BPD also showed moderate diagnostic efficiency when predicting CI-BPD diagnosis with Sn and Sp values of .71 and .65, respectively, and diagnostic accuracy (Acc) of .73. These results are similar to those reported by Chanen et al. (2008) in a child and adolescent population (Sn = .68, Sp = .75, Acc = .73), and Patel et al. (2011) in a community sample of adult women (Sn = .69, Sp = .67, Acc = .74), but weaker than those reported in the initial validation study in adults (Zanarini et al., 2003; Sn = .81, Sp = .85, Acc = .83).

As suggested by Patel et al. (2011), we believe that the differing results of the aforementioned validity studies of the MSI-BPD (in comparison with the initial validation study) are likely because of more heterogeneity in participant samples. Indeed, the initial validation study (Zanarini et al., 2003) recruited only participants with a particular treatment history, whereas the studies that followed made use of more typical samples, such as those seen in outpatient clinics. Taken together, the MSI-BPD has consistently demonstrated at least moderate diagnostic accuracy, as in this study, in various populations, across multiple settings, compared against differing structured interview BPD measures, and at varying degrees of BPD severity.

The current study is important in that it extends the use of the MSI-BPD as a screening tool to inpatient adolescent populations in the same way it was originally designed for use in adult populations, and it established a cutoff score of 5.5 on the MSI-BPD in predicting an accurate BPD diagnosis on the CI-BPD. It should be noted that the cutoff score established in the current study is lower than the scores established in the original validation study (≥7; Zanarini, 2003) and follow-up studies (7; Chanen et al., 2008), but the diagnostic accuracy similarly remained in the moderate range. The discrepancy between cutoff scores for the MSI-BPD is likely because of sampling differences across studies. For example, Chanen et al. (2008) used an outpatient young adult sample with a mean age of 18.8 years (SD = 2.8; range = 15-25 years), and the initial validation study (Zanarini, 2003) was conducted using an adult sample with a mean age of 33.6 years (SD =11.1; range = 18-59 years). The inpatient youth sample used in the current study has a mean age of 14.64 years (SD = 1.49; range = 12-17 years). The differences in mean ages of these samples, and resulting cutoff scores, highlight the importance of the current study in establishing a more appropriate cutoff score for use of the MSI-BPD with an adolescent population. Applying previously established cutoff scores for adult samples to an adolescent population of inpatient youth would sacrifice sensitivity, limiting the utility of this measure as a screening tool for this age group (i.e., MSI-BPD cutoff = 7 with current sample resulted in Sn = .48, and Sp = .83).

Given that the current study was conducted with inpatient adolescents, the lower cutoff threshold could be also explained by the presence of higher levels of psychopathology in this population than seen in outpatient populations, and therefore fewer items need to be endorsed before an adolescent meets the criteria for BPD. In addition, the current study determined that those above the cutoff score reported greater suicidal ideation and endorsed greater Axis I psychopathology, further strengthening this interpretation. As a relatively new screening tool, the MSI-BPD will likely continue to gain strength and popularity as it is evaluated for use with more diverse populations, and the results of this study add to the list of validated populations for which the MSI-BPD can be used with adequate diagnostic accuracy.

This study is not without limitations. As a screening tool, the self-report style of the MSI-BPD lends itself useful to quick and effective screening of BPD as a global construct; however, screening measures are susceptible to false positives, social desirability, perceived demand characteristics, and response set based on fixed response choices. Furthermore, we did not exclude participants based on the presence of a comorbid Axis I primary diagnosis given that the severity of the sample would have resulted in too many exclusions, and we did not collect data on clinician diagnosis after the assessment was complete as has been done in previous MSI-BPD validation studies. Additional limitations include the small sample size (although for inpatient adolescents this is a very respectable sample size), and the use of only inpatient adolescents on an acute unit at county hospital, which likely represent more severe psychopathology than seen in outpatient settings. The cutoff score presented in the current study should be interpreted and used with caution due to these limitations of sampling variability and the reality that cutoff scores necessarily differ with regard to the

outcome variable of choice (in this case, CI-BPD diagnostic status). Of note, as well, is the timing of the screening and assessment during the first 48 hours of inpatient hospitalization, which leaves room for participants to have already begun psychotropic medications for stabilization and could potentially affect their response style.

Despite these limitations, the current study contributes to the mounting evidence in support of the MSI-BPD as a quick instrument for screening BPD with adequate diagnostic accuracy in varied settings and in multiple clinical and nonclinical (Gardner & Qualter, 2009) populations. Further research is necessary to validate the measure in other populations, and to determine with which populations the diagnostic accuracy could be improved to reach that similar to the initial validation study. Goals for future research include the addition of discriminant validity for further validation, and examination of the established cutoff score with a larger adolescent sample.

Declaration of Conflicting Interests

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