

A Brief Inpatient Measure of Global Psychiatric Symptom Severity

Initial Validation of the Brief Symptom Measure-25 for an Adolescent Inpatient Sample

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Abstract: Adolescent psychiatry is experiencing a growing need for brief yet psychometrically robust outcome measures for inpatient settings. Outcome measures currently available present limitations to clinicians and patients alike in terms of their excessive length, time of completion, difficulty to score, and focus on specific clusters of symptoms. The present study sought to validate the Brief Symptom Measure-25 (BSM-25) as a brief and easily administered measure of global psychiatric symptom severity in adolescent inpatient samples. This study evaluated the results from 154 adolescent inpatients who completed several self-report measures at admission. The findings demonstrate that the instrument has good construct validity when compared with validated measures of psychological health and well-being, behavioral problems, and interpersonal distress. We also showed the sensitivity to change of the BSM-25 from admission to discharge, and we showed that this healthy change was paralleled in several measures (self-reports and clinician ratings), using data from 75 adolescent psychiatric inpatients who were assessed at admission and also at discharge. Although this is only the first step in the validation of this measure for an adolescent inpatient setting, the BSM-25 shows promise as a brief outcome measure of global psychiatric symptom severity while maintaining validity and instrument sensitivity.

Key Words: Inpatient, adolescent, global symptom severity, outcome, assessment

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In recent years, regulatory mental health organizations have increased pressure to measure and monitor the efficacy of child and adolescent inpatient treatment programs (Blanz and Schmidt, 2000; Joint Commission on Accreditation of Healthcare Organizations, 1997; Lyons et al., 1997; Sederer et al., 1996). Outcome measurement has become increasingly crucial from both scientific and economic standpoints, resulting in an increased demand for improved techniques of measuring psychological symptoms, behavior problems, and functioning.

The present study sought to validate the Brief Symptom Measure-25 (BSM-25; Blais, 1999). The BSM-25 is a self-report questionnaire that consists of 25 items rated on a 7-point scale ranging from 0 (“none”) to 6 (“extremely”), with higher scores being more indicative of increased symptomatic distress (Blagys et al., 2002). Each item is preceded by the stem: “How much are you troubled by...” Patients are asked to rate each symptom item on the basis of how they feel right now (currently).

Although several self-report measures for adolescents that evaluate symptomatic distress are available, the utility of such instruments in inpatient outcomes research is hindered by a number of limitations. Many symptom measures for adolescent patients group symptoms into categories and provide clinicians only with information about specific problems rather than a global measure of symptom severity. For instance, the Youth Self-Report (YSR; Achenbach and Rescorla, 2001) measure groups symptoms into three scales: internalizing (anxiety, depressive, withdrawal, and somatic), externalizing (aggression and delinquency), and total problems. Although the YSR provides an overall global score of behavioral problems, it is inappropriate for use in acute psychiatric inpatient settings. The YSR is less sensitive to change in periods shorter than 6 months (Achenbach and Rescorla, 2001), and the length of the measure is problematic. Likewise, the Conners Parent and Teacher Rating Scales (Conners et al., 1998) focus mostly on externalizing symptoms, and the Acuity of Psychiatric Illness—Child and Adolescent Version (Lyons et al., 1997) only calculates the trajectory of behavioral change for each adolescent (Lyons et al., 2001). Many measures currently in use are limited on the basis of the period in which measurements are to be administered. One such measure is the Child and Adolescent Functional Assessment Scale (Hodges and Wong, 1996), which, like the YSR, is designed to rate only problems over longer periods (3–6 months). Moreover, most of the currently available measures of adolescent symptoms are burdensome—not only for patients but for clinicians as well. These take time to administer and score, and this time is in short supply for staff in an adolescent psychiatric inpatient unit. In contrast, the BSM-25 is quick to administer (approximately 5 minutes) and score and is sensitive to change over a period of several days (3–4 days).

The BSM-25 could also be an important measure because of the need to better document treatment effectiveness. Adolescent inpatient treatment research lacks methodological rigor (Bettman and Jaspersen, 2009; Blanz and Schmidt, 2000). Current studies investigating adolescent inpatient treatment suffer from high dropout rates and lack of systematic information regarding global symptom severity (Blanz and Schmidt, 2000). Inpatient treatment is the most costly and potentially disruptive of treatment modalities, making the lack of rigorous research more troubling (Blanz and Schmidt, 2000). A measure of global symptom severity would aid outcome research for adolescent inpatient settings and clinicians in identifying whether their patients are getting better.

We sought to demonstrate the initial validity of the BSM-25 as a potential brief measure of global psychiatric symptom severity and treatment outcome measure for a psychiatric inpatient adolescent sample and a more practical alternative for longer, more detailed measures of functioning. Previous research has shown that the BSM-25 demonstrates good sensitivity to change and robust psychometric properties in adult inpatient settings (Blagys et al., 2002; Blais, 1999), as well as high correlations with the Brief Symptom Inventory (BSI; Derogatis and Melisaratos, 1983), the short form of the SCL-90 (Derogatis and Melisaratos, 1983). We sought to demonstrate the initial validity of the BSM-25 (Blais, 1999) for an inpatient adolescent sample through its

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correlation with several self-report measures including the Schwartz Outcome Scale-10 (SOS-10; Blais et al., 1999), a psychological health and well-being measure; the Inventory of Interpersonal Problems-32 (IIP-32; Horowitz et al., 2000; Soldz et al., 1995), a measure of interpersonal distress; and the YSR (Achenbach and Rescorla, 2001), a behavioral problems self-report. Specifically, we expect that the BSM-25 will be negatively correlated with the SOS-10 and positively correlated with the IIP-32 subscales and the YSR scale. We also sought to demonstrate the sensitivity to change of the BSM-25 in the patients who completed the BSM-25, along with other measures at admission and again at discharge.

METHODS

Participants

The sample consisted of 154 psychiatric inpatients, 75 adolescent boys and 79 adolescent girls, admitted to the Adolescent Psychiatric Inpatient Unit of the Nassau University Medical Center (New York, United States). The patients were between the ages of 13 and 17 years, with a mean age of 15.9 years (SD, 1.102). The ethnic makeup of the sample was as follows: white, 44.2%; African-American, 31.8%; Hispanic/Latino, 16.9%; Asian, 2.6%; and other, 4.5%. The primary diagnoses of these patients were the following: mood disorders, 58%; conduct disorder/oppositional defiant disorder, 31%; impulse control disorder, 6%; psychosis, 4%; and posttraumatic stress disorder, 1%.

Of the 154 patients who completed the admission packet, 75 adolescents (39 boys and 36 girls) who were admitted to the Adolescent Psychiatric Inpatient Unit of the Nassau University Medical Center assented (legal guardian consented as well) to participate in the unit's institutional review board (IRB)-approved assessment and outcome study. The patients had a mean age of 15.7 years (SD, 1.19). The ethnic makeup of these patients was as follows: white, 40.8%; African-American, 25.4%; Latino/Hispanic/Spanish, 25.4%; other, 5.6%; and Asian, 2.8%. The primary diagnoses for these 75 patients were as follows: mood disorders, 64%; conduct disorder/oppositional defiant disorder, 30%; impulse control disorder, 2%; psychosis, 3%; and posttraumatic stress disorder, 1%.

Procedure

Each patient was given a self-report assessment packet containing the SOS-10, the IIP-32, the YSR, and the BSM-25 on or within 1 day of admission to the unit. The patients were given as much time as needed to complete the assessments, which were typically completed within 45 minutes. These assessments were done as part of the clinical assessment protocol of the unit, and the data for this study were gained through IRB-approved chart review.

The patients and their legal guardians were approached for consent to an assessment and outcome project. Seventy-five (48.7%) of the 154 patients who completed the admission packets also consented to the unit's IRB-approved assessment and outcome study. As part of the assessment and outcome study, the patients completed admission and discharge packets of questionnaires that included the SOS-10 and the BSM-25. Two clinicians (the patients' group therapist and their individual therapist) completed admission and discharge Global Assessment of Functioning (GAF; American Psychiatric Association [APA], 2000) ratings for each patient who consented. The two clinicians' GAF ratings were averaged to obtain a mean GAF score for admission and discharge. The clinicians who completed the GAF ratings included a licensed clinical psychologist (PhD) with advanced training in personality and outcome assessment, predoctoral clinical psychology interns, and fourth year clinical psychology doctoral student externs who received advanced training in the assessment and study measures. The mean length of stay for these patients was 10.81 (SD, 5.23) days.

Measures

Brief Symptom Measure-25

The BSM-25 (Blais, 1999) is a unidimensional 25-item self-report of the severity of psychiatric symptoms. The measure was developed by an expert panel of mental health professionals (three psychologists, three psychiatrists, and two psychiatric nurses) who created an initial item pool. This panel was instructed to come up with a limited number of items (no more than 50 items) that capture important features or symptoms of common and severe psychiatric disorders in both inpatient and outpatient treatment settings. The items generated were guided primarily by the diagnostic categories of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (APA, 2000). The measure was not designed to be a diagnostic tool (*i.e.*, not intended to diagnose schizophrenia). The items were written to measure problems and symptoms that are commonplace to multiple psychiatric disorders, and the items are phrased in such a way to capture more than one aspect of a psychiatric problem. For example, item 19 of the final scale (see appendix) asks respondents to indicate "How much you are troubled by difficulty sleeping, either sleeping too little or too much." By capturing problems associated with too much or too little sleep, subjects with depression, anxiety, or hypomania could endorse such an item. Similarly, item 23 asks "How much you are troubled by feeling unreal or unconnected to the world"; by capturing this type of common experience, subjects with psychosis, posttraumatic stress disorder, or a personality disorder could be expected to endorse the item. Clinicians using this measure can capture a greater range of symptoms severity.

The initial item pool generated was 40 items. Five items were eliminated or combined because of their redundancy with other items. These 35 items were presented to a new panel of five mental health professionals and to a small group of consumers (which included up to six psychiatric inpatients). After this review, additional 10 items were eliminated or combined with other items.

The measure is scored by summing up the items, each scored on a 7-point Likert scale. Previous research has shown that the BSM-25 demonstrates good sensitivity to change in adult inpatient populations as well as good psychometric properties (Blagys et al., 2002; Blais, 1999). The measure has also shown high correlations with the BSI (Derogatis and Melisaratos, 1983) and the short form of the SCL-90 (Derogatis and Melisaratos, 1983). The coefficient α for this sample was 0.93. The mean corrected item-scale correlation for the BSM-25 items in this sample was 0.65 (range, 0.37–0.79). The only item correlation lower than 0.5 was 10 (hearing voices and seeing things), likely attributed to the low base rate response for the item in this sample (86% of the participants gave 0 or 1 for this item).

Schwartz Outcome Scale-10

The SOS-10 (Blais et al., 1999) is a 10-item Likert-style self-report measuring psychological well-being and distress. Each item is scored on a scale from 0 to 6, yielding possible total scores from 0 to 60. Higher scores on the SOS-10 are representative of better psychological health and well-being. Research (Dragomirecka et al., 2006; Haggerty et al., in press, 2010; Laux and Ahern, 2003; Rivas-Vazquez et al., 2001; Young et al., 2003) has shown that the SOS-10 is a valid and reliable measure of quality of life and psychological well-being. The coefficient α for this sample was 0.84.

Inventory of Interpersonal Problems-32

The IIP-32 (Horowitz et al., 2000) is a 32-item inventory of distressing interpersonal behaviors the respondent identifies as "hard to do" (*i.e.*, behavioral inhibitions) or "does too much" (*i.e.*, behavioral excesses) on a 0 (not at all) to 4 (extremely) Likert scale. The items were derived from verbatim transcripts of the patients' psychotherapy intake interviews. Subsequent analyses identified the current version,

which conforms to the interpersonal circumplex, through the covariation among the eight IIP-32 octant scales. The IIP-32 also yields a total interpersonal distress scale, which is the scale we will be focusing on in this study. The IIP-32 has well-documented reliability, validity, and test-retest reliability (Horowitz et al., 2000). Validity evidence for the IIP-32 was illustrated by the positive association of the IIP-32 with the indices of negative mood such as anxiety and depression (Wei et al., 2003). The coefficient α for the total interpersonal distress scale of the IIP-32 was 0.94 for the current study.

Youth Self-Report

The YSR (Achenbach and Rescorla, 2001) is a widely used self-report questionnaire designed to assess the behavioral problems and the social competencies of young people aged 4 to 18 years. The YSR yields two broadband, higher-order psychopathology scales, internalizing and externalizing. The YSR is broadly used in both clinical and research settings because of its demonstrated reliability and validity; ease of administration and scoring; and applicability to clinical, non-clinical, and cross-cultural samples (Achenbach and Rescorla, 2001; Cohen et al., 1985; De Groot et al., 1994; Drotar et al., 1995; Sandberg et al., 1991). The coefficient α values for the internalizing and externalizing scales of the YSR in this sample were 0.87 and 0.84, respectively.

Global Assessment of Functioning

The GAF (APA, 2000) is a 100-point clinician-rated scale created to tap a patient’s overall level of functioning. The scale is behaviorally anchored to help guide clinical ratings. The correlation between the GAF scores (intraclass correlation coefficient, 2.2) of the individual and the group therapist was 0.57 for admission and 0.40 for discharge.

RESULTS

The means and standard deviations of the BSM-25, the SOS-10, the IIP-32, and the YSR are reported in Table 1. Pearson’s product correlations between the BSM-25 scores and the comparative measures (i.e., YSR, IIP-32, SOS-10) were conducted to examine the hypothesized relationships. Table 2 summarizes the correlations of the BSM-25 with the SOS-10, the YSR, and the IIP-32. Pearson’s product correlations were computed for all relationships by using an α level of 0.05 for significance (two tailed). Correlational coefficients from 0.1 to 0.3 are considered to represent a small effect; from 0.3 to 0.5, a medium effect; and greater than 0.5, a large effect (Cohen, 1988). Hemphill (2003) reported that mean effects greater than 0.35 occur only 33% of the time in psychology research.

In support of the hypotheses, the results revealed a significant negative correlation between the BSM-25 and the SOS-10 total score. Significant positive correlations were also found between the

TABLE 1. Means and Standard Deviations of the BSM-25, the SOS-10, the IIP-32, and the YSR at Admission

	<i>n</i>	Mean	SD
BSM-25	151	44.70	32.32
SOS-10	152	37.82	14.28
IIP-32			
Total score	150	1.40	0.79
YSR			
Internalizing	141	0.60	0.38
Externalizing	141	0.71	0.31

The YSR scales and the IIP-32 scales were mean item scores because some of the scales had more items than others, and we used the mean scores rather than standardized scores.

TABLE 2. Pearson’s Product Correlations Between the BSM-25 and Criterion Variables

	BSM-25		
	<i>n</i>	<i>r</i>	<i>p</i>
YSR			
Internalizing	139	0.86	<0.001
Externalizing	139	0.57	<0.001
IIP-32 total problems	150	0.48	<0.001
SOS-10 total score	151	−0.69	<0.001

BSM-25 and the IIP-32 total score. The results also reveal a positive correlation between the BSM-25 and the YSR’s internalizing and externalizing scales.

We performed paired sample *t*-tests to evaluate whether there was a significant difference between admission and discharge scores on the BSM-25, SOS-10, and GAF mean score ratings. These results are presented in Table 3. The *t*-tests between the 154 patient samples who completed only the admission measures and the 75 who consented to the prospective study and completed the discharge measures revealed no significant differences between the two groups.

Paired *t*-tests for the BSM-25 revealed a significant difference between the admission and the discharge score. The patients reported to be less symptomatic at discharge than they reported to be at admission. This healthy change was also paralleled with the measure of psychological health and well-being in which the SOS-10 scores of the patients at discharge were healthier than their scores at admission. When we looked at the clinician rating of their overall functioning, we found that their overall functioning improved significantly as well.

DISCUSSION

The results reveal that the adolescents who scored high on the BSM-25 also reported experiencing lower psychological health and well-being as measured by the SOS-10, more interpersonal distress as measured on the IIP-32, and increased behavioral problems as measured by the YSR. These results make theoretical sense and were in the predicted direction as well, supporting the initial construct validity of the BSM-25 as a brief global symptom measure for adolescent inpatients. We would expect that adolescents who are experiencing and reporting symptoms would also be experiencing dysfunction in other areas of their life such as interpersonal relationships and problematic behaviors. We would also anticipate a patient who is experiencing psychiatric symptoms to also rate himself/herself lower on his/her overall well-being.

Our results also showed that, even during a short hospitalization with a mean length of stay of slightly more than 10 days for the patients who completed the admission and discharge measures, the BSM-25 was sensitive enough to pick up on change in symptom severity. This healthy change from admission to discharge was also paralleled in another self-report measuring psychological health and well-being and also in the clinician-rated measure of functioning. The fact that the change shown on the self-report was also replicated in the clinicians’ ratings shows that these patients did indeed show improvement from admission to discharge.

The BSM-25 was initially constructed to assess global psychiatric symptom severity in adults. The importance of having a common measure to assess symptoms from adolescence through adulthood is that it allows the assessment of longitudinal outcomes as well. Psychiatric adolescent inpatients often experience frequent admission and readmissions to psychiatric treatment facilities during their lifetime. In addition, symptom severity of different developmental stages can be

TABLE 3. Change in Scores on the BSM-25, the SOS-10, and the GAF From Admission to Discharge

Treatment	n	Admission, Mean/SD	Discharge, Mean/SD	r ₁₂	t-Value	df	d
BSM-25	53	51.59/29.9	34.28/28.5	0.50*	4.31*	52	1.20
SOS-10	54	36.15/14.35	44.17/12.14	0.49*	4.33*	53	1.19
GAF	64	41.57/6.12	51.23/5.88	0.53*	13.27*	63	3.34

Combined = patients receiving both psychotherapy and pharmacotherapy. All analyses are paired *t*-tests. All *t*-values are absolute values. *r*₁₂ = the correlation between the admission and discharge scores/ratings (all *r*₁₂ values were statistically significant, *p* < 0.05).

*Indicates a statistically significant difference (*p* < 0.001).

compared, such that one would be able to compare global symptom severity in adolescent psychiatric inpatients with their adult counterparts. This would allow researchers to identify symptom trends through these developmental stages using a common metric. The items of the BSM-25 are broadly worded so as to be appropriate in psychiatric patients at the adolescent and the adult developmental level, and the symptoms these ask the patients to rate are applicable to the symptoms seen in both adolescents and adults.

As with any study, this study has some limitations. Many people would expect that once an adolescent knows that he/she is being discharged, he/she would feel better and thus rate himself/herself on self-reports more favorably. Although this may be true, the fact that the clinician rating of the adolescents' functioning improved from admission to discharge makes us feel that this is not entirely the case in this study. The clinicians were blinded to the patients' self-report questionnaire results. That being said, future research would do well to administer these measures before the patient knows that he/she is being discharged. Perhaps, this would be a more realistic assessment of patient functioning. Another note is that the interrater reliability of the GAF scores at admission and discharge were not optimal, 0.57 and 0.40, respectively. We would expect lower reliability scores because of the cross-observer/method assessment sources. However, if the interrater reliability were to improve, it would improve only the validity results for the BSM-25.

Another limitation is that we used self-report measures with adolescents who historically have shown not to be the best reporters of their functioning, especially the ones who have the diagnosis of conduct disorder or oppositional defiant disorder (Coghill et al., 2009; Eiser and Morse, 2001), which represents approximately 30% of our sample. This could be because they do not have enough life experience to accurately evaluate their beliefs and behavior and may overreport or underreport. Although this could be true and clinicians would also do well to use multiple reporters to get an accurate understanding of their functioning, surveying the patients for their assessment of their functioning still has merit.

Although this study has some limitations, it also has some considerable strengths in the sense that we have a large sample of adolescent inpatients to evaluate the construct validity of the BSM-25 as a measure of global psychiatric symptom severity. We also included the clinician ratings of the patients' function to compare with the change shown in the BSM-25. Our sample was also diverse both in ethnicity and sex, and the measure was used the way that we propose it could be used, on an acute adolescent inpatient unit to measure global symptoms severity.

The current study demonstrates initial validity for the BSM-25 as a measure of global symptom severity for adolescent inpatients. This measure can be useful to clinician staff on these units because it is quick to administer and score and provides quick feedback to the clinical team about functioning. This measure could, and in some cases should, be used in conjunction with more specific and comprehensive measures of symptoms. That being said, this measure demonstrates usefulness in the evaluation of treatment being provided on adolescent inpatient units and also provides a broad measure of how symptomatic

the patient is. This is especially timely given the need to better evaluate clinical outcomes on adolescent inpatient units.

DISCLOSURES

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APPENDIX

BRIEF SYMPTOM MEASURE-25[©]

Instructions: For each question listed below **PLEASE CIRCLE THE NUMBER** that best describes **THE AMOUNT OF TROUBLE YOU ARE CURRENTLY (RIGHT NOW TODAY) EXPERIENCING IN THAT AREA.** Please answer all the questions. If there is a question that does not apply to you answer 0 (No trouble).

HOW MUCH ARE YOU CURRENTLY TROUBLED BY:	0	1	2	3	4	5	6
	None			Extremely			
1) Feeling tense or anxious.	0	1	2	3	4	5	6
2) Low self-confidence or low self-esteem	0	1	2	3	4	5	6
3) Feeling isolated or lonely	0	1	2	3	4	5	6
4) Feeling bored or uninterested in the things you do	0	1	2	3	4	5	6
5) Feeling hopeless or depressed	0	1	2	3	4	5	6
6) Wishing or wanting to die	0	1	2	3	4	5	6
7) Physical problems or physical pains	0	1	2	3	4	5	6
8) Fears or panic attacks	0	1	2	3	4	5	6
9) Memory problems or poor concentration	0	1	2	3	4	5	6
10) Hearing voices or seeing things that others don't see or hear	0	1	2	3	4	5	6
11) Racing or uncontrollable thoughts	0	1	2	3	4	5	6
12) Frequently changing moods or feelings	0	1	2	3	4	5	6
13) Uncontrollable or "compulsive" behaviors	0	1	2	3	4	5	6
14) Distressing or irrational thoughts	0	1	2	3	4	5	6
15) Feeling angry or irritable	0	1	2	3	4	5	6
16) Sexual thoughts or behaviors	0	1	2	3	4	5	6
17) A desire to drink alcohol or use street drugs	0	1	2	3	4	5	6
18) A desire to hurt yourself or others	0	1	2	3	4	5	6
19) Difficulty sleeping, either sleeping too little or too much	0	1	2	3	4	5	6
20) Difficulty with your appetite, either eating too much or too little	0	1	2	3	4	5	6
21) Being suspicious or fearful of others	0	1	2	3	4	5	6
22) Feeling overwhelmed by the things going on in your life	0	1	2	3	4	5	6
23) Feeling unreal or unconnected to the world	0	1	2	3	4	5	6
24) Feeling different from other people	0	1	2	3	4	5	6
25) Feeling that others don't understand you	0	1	2	3	4	5	6

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