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Evaluation of the factor structure and psychometric properties of the brief symptom inventory—18 with homebound older adults

Andrew J. Petkus¹, Amber M. Gum², Brent Small³, Vanessa L. Malcarne⁴, Murray B. Stein^{5,6,*}, and Julie Loebach Wetherell^{5,*}

¹San Diego State University/University of California, San Diego Joint Doctoral Program in Clinical Psychology, USA

²Department of Aging and Mental Health Disparities, Louis de la Parte Florida Mental Health Institute, University of South Florida, USA

³School of Aging Studies, University of South Florida, USA

⁴Department of Psychology, San Diego State University, USA

⁵Department of Psychiatry, University of California, San Diego, USA

⁶Department of Family and Preventative Medicine, University of California, San Diego, USA

Abstract

Objective—Homebound older adults are at high risk for depression and anxiety. Systematic screening may increase identification of these difficulties and facilitate service usage. The purpose of this study was to investigate the factor structure, internal consistency, and concurrent validity of the Brief Symptom Inventory—18 (BSI-18) for use as a screening instrument for depression and anxiety with homebound older adults and to examine if the BSI-18 could be shortened further and exhibit comparable psychometric properties.

Methods—A sample of 142 older adults receiving in-home aging services completed interviews that included the BSI-18 and the depression and anxiety modules of the structured clinical interview for DSM-IV.

Results—Confirmatory factor analysis showed that the theorized three-factor, second-order model of the BSI-18 fit the data well ($S-B X^2 = 136.17$; $p = 0.36$). The depression and anxiety subscales exhibited high internal consistency ($\alpha > 0.81$), whereas the somatic subscale exhibited lower internal consistency ($\alpha = 0.69$). Receiver operator curve (ROC) analyses suggest that the BSI-18 depression and anxiety subscales were able to predict those with DSM-IV diagnoses (Depression AUC = 0.89 $p < 0.001$; Anxiety AUC = 0.80, $p < 0.001$). The ROC results suggested

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Correspondence to: A. J. Petkus, apetkus@ucsd.edu.

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Conflicts of interest

None known.

adapting a cut score of $T = 50$ to achieve optimal sensitivity and specificity. The short three-item depression scale exhibited comparable psychometric properties to the full scale, while the three-item somatic and anxiety scales exhibited lower internal consistency and sensitivity.

Conclusions—These findings provide initial evidence that the BSI-18 is valid for use with homebound older adults.

Keywords

measures; homebound; older adults; psychometrics; anxiety; depression

Depression and anxiety are common problems for homebound older adults (Bruce *et al.*, 2002; van Balkom *et al.*, 2000). Unfortunately, these problems frequently go unrecognized by home care professionals (Brown *et al.*, 2003). Systematic screening of both anxiety and depression in older adults using home-based health and aging services may facilitate access to appropriate services by increasing identification of problems.

A number of self-report screening measures are well-accepted for detecting depressive symptoms in older adults. The geriatric depression scale- short form is one of the most commonly used measures and has been found to exhibit high reliability and validity for use in primary care (Arean and Ayalon, 2005) and with homebound elders (Iglesias, 2004, Marc *et al.*, 2008). Other measures such as the patient health questionnaire-9 (PHQ-9) and the Center for Epidemiological Studies Depression (CES-D) scale have also been found to be acceptable screening measures of depression with older adults (Arean and Ayalon, 2005).

Unlike measures of depression, there are no well-established, psychometrically sound, brief self-report screening measures of anxiety for older adults (Dennis *et al.*, 2007). Two self-report measures of anxiety that have been used frequently with older adults are the beck anxiety inventory (BAI) and the state trait anxiety inventory (STAI), although studies suggest psychometric problems with these measures when used with older adults (Dennis *et al.*, 2007; Kabacoff *et al.*, 1997; Wetherell and Gatz, 2005). The geriatric anxiety inventory (Pachana *et al.*, 2007) is a promising new instrument. It is long (20 items) and does not measure somatic or depressive symptoms. Thus, it may not be optimal for use as a screening instrument in clinical settings.

Instruments such as the hospital anxiety and depression scale (HADS) that measure both depressive and anxiety symptoms exhibit greater incremental validity than an instrument that assesses only depression or only anxiety. The HADS depression subscale has exhibited promising psychometric properties with older cancer patients (Martin and Cheng, 2006), but may have less face validity with homebound elders because it does not contain items assessing suicide ideation or loneliness which are especially salient to homebound older adult populations (Mitty and Flores, 2008; Barg *et al.*, 2006). The HADS anxiety scale appears valuable to measure severity of anxiety symptoms but exhibits poor sensitivity and specificity for screening in older medical patients (Davies *et al.*, 1993, Johnson *et al.*, 1995).

One screening measure for both depression and anxiety that holds promise for use with homebound elders is the brief symptom inventory-18 (BSI-18; Derogatis, 2000), a self-

report measure. The BSI-18 was initially validated and intended for use with medically ill populations (Derogatis, 2000, Zabora *et al.*, 2001), so it may be an especially useful measure with homebound chronically ill older adults. In addition, any home healthcare professional regardless of education can administer the measure (Derogatis, 2000). Furthermore, administration of the BSI-18 takes no longer than 5 min and scoring is equally brief (Derogatis, 2000). There are three subscales that measure depressive, anxiety, and somatic symptoms. The depression subscale includes items about suicidal ideation and loneliness. In older adults, it has been suggested that screening instruments should focus less on somatic symptoms and more on the cognitive symptoms of anxiety (Lenze and Wetherell, 2009, Wetherell and Gatz, 2005). The anxiety subscale does not contain somatic items as these are measured on a separate somatic subscale.

The three subscales of the BSI-18 (i.e., depression, anxiety, somatic) are theorized to represent separate constructs within an overarching “distress” construct. Previous studies across different populations have identified three different factor structures. A four-factor solution (depression, somatic, general anxiety, panic) has been found in community adults (Derogatis, 2000), adult survivors of childhood cancer (Recklitis *et al.*, 2006), and Spanish psychiatric outpatients (Andreu *et al.*, 2008). Two of these studies (Derogatis, 2000; Recklitis *et al.*, 2006) and two studies with medical patients (Durá *et al.*, 2006; Galdon *et al.*, 2008) found that the intended three-factor structure consisting of depression, anxiety, and somatic factors also fit the data well. Studies of immigrants from Central American (Asner-Self *et al.*, 2006) and low-income Latina mothers (Prelow *et al.*, 2005) found that the BSI-18 measures a single factor of general distress. No studies have been conducted to validate the factor structure of the BSI-18 with older adult populations or specifically homebound older adults.

Studies have produced mixed findings on the concurrent validity of the BSI-18. Studies with cancer patients (Zabora *et al.*, 2001) and adult survivors of childhood cancer (Recklitis and Rodriguez, 2007) have found that the BSI-18 global severity index (GSI) has high concurrent validity with the SCL-90. In one study conducted with older adults, the anxiety subscale of the BSI-18 was not able to distinguish medically ill participants with a diagnosis of GAD from those without GAD (Wetherell *et al.*, 2007). Across all ages, no studies could be found investigating how well the depression subscale of the BSI-18 identified individuals with a depressive disorder, nor have any studies investigated the concurrent validity of the anxiety subscale of the BSI-18 across all types of anxiety disorders.

The purpose of this study was to investigate the psychometric properties of the BSI-18 for use as a screening instrument to identify depression and anxiety diagnoses in older homebound adults. Specifically, the factor structure and internal consistency of the BSI-18 were investigated. Furthermore, the concurrent validity of the BSI-18 and its effectiveness as a screening instrument to identify depressive and anxiety disorders according to the DSM-IV were examined. Lastly, in an effort to develop a shorter scale, exploratory analyses were conducted to determine key items from each subscale that may provide comparable psychometric properties.

Methods

Overview

A detailed description of the study design was reported in a previous study (Gum *et al.*, 2009). All participants provided written informed consent, and all study protocols were approved by the University of South Florida Institutional Review Board.

Participants

Participants ($n = 142$) were older adults receiving in-home aging services, and were recruited by case managers from local aging service agencies in four counties in Florida. In order to qualify for in-home aging services, individuals were assessed by a case manager and physician and determined to be at high risk of nursing home placement if services were not provided. Clients of in-home services are largely homebound, unable to leave their home independently without assistance. Services provided by the aging service agencies include in-home case management, home-delivered meals, and homemaker and personal aide services.

Case managers were provided a script to aid in explaining the study and were instructed to invite each of their clients during regular home visits to participate in the study. Clients that were interested were contacted by research staff, and in-person interviews were conducted in participants' homes by research staff. Participants were eligible for the study if they spoke English, were at least 60 years old, received in-home aging services, had cognitive ability to consent, and had no dementia diagnosis (per self, case manager, or family report). After completing the interview, participants that were experiencing significant distressing symptoms were provided brief psychoeducation about their symptoms and provided referrals for mental health services. In addition, if the participant gave permission, the case manager was notified to facilitate linkage to appropriate services.

It is unknown how many clients were invited by case managers but subsequently refused to be contacted by research staff. In total, 231 individuals allowed the research team to contact them. Of those 231, 142 (61.5%) completed the research interview. The demographics of this sample were compared with the demographics of the entire population of older adults receiving aging services from the referring agencies. The study sample was younger, less functionally impaired, and consisted of fewer men and Hispanics when compared to the population (Gum *et al.*, 2009).

Measures

Brief Symptom Inventory-18 (Derogatis, 2000)—The BSI-18 is an 18-item instrument that measures symptoms of distress. The overall score of the BSI-18 is referred to the Global Severity Index (GSI). The BSI-18 is comprised of depression, anxiety, and somatic subscales, each measured with six items. Participants are asked to rate how much they have been bothered by each symptom in the past 7 days using a five-point scale ("0 = not at all" to "4 = extremely"). Raw scores on the GSI range from 0 to 72, and each subscale has a scoring range of 0–24. Derogatis has suggested a T-score of 63 based on community norms as a cut score to indicate significant distress.

Structured clinical interview for DSM-IV—Axis I (SCID; First et al., 2002)—

The SCID is a structured clinical interview used to diagnose psychiatric disorders based on criteria from the DSM-IV (American Psychiatric Association, 1994). The depression and anxiety disorders modules of the SCID were included. The following diagnoses were assessed: major depressive disorder, dysthymic disorder, depressive disorder not otherwise specified, depressive disorder due to a medical condition or substance, panic disorder, agoraphobia, specific phobia, social phobia, obsessive-compulsive disorder, post-traumatic stress disorder, generalized anxiety disorder, anxiety disorder not otherwise specified, and anxiety due to a general medical condition or substance. All questions were in reference to current functioning. All interviewers had at least a Bachelor's degree and were extensively trained by a licensed clinical psychologist (AG). Training protocols included viewing the SCID training tapes, observing a SCID, and conducting role play practice SCIDs. Furthermore, AG reviewed and provided feedback on all interviewers' first interviews. AG reviewed a randomly selected 20% of audiotaped interviews to assess interrater reliability. Kappa across depressive disorders were 0.72 representing "substantial" agreement, and across anxiety disorders was 1.00, representing perfect agreement (Landis and Koch, 1977).

Statistical analysis

Means and standard deviations were computed for each item, subscale, and the GSI. Correlations were computed between each item and the item's theorized subscale as well as the overall score. Total scores for each subscale as well as the GSI were converted into T-scores and percentiles based on the community norms published by Derogatis (2000). Cronbach's alpha was computed to determine internal consistency for each subscale and the overall scale.

A confirmatory factor analysis was conducted using EQS (Bentler and Wu, 1995). The normalized estimate of the Mardia's coefficient suggested that the BSI-18 data were not normally distributed, so to correct for non-normally distributed data, the Satorra-Bentler (S-B) scaled χ^2 adjustment was reported in addition to the maximum likelihood (ML) χ^2 . The overall fit of each model was assessed by using the ML and S-B χ^2 . The χ^2 statistic may not be the optimal method of measuring model fit (Byrne, 1994) so the ML and S-B comparative fit index (CFI) as well as the ML and S-B root mean-square error of approximation (RMSEA) were also used. A CFI of greater than 0.90 and a RMSEA of less than 0.08 represent adequate fit (Kline, 1998).

All three factor structures found in prior research (Asner-Self *et al.*, 2006, Derogatis, 2000, Durá *et al.*, 2006, Recklitis *et al.*, 2006) were examined: one-factor, three-factor, and four-factor solutions. The four-factor model consists of the depression and somatic factors from the three-factor model, with the anxiety factor split into separate panic and general anxiety factors. The panic factor consists of the items "suddenly scared", "spells of terror or panic", and "feeling fearful". The general anxiety factor consists of "nervousness", "feeling tense", and "feeling restless". For each model, the Lagrange Multiplier (L-M) test and the Wald test were conducted to determine if any paths should be added or deleted to improve the model. The factors were allowed to correlate with each other in the first-order three- and four-factor models. The intended design of the BSI-18 is that it is a measure of overall psychological

distress with subscales that measure specific types of distress (Derogatis, 2000). To test the conceptualization of an overarching distress factor, a second-order hierarchical model was run for the three- and four-factor models. The second-order model directly tests this intended design by adding a second order latent variable labeled “psychological distress” and observing how it affects model fit.

In order to investigate key items for each scale that could be used to potentially shorten the scale and provide comparable screening utility, the three items that exhibited the highest factor loadings for each scale were used to construct a short version of each scale. The internal consistency of each short scale was calculated. The three items that made up the somatic short scale were items one (faintness or dizziness), four (pains in heart or chest), and 17 (feeling weak in part of body). The depression short scale consisted of items two (feeling no interest), eight (feeling blue), and 14 (feeling hopeless), whereas the anxiety short scale consisted of the items that constituted the panic factor described above.

To investigate concurrent validity, receiver operator characteristic (ROC) curve analyses were conducted comparing the BSI-18 depression subscale T-score as well as the three-item short depression scale raw score to the SCID depression diagnosis. Finally, ROC analyses were conducted comparing the BSI-18 anxiety subscale T-score and the proposed panic and general anxiety factors to SCID anxiety disorder diagnosis.

Results

Sample characteristics

The average age of participants was 74.7 (SD = 8.3) years old. The sample was predominantly female ($n = 113$; 79.6%) and white ($n = 105$; 74.9%) or black ($n = 28$; 19.7%). Participants were taking on average 7.54 (SD = 4.49) non-psychotropic medications, had 2.43 (SD = 1.91) ADL limitations, 5.25 (SD = 1.91) IADL limitations, and 5.04 (SD = 2.61) chronic physical conditions. For additional characteristics of the sample please refer to Gum *et al.* (2009).

Severity of symptoms and internal consistency of BSI-18

Table 1 contains descriptive information regarding each BSI-18 item, subscale scores and the GSI. Anxiety scores were highly correlated with depression ($r = 0.71$; $p < 0.001$) and somatic symptoms ($r = 0.56$, $p < 0.001$). Depressive symptoms were less strongly correlated with somatic symptoms ($r = 0.47$; $p < 0.001$). Cronbach's alphas were 0.87 for the depression subscale, 0.81 for the anxiety subscale, 0.69 for the somatic subscale, and 0.89 for the GSI. Cronbach's alphas for the short three item subscales were 0.83 for the depression short subscale, 0.79 for the anxiety—panic subscale, and 0.56 for the somatic short subscale.

SCID diagnosis

Of the participants, 17 (12.1%) met criteria for a SCID depressive disorder and 17 (12.5%) met criteria for a SCID anxiety disorder. Of those with a depressive disorder, 16 participants were diagnosed with major depressive disorder and one participant was diagnosed with a

depressive disorder not otherwise specified. Of those with an anxiety disorder there were six (4.2%) with specific phobia, four (2.8%) with panic disorder, three (2.1%) with PTSD, three (2.1%) with social phobia, two (1.4%) with agoraphobia, and one (0.7%) with anxiety due to a general medical condition. Two participants met criteria for more than one anxiety disorder. Five participants (3.5%) met criteria for both a depressive and anxiety disorder.

Construct validity

Table 2 provides results from the confirmatory factor analyses. First, the single factor model exhibited poor fit (S-B CFI = 0.843; S-B RMSEA = 0.060; S-B $\chi^2 = 201.94$; $p < 0.001$). The L-M and the Wald tests did not suggest any conceptually meaningful modifications.

The three-factor model fit the data well (S-B CFI = 0.982; S-B RMSEA = 0.024; S-B $\chi^2 = 139.64$; $p = 0.31$), as did the second-order three-factor model (S-B CFI = 0.988; S-B RMSEA = 0.021; S-B $\chi^2 = 136.17$; $p = 0.36$). When comparing the differences in negative log likelihood between the first- and second-order models, the second-order model did not significantly improve model fit (S-B $\chi^2 = 3.47$ (1); $p > 0.05$).

Last, the four-factor model exhibited a good fit to the data (S-B CFI = 1.000; S-B RMSEA < 0.001; S-B $\chi^2 = 117.75$; $p = 0.75$). A second-order four-factor model exhibited similar good fit to the first-order model (S-B CFI = 1.000; S-B RMSEA < 0.001; S-B $\chi^2 = 115.37$; $p = 0.82$) indicating a good fit. When comparing the differences in negative log likelihood, the second-order model was significantly better than the first-order model ($\chi^2 = 2.38$ (1); $p < 0.05$).

Although the four-factor model provided a slightly better fit than the three-factor model, the improvement was small and judged as not contributing conceptually to the model. The three-factor second-order model was judged to be the preferred model. This model was most consistent with the original conceptualization of the measure as well as the most parsimonious and easily interpretable. In a path analysis of this model, all free parameters were statistically significant ($p < 0.05$; see Figure 1).

Concurrent validity with SCID diagnosis

The ROC analysis of the BSI-18 depression subscale with SCID depressive disorders yielded an area under the curve (AUC) of 0.892 (95% confidence interval [CI] = 0.817–0.967, $p < 0.001$; see Figure 2), suggesting that the BSI-18 depression subscale was able to significantly discriminate between those with and without a SCID depressive disorder. The AUC for the three-item depression scale was also significant (AUC = 0.884; 95% CI = 0.787–0.981). The AUCs for these subscales were not statistically different (χ^2 (1) = 0.10; $p = 0.76$). The cut score of T = 63 proposed by the original author (Derogatis, 2000) resulted in sensitivity of 0.71 and specificity of 0.87. A cut point of T = 53 resulted in a sensitivity of 0.88 and a specificity of 0.67, and a cut score of T = 50 resulted in a sensitivity of 0.88 and a specificity of 0.62. A cut score of three or greater for the three-item depression subscale resulted in a sensitivity of 0.88 and a specificity of 0.74.

The ROC analysis of the BSI-18 anxiety subscale with any SCID anxiety disorder yielded an AUC of 0.80 (95% confidence interval = 0.70–0.90, $p < 0.001$; see Figure 3), suggesting

that the BSI-18 anxiety subscale was able to discriminate between those with and without a SCID anxiety disorder. The original author's proposed cut score of $T = 63$ yielded sensitivity of 0.41 and specificity of 0.89. A T-score of 49 yielded the optimal sensitivity of 0.88 and specificity of 0.61.

The ROC analysis of the general anxiety subscale (items: nervousness, tense, and restlessness) with a SCID anxiety disorder yielded an AUC of 0.79 (95% CI = 0.68–0.89, $p < 0.001$; see Figure 3). The three-item general anxiety subscale did not have a significantly lower AUC when compared with the full six-item anxiety scale ($\chi^2(1) = 0.69$; $p = 0.41$). A cut score of three or greater produced a sensitivity of 0.82 and a specificity of 0.66. The ROC analysis of the panic subscale (items: scared, panic, and fearful) with having a SCID anxiety disorder yielded an AUC of 0.74 (95% CI = 0.59–0.88; $p = 0.002$). The panic subscale did not have a significantly different AUC than the full six-item anxiety factor ($\chi^2(1) = 2.02$; $p = 0.16$). A cut score of 1 produced a sensitivity of 0.65, and a specificity of 0.78.

Discussion

The purpose of the present study was to examine the psychometric properties of the BSI-18 for screening anxiety and depression in older housebound adults. The three-factor second-order model of the BSI-18, consisting of a depression, anxiety, and somatic factor with a second-order factor representing overall distress, fit the data well. This three-factor second-order model is the conceptualization intended by the original author (Derogatis, 2000). Evidence of a four-factor model found in prior research (Derogatis, 2000; Recklitis *et al.*, 2006) was also found; however, consistent with those authors, we suggest that the three-factor model is preferable because of its match to the conceptual theory of the BSI-18 and parsimony. The loneliness item had a high factor loading on the depression factor (0.74) as well as the highest mean score of all the depression items ($M = 0.96$), suggesting that screening instruments with homebound elders should include items that assess for loneliness. Due to functional impairment from chronic physical diseases, this population typically is unable to leave the house without assistance. As a result, it may be difficult to maintain social networks, thus making loneliness especially salient with this population. Further analysis of the parameters in the final model suggests a high correlation among the anxiety, depression, and somatic latent variables. Studies have found that depression and anxiety are commonly comorbid (Gum and Cheavens, 2008) which might explain the high correlation between anxiety and depressive subscales. Anxiety and depression have both been found to be associated with physical illness (Lenze *et al.*, 2001), which may explain the high correlation between the anxiety and depression factors with the somatic factor.

Findings suggest that the depression and anxiety subscales of the BSI-18 display acceptable accuracy in distinguishing those who have diagnosable depressive and anxiety disorders from those who do not. Adopting a cut score to represent clinically significant distress of $T = 50$ for both subscales would decrease the specificity of the depression subscale, however using the same cut score for both scales would make the scales more practical for use in clinical settings. Although specificity was low for these proposed cut values, sensitivity was high. This low specificity may be acceptable, given that specificity is less important when

screening for disorders that have a high prevalence rate and when further assessment would not be hazardous, costly, or intrusive to the client (Murphy *et al.*, 1987).

To our knowledge, this was the first study to investigate the BSI-18 depression subscale score in relation to a depression diagnosis derived from a structured clinical interview. In addition, this was the first study to investigate the BSI-18 anxiety subscale in relation to any anxiety disorder diagnosis. Our findings that the BSI-18 exhibited acceptable accuracy in identifying those with an anxiety disorder is not consistent with past research indicating that the BSI-18 anxiety subscale was not an adequate screening tool, although the previous study only investigated individuals with GAD (Wetherell *et al.*, 2007). The current sample did not include any participants diagnosed with GAD, so it is possible that the BSI-18 does not adequately capture the worry and other anxiety features specific to GAD.

Due to the time constraints home healthcare professionals face, exploratory analyses were conducted to determine if the BSI-18 could be further shortened and still provide comparable screening utility. The short three-item depression and anxiety scales had acceptable internal consistencies ($\alpha > 0.79$), however the short somatic subscale had low-internal consistency ($\alpha = 0.56$). The three-item depression subscale provided comparable screening utility to the full depression subscale, while the shortened anxiety subscale exhibited lower sensitivity than the full anxiety subscale. The use of the full six-item depression scale as a screening measure is preferred over the three-item short scale, due to the existing body of literature and normative data on the full scale. More research needs to be done to validate and norm the three-item short depression scale before it can be recommended for use. The use of the short somatic and anxiety subscale was not supported due to the low-internal consistency of the short somatic subscale and the reduced sensitivity of the short anxiety subscale.

This study has several limitations. Findings cannot be generalized to homebound older adults with GAD because no participants were found to meet criteria for GAD. The prevalence of GAD may decrease as adults become more physically frail, as decreased rates of GAD have been reported in nursing home patients (Smalbrugge *et al.*, 2005). Another limitation is that it was not possible to compare across anxiety disorders or make comparisons among ethnic groups, or by genders due to the sample size. Finally, the BSI-18 was administered orally instead of *via* paper and pencil, therefore slightly altering the standardization of the test.

Conclusions

The findings provide initial evidence that the intended three-factor structure of the BSI-18 is valid for homebound older adults. The findings also suggest that the separate subscales exhibit acceptable accuracy in screening for depression and anxiety in homebound older adults.

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Key Points

- This study provides initial evidence that the BSI-18 is reliable and valid with homebound older adults. The findings suggest that the factor structure of the BSI-18 is valid with homebound older adults. They also suggest that the BSI-18 was able to identify those homebound older adults that had a DSM-IV diagnosis.

Figure 1.

Path diagram of the three-factor second-order model of the BSI-18. *Note:* * = significant at $p < 0.05$.

Figure 2. Receiver operator characteristic (ROC) analysis of BSI-18 depression T-scores against depression diagnosis.

Figure 3. Receiver operator characteristic (ROC) analysis of BSI-18 anxiety T-score against anxiety diagnosis.

Table 1

BSI-18 Item, subscale, and global severity index summary statistics

Item	Item number	M	SD	Correlation with subscale	Correlation with GSI	T-score (SD)	Percentile (SD)
Depression subscale ($\alpha = 0.87$)							
No interest	2	0.87	1.25	0.82	0.72	—	—
Lonely	5	0.96	1.29	0.82	0.66	—	—
Blue	8	0.87	1.21	0.86	0.75	—	—
Worthlessness	11	0.58	1.04	0.78	0.71	—	—
Hopelessness	14	0.71	1.17	0.81	0.76	—	—
Suicide	17	0.15	0.70	0.51	0.42	—	—
Subscale total	—	4.15	5.24	—	0.87	51.61 (11.29)	51.10 (31.98)
Anxiety subscale ($\alpha = 0.81$)							
Nervousness	3	0.96	1.26	0.73	0.66	—	—
Tense	6	1.08	1.18	0.66	0.65	—	—
Scared	9	0.29	0.79	0.77	0.67	—	—
Panic	12	0.35	0.93	0.77	0.67	—	—
Restlessness	15	0.60	1.09	0.66	0.56	—	—
Fearful	18	0.44	0.97	0.79	0.66	—	—
Subscale total	—	3.71	4.50	—	0.88	50.86 (10.82)	50.15 (30.22)
Somatic subscale ($\alpha = 0.69$)							
Faintness	1	0.63	1.04	0.61	0.52	—	—
Chest pains	4	0.50	1.00	0.64	0.52	—	—
Nausea	7	0.57	1.09	0.45	0.38	—	—
Short breath	10	0.87	1.23	0.66	0.51	—	—
Numbness	13	1.38	1.39	0.66	0.47	—	—
Weakness	16	1.63	1.37	0.73	0.56	—	—
Subscale total	—	5.57	4.50	—	0.79	58.78 (10.09)	72.53 (26.49)
GSI ($\alpha = 0.89$)							
GSI total	—	13.43	12.11	—	—	54.70 (10.81)	62.11 (29.27)

Note: all correlations were significant at $p < 0.05$.

Table 2

Confirmatory factor analysis model fit statistics

Model	ML χ^2	df	p	CFI	RMSEA	* χ^2	p	* CFI	* RMSEA
1-Factor	318.22	135	<0.001	0.814	0.098	201.94	<0.001	0.843	0.059
3-Factor	218.51	132	<0.001	0.912	0.069	139.63	0.308	0.982	0.020
3-Factor 2nd order	218.51	131	<0.001	0.911	0.069	137.50	0.331	0.985	0.019
4-Factor	182.46	129	<0.001	0.946	0.055	117.75	0.752	1.000	<0.001
4-Factor 2nd order	187.71	130	<0.001	0.941	0.058	115.37	0.817	1.000	<0.001

Note:

* Satorra-Bentler statistic.

ML χ^2 = maximum likelihood χ^2 , CFI = comparative fit index, RMSEA = root mean square error of approximation.