Brief Reports

PSYCHOMETRIC EVALUATION OF THE BECK DEPRESSION INVENTORY IN ADULTS WITH SOCIAL ANXIETY DISORDER

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Although the Beck Depression Inventory (BDI) is commonly used to assess levels of depressive symptoms in socially anxious adults, its psychometric properties in this context have never been formally examined. Therefore, we examined the psychometrics of the BDI in a sample of adults with a principal diagnosis of social anxiety disorder (N = 113). The BDI exhibited good internal consistency and re-test reliability. It also correlated significantly more strongly with other measures of depression than with measures of either social or non-social anxiety. Thus, the BDI appears to be a valid tool for the assessment of depressive symptoms in adults with social anxiety disorder. Depression and Anxiety 14:145–148, 2001. © 2001 Wiley-Liss, Inc.

Key words: *social phobia; depression; psychometrics; reliability; validity*

INTRODUCTION

Although the Beck Depression Inventory [BDI; Beck et al., 1979] is widely used as a measure of depressive symptoms in all of the anxiety disorders, no study has formally examined its psychometric properties in a sample of adults with social anxiety disorder. Indeed, only one psychometric evaluation of the BDI has been performed in any clinically anxious sample [elderly patients with generalized anxiety disorder; Snyder et al., 2000]. This is discouraging given the importance of re-evaluating the psychometric properties of standardized measures when they are used in samples different from the ones in which they were developed [Kazdin, 1998]. Despite the supportive evidence for the reliability and validity of the BDI in various clinical populations [Beck et al., 1988], a psychometric evaluation in individuals with social anxiety disorder may be particularly important, given the strong relationship between social anxiety and depression.

Specifically, studies have suggested that social anxiety and depression frequently co-occur at both diagnostic [Kessler et al., 1999] and symptom [e.g., Heimberg et al., 1989] levels. Indeed, more than one person in three (34.2%) with a lifetime diagnosis of social anxiety disorder also has a history of a mood disorder [Kessler et al., 1999]. In addition, studies suggest that, of the anxiety disorders, social anxiety disorder may be particularly difficult to distinguish from depression as both disorders are characterized by low levels of positive affect [e.g., Brown et al., 1998]. In the current

study, therefore, we evaluated the psychometric properties of the BDI in a sample of adults with social anxiety disorder.

METHOD

The sample consisted of 113 patients assigned a principal diagnosis of social anxiety disorder after a semi-structured interview with the Anxiety Disorders Interview Schedule-Revised [ADIS-R; DiNardo and Barlow, 1988]. Potential patients were excluded if they exhibited symptoms of schizophrenia, prominent risk

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of self-harm, organic mental disorder, alcohol or substance abuse within the last 6 months, or history of bipolar-I disorder. Clinicians using the ADIS-R have demonstrated strong inter-rater agreement for diagnoses assigned by this interview [DiNardo et al., 1993]. Clients were between 18 and 65 years old (M = 36.5, SD = 9.8). Fifty-eight (51.3%) were female and 68 (59.6%) met criteria for generalized social anxiety disorder. Current comorbid depressive disorder diagnoses were as follows: major depressive disorder = 13 patients (11.4 %), dysthymic disorder = 4 patients (3.5 %), and depressive disorder not otherwise specified = 5 patients (4.4 %).

Measures of social anxiety included the Fear of Social Interaction and Fear of Performance subscales of the Liebowitz Social Anxiety Scale [LSAS-FS and LSAS-FP, respectively; Liebowitz, 1987], the Social Interaction Anxiety Scale, and the Social Phobia Scale [SIAS and SPS, respectively; Mattick and Clarke, 1998]. Measures of non-social anxiety, included for the assessment of divergent validity, were two measures of trait anxiety, the Hamilton Anxiety Rating Scale [HARS; Hamilton, 1959], and the anxiety subscale of the State-Trait Anxiety Inventory — Trait form [STAI-T; Spielberger et al., 1983],[1] as well as one measure of fears of anxiety sensations, the Anxiety Sensitivity Index [ASI; Reiss et al., 1986]. In addition to the BDI, measures of depressive symptoms included the 21-item Hamilton Rating Scale for Depression [HRSD-21; Hamilton, 1960], the Depression subscale of the Symptom Checklist-90R [SCL-90R-D; Derogatis, 1977], and the depression subscale of the STAI-T.

RESULTS

Consistent with studies in other populations [see Beck et al., 1988], the BDI exhibited good internal consistency (α = .89) and re-test reliability (intraclass correlation coefficient = .91; mean re-test interval = 32 days[2]) in the current sample. The mean BDI score for the current sample was 12.44 (SD = 8.78), indicating that the patients were, on average, mildly depressed [Kendall et al., 1987]. As expected, patients with a comorbid depressive disorder had significantly higher BDI scores (M = 20.36, SD = 8.79) than did patients without a comorbid depressive disorder (M = 10.53, SD = 7.68), t(111) = 5.24, P < .001, $r_{effect\ size}$ = .53. In

addition, patients with generalized social anxiety disorder had significantly higher BDI scores (M = 15.22, SD = 9.30) than did patients with nongeneralized social anxiety disorder (M = 8.24, SD = 5.90), t(111) = 4.47, P < .001, $r_{effect\ size}$ = .47.

To examine convergent and divergent validity, patients' scores on the BDI were compared, in a multitrait-multimethod matrix [Campbell and Fiske, 1959], to their scores on other measures of depression, social anxiety disorder, and non-social anxiety (see Table 1). BDI scores were significantly correlated with each of the other measures (all Ps < .01). Nevertheless, to test the hypothesis that the BDI would correlate more strongly with other measures of depression than with measures of either social or non-social anxiety, we used the method of comparing correlated correlation coefficients of Meng et al. [1992]. We adjusted our alpha level to correct for the large number of tests being conducted (P_{crit} = .013 or .017, depending on the number of comparisons in each domain).

The magnitudes of the correlations between the BDI and each of the other depressive symptom measures were significantly higher than those between the BDI and each of the measures of social anxiety. In addition, the BDI was more strongly correlated with the SCL-90R-D than with each of the measures of non-social anxiety. The BDI was also more strongly correlated with both the HRSD-21 and the STAI-T-D than with one of the three measures of non-social anxiety (ASI), and the BDI tended to correlate more strongly with the HRSD-21 than with the HARS (z = 2.11, P = .02).[3]

DISCUSSION

This is the first study to examine the psychometric properties of the BDI in a sample of patients with social anxiety disorder. As in previous studies using other samples [see Beck et al., 1988], the BDI showed good internal consistency and re-test reliability. Mean BDI scores suggest that our sample was, on average, mildly depressed, and that those with a comorbid depressive disorder exhibited higher levels of depressive symptoms than those without a comorbid depressive disorder. Furthermore, the BDI demonstrated adequate convergent and divergent validity in this sample. It is worth noting that the modest rate of comorbid depressive disorder in our sample could result in a restricted range of depression scores, adversely affecting convergent and discriminant validity coefficients. However, our rates of comorbid major depression are consistent with published findings [Sanderson et al., 1990], suggesting that our findings are generalizable.

Although this study provides encouraging results for researchers using the BDI to assess depressive symptoms in socially anxious samples, its limitations should be noted. First, only patients with a principal diagnosis

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[1]In the current study we utilized the anxiety and depression subscales of the STAI-T (STAI-T-A and STAI-T-D, respectively) as developed by Bieling, Antony, and Swinson [1998]. These subscales have been shown to have good internal consistency (αs = .78 and .80 for the STAI-T-A and STAI-T-D, respectively) and better convergent and discriminant validity than the full-scale STAI-T [Bieling et al, 1998].

[2]Both administrations of the BDI were conducted before patients began treatment.

[3]Further details of these analyses can be obtained from the authors.

TABLE 1. Means, standard deviations, and correlations between study variables*

	BDI	SCL-90R-D	STAI-T-D	HRSD	ASI	STAI-T-A	HARS	SIAS	SPS	LSAS-FS	LSAS-FP
BDI[sr]	12.44 (8.78)										
SCL-90R-D[sr]	.82	1.17 (0.73)									
STAI-T-D[sr]	.69	.70	35.49 (7.66)								
HRSD[ca]	.72	.73	.61	9.99 (5.96)							
ASI[sr]	.39	.47	.31	.30	26.23 (10.84)						
STAI-T-A[sr]	.73	.79	.72	.69	.39	15.80 (4.29)					
HARS[ca]	.59	.54	.52	.63	.24	.59	15.47 (6.09)				
SIAS[sr]	.56	.59	.70	.47	.34	.56	.46	45.04 (15.42)			
SPS[sr]	.50	.53	.48	.49	.50	.60	.50	.66	31.67 (15.72)		
LSAS-FS[ca]	.50	.51	.62	.43	.23	.47	.38	.77	.52	16.22 (6.59)	
LSAS-FP[ca]	.44	.48	.55	.48	.36	.48	.41	.60	.63	.73	17.76 (5.49)

BDI, Beck Depression Inventory; SCL-90R-D, Symptom Checklist-90R-Depression subscale; STAI-T-D, State-Trait Anxiety Inventory, Trait version-Depression subscale; HRSD, 21-item Hamilton Rating Scale for Depression; ASI, Anxiety Sensitivity Index; STAI-T-A, State-Trait Anxiety Inventory, Trait version-Anxiety subscale; HARS, Hamilton Anxiety Rating Scale; SIAS, Social Interaction Anxiety Scale; SPS, Social Phobia Scale; LSAS-FS, Liebowitz Social Anxiety Scale-Fear Social; LSAS-FP, Liebowitz Social Anxiety Scale-Fear Performance. The superscript "sr" denotes a self-report measure and the superscipt "ca" denotes a clinician-administered measure. Means (and standard deviations) are listed along the diagonal. All correlations are significant at $P < .01$.

of social anxiety disorder were included. However, given that social anxiety may be more difficult to differentiate from depression than are other types of anxiety, the current study may be a particularly stringent test of the BDI. Therefore, the results of this study, in combination with those of Snyder et al. [2000], suggest that the BDI may also be a valid instrument for assessing depressive symptoms in patients with other anxiety disorders. Second, while the BDI was significantly correlated with each of the social anxiety scales, it was quite a bit more strongly correlated with the HRSD-21 and the SCL-90R depression subscale. Continued examination of the shared versus unique symptoms of anxiety and depression may lead to the development of more refined measures or to the increased clinical utilization of more refined measures already in existence [e.g., the Mood and Anxiety Symptom Questionnaire; Watson et al., 1995]. Finally, future studies may need to assess the psychometric properties of the BDI-II [Beck et al., 1996] in clinically anxious samples as this new scale's usage increases. At present, however, our findings support the continued use of the BDI in samples of individuals with social anxiety disorder and lend greater credence to the validity of previous studies that have used the BDI as a measure of depressive symptoms in similar samples.

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