

Research Article

APPRAISAL OF SOCIAL CONCERNS: A COGNITIVE ASSESSMENT INSTRUMENT FOR SOCIAL PHOBIA

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The current study describes the validation of a new cognitive assessment measure for social phobia, entitled the Appraisal of Social Concerns (ASC). Item content is relevant to a range of social situations. The ASC can be used to tailor interventions to patients' idiosyncratic concerns. Data are presented from both clinical (n = 71) and non-clinical (n = 550) samples. Preliminary data indicate that the ASC has good internal consistency and test-retest reliability. The construct validity of the ASC is comparable to that of well-established measures in use with social phobics. A strength of the ASC is its sensitivity to the effect of treatment. An exploratory factor analysis yielded three factors tapping concerns about negative evaluation, observable symptoms, and social helplessness. Subscale scores were strongly correlated. Preliminary findings suggest that the ASC is a psychometrically sound, time efficient instrument that can be used for both clinical and research purposes. Depression and Anxiety 19:217–224, 2004.

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Key words: cognitive assessment; social phobia; reliability; validity; treatment sensitivity; cognitive-behavioral treatment

INTRODUCTION

Cognitions have been well known to play a central role in the development and maintenance of social anxiety disorder. Current conceptualizations of social anxiety disorder have emphasized that it is associated with perceived negative evaluation from others, negative self-evaluation, and biased information processing [Clark and McManus, 2002; Clark and Wells, 1995; Foa et al., 2001; Rapee and Heimberg, 1997]. Treatments directly targeting maladaptive cognitions related to social evaluative concerns have demonstrated clinical efficacy in several well-controlled clinical trials [Heimberg and Juster, 1995; Lucas and Telch, 1993; Taylor, 1996]. Moreover, evidence from several studies suggest that change in negative cognitions may mediate symptom reduction in social anxiety [Foa et al., 1996; Lucas and Telch, 1993; Lucock and Salkovskis, 1988; Mattick et al., 1989; Mattick and Peters, 1988]. These findings highlight the importance of assessing the cognitive features of social anxiety disorder.

The primary cognitive assessment measures available have included: 1) thought listing protocols, 2) Irrational Beliefs Test (IBT) [Jones, 1969], 3) Social Interaction Self-Statement Test (SISST) [Glass, et al., 1982]; and 4) Fear of Negative Evaluation Scale (FNE)

[Watson and Friend, 1969]. Thought listing protocols are quite costly in terms of time requirements. The IBT has been shown to lack specificity to social phobia, although some of its subscales may be useful [Arnkoff and Glass, 1989]. The SISST has shown promise [Glass and Furlong, 1990] but doubts about the SISST relevance to public speaking situations have been raised [Arnkoff and Glass, 1989; Dodge et al., 1988]. Beidel et al. [1985] and Turner et al. [1986] have suggested that minor changes to the wording of the SISST items yield a version appropriate for use with public speaking situations. A weakness of the SISST is its failure to

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assess the individual's concerns about visible signs of anxiety, which is readily seen in a clinical context as an important facet of social phobia. Another potential limitation of the SISST is that its items are fairly specifically worded self-statements; by asking participants to endorse specifically worded thoughts, the sensitivity of the measure to phobic concerns may be compromised to an unknown degree. This concern was raised by the developers of the SISST, and has been echoed by Dodge et al. [1988] and Stopa and Clark [1993]. The weakness of the FNE is that it was designed to specifically assess fear of negative evaluation. It does not tap other theoretically relevant concerns such as appearing anxious in front of others.

The present study introduces a new cognitive assessment measure for use with social phobics, the Appraisal of Social Concerns (ASC). The ASC was designed to address some of the limitations of the SISST. The ASC is a 20-item self-report measure of concerns relevant to a clinical social phobic population. Unlike the SISST, which asks participants to rate the frequency with which they are aware of particular thoughts, the ASC asks participants to rate the degree to which they are concerned about socially relevant threats typically perceived by social phobics. This format has the potential advantage to assess socially-relevant threat perceptions even though specific threatening thoughts may not be in the individual's conscious awareness.

Compared to thought listing protocols, the ASC is more time efficient. The ASC thus offers the dual advantages of not having overly idiosyncratic items, while being time efficient. Further, the ASC specifically assesses participants' concerns about signs of anxiety being detected by others. The ASC may also assist the clinician in identifying specific intervention targets.

Using a large sample of undergraduate students and a smaller sample of DSM-III-R diagnosed social phobics, the present study reports the preliminary results of the internal consistency, factor structure, test-retest reliability, discriminant and convergent validity, normative data, and treatment sensitivity of the ASC.

METHODS

SCALE DESCRIPTION

The ASC is a 20-item self-report questionnaire designed for use with socially phobic patients. The scale is presented in the Figure 1.

INSTRUCTIONS AND SCORING

We initially considered instructions asking the participant to make separate ratings of their expected likelihood of particular events germane to social situations (e.g., being rejected), and the threat values they would assign to each event. Our rationale was that expected likelihood and threat value are the two most fundamental cognitive aspects of fear. However,

because one goal in developing the ASC was to devise a quickly administered and scored measure, we chose to combine the likelihood and threat value aspects by asking participants to rate their degree of concern about the particular outcomes. Instructions asked participants to choose a number from 0 ("not at all concerned") to 100 ("extremely concerned") that best describes the degree to which they would be concerned by the particular outcome when placed in a challenging social situation. The ASC total score is simply the mean of the individual's scores on all items.

ITEM DEVELOPMENT AND CONTENT

Items for the ASC were created by the authors, with the goal of being relevant to the clinical population of social phobics. Twenty face-valid items addressing perceived threats commonly reported by social phobics (e.g., various types of negative reactions from others, failures in impression management, signs of social anxiety being visible to others, and negative evaluation) were generated.

PARTICIPANTS

A nonclinical sample of 550 students (290 men, 260 women) was drawn from two introductory psychology classes at the University of Texas at Austin. These students were presumed to represent the range of social anxiety in the general population. Mean age for this sample was 19.42 ± 3.07 years. A clinical sample of 86 participants with a principal DSM-III-R Axis I diagnosis of social phobia was also studied (35 men, 51 women). The clinical sample included 71 participants who completed pre-treatment assessment for a treatment outcome study of social phobia [Lucas and Telch, 1993], and 15 participants from a pilot of the same study done in 1991. Participants' mean age was 35.94 ± 10.64 years.

MEASURES

Cognitive measures included the negative and positive scales of the SISST and three subscales of the IBT (IBT-SP). The SISST is a 30-item questionnaire, consisting of a 15-item negative subscale and a 15-item positive subscale. Glass et al. [1982] found that all items correlated with the total scale. The SISST also correlated significantly with two self-report measures of social avoidance. Split-half reliabilities were .86 for the negative subscale and .73 for the positive subscale.

In two treatment studies, Mattick and Peters [1988] and Mattick et al. [1989] chose four of the IBT subscales as relevant for social phobia research. Three of these (demand for approval, high self-expectations, and anxious overconcern) were also recommended by Arnkoff and Glass [1989] as being the IBT scales most relevant to social phobia. For the current study we chose to be conservative and included only the three scales recommended by both Arnkoff and Glass [1989]

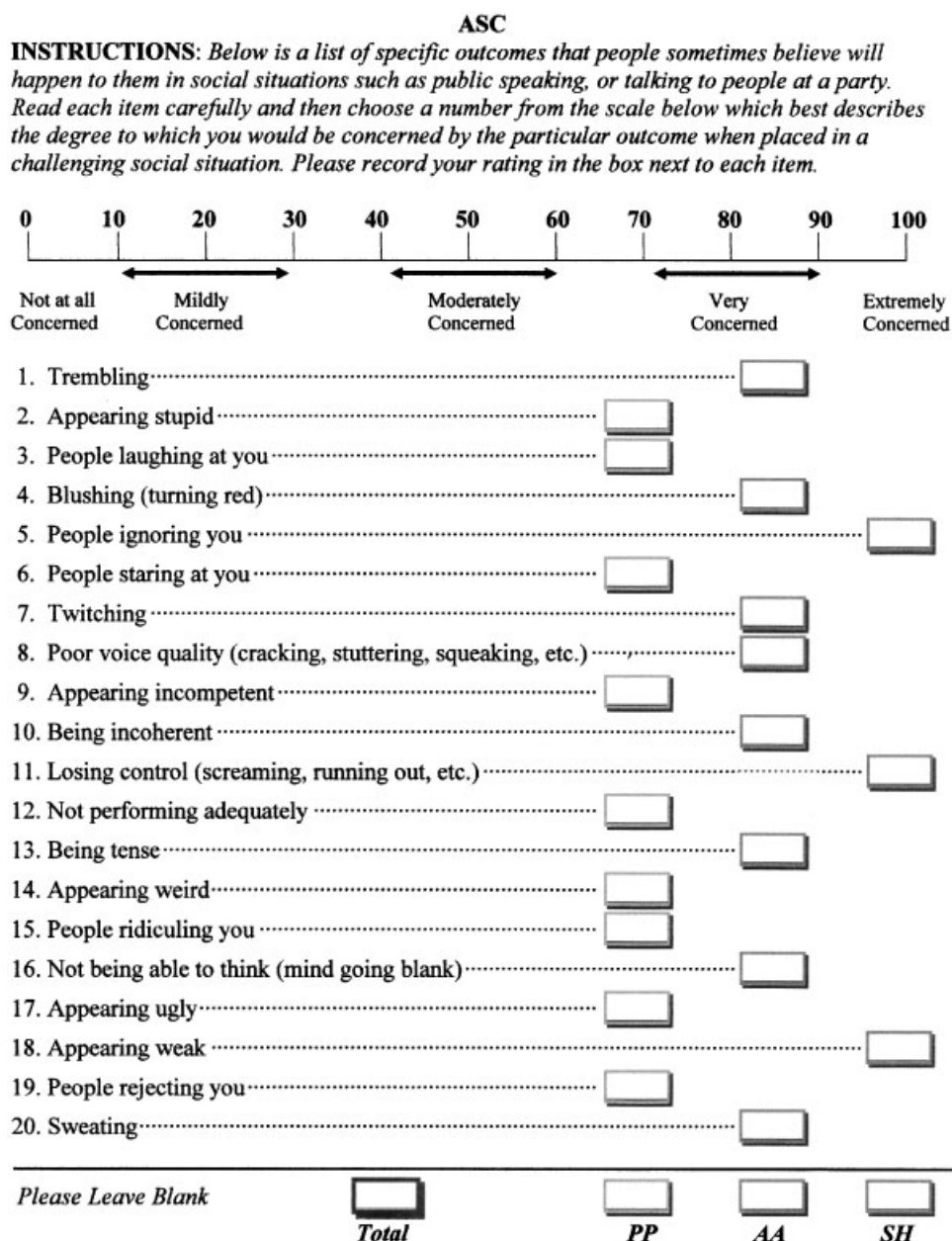


Fig. 1. Receiver-operating characteristic curve (ROC) analysis of the total panic disorder severity scale (PDSS) versus a current diagnosis of panic disorder.

and Mattick et al. [1989]. Jones [1969] had reported item-total correlations ranging from .66 to .8 for the IBT subscales.

The Social Phobia and Anxiety Inventory [Turner et al., 1989], the Social Phobia Scale (SPS), and the Social Interaction Anxiety Scale (SIAS) [Mattick and Clarke, 1988] were used as self-report indices of social phobia. The SPAI contains 32 social phobia items and 13 agoraphobia items. The total score (minimum = 0, maximum = 192) is obtained by subtracting the agoraphobia score from the social phobia score; this procedure was designed by the scale's authors to

correct the final score for social distress related to panic attacks or other agoraphobic concerns. Turner et al. [1986, 1989] found test-retest reliability for the total scale to be .86; coefficient α for the social phobia subscale was .96. The SPAI has also shown discriminative validity versus a nonsocial phobic group and versus other anxiety disorder groups [Beidel et al., 1989; Turner et al., 1989]. The final, or "difference score," is the SPAI score used in the current study.

The SPS and SIAS are two companion measures, each with 20-items. Psychometric properties for these

were reported in Mattick and Clarke [1988]. Internal consistency, as measured by Cronbach's α , was .94 for each scale. Test-retest reliability was .93 for the SPS and .92 for the SIAS for a 12-week retest. Both scales showed discriminative validity versus a nonclinical group and versus anxiety disorder groups.

The Beck Anxiety Inventory [Beck et al., 1988] and the Beck Depression Inventory [Beck et al., 1961] were used as general mood indices. The BAI has good internal consistency (coefficient α is .92), good test-retest reliability (.75), and good discriminant validity. Beck et al. [1988] reported the results of 25 years of research on the psychometric properties of the BDI. They reported a mean coefficient α of .86 when the BDI was used with psychiatric patients.

PROCEDURE

The students comprising the nonclinical sample completed the ASC as part of a battery of questionnaires that was given as prescreening for studies conducted at the UT-Austin Psychology Department.

Participants in the clinical sample were recruited for the treatment study via referral from the senior author's anxiety disorders research center at UT-Austin, and from newspaper, radio, and television advertisements in the greater Austin area. The Structured Clinical Interview for DSM-III-R (SCID-I) [Spitzer et al., 1989] was used to assess principal Axis I diagnoses; participants were eligible for the study only if social phobia was the principal Axis I diagnosis. Inter-rater reliability coefficients (κ) for the clinical sample were calculated on a random sample of 20% of the structured interviews from the formal treatment study, drawn from both the accepted and rejected participants. Kappa coefficients for both the principal Axis I diagnosis and the diagnosis of social phobia were 1.0. Exclusion criteria were current substance abuse or dependence, current suicidal intent, current psychotic symptoms, or current bipolar disorder.

Participants in the clinical sample completed the ASC as part of pre-treatment assessment for a treatment outcome study of social phobia. Sixty-one of these participants had also completed the ASC at an orientation meeting before the pre-treatment assessment. All of the clinical participants completed a battery of self-report questionnaires via computer administration at the pre-treatment assessment. Sixty of the participants from the nonclinical sample completed the same battery of questionnaires.

RESULTS

ITEM ANALYSIS

Data from the 550 students in the entire nonclinical sample were utilized in these analyses. Item-total correlations (using the total ASC score with the particular item removed) ranged from .48-.78, all

significant ($P < .001$). All of the original 20 items were retained for inclusion in the final scale.

NORMATIVE DATA

The mean ASC score for the nonclinical sample was 35.59 ± 19.52 ; scores ranged from 0-87. The mean for males ($n = 290$) was 34.19 ± 19.62 . The mean for females ($n = 260$) was 37.15 ± 19.32 . The mean for the clinical sample was 45.41 ± 20.61 . The mean for males ($n = 35$) was 39.25 ± 19.41 , ranging from 2.75-77.5. The mean for females ($n = 51$) was 49.65 ± 20.53 , ranging from 12.00-68.00. The difference between males and females was significant ($P < .05$).

Norms for the two social phobia subtypes were estimated using data from the clinical sample. The mean for generalized social phobics was 46.84 ± 21.8 ($n = 59$). For the specific subtype, the mean ASC score was 35.36 ± 19.73 ($n = 12$). The difference between these means approached significance ($P < .10$). The mean ASC scores between the social phobia subtypes and between the clinical and nonclinical samples were not compared as the samples were not matched.

RELIABILITY

Using data from the entire nonclinical sample ($N = 550$), the coefficient alpha for the full scale was .94. Test-retest reliability was assessed with data from 61 clinical social phobics for whom data were available from orientation and pre-treatment assessment. The mean interval of time was 7.5 days. The Pearson correlation between scores at these two assessments was $r = .82$.

FACTOR STRUCTURE

The factor structure of the ASC was explored using the nonclinical sample due to sample size considerations. Given our intention to cross validate the internal consistency of the subscales, the dataset was split so that adequate sample size would be reserved for the cross validation. Using a random selection process, 350 cases were selected for the exploratory factor analysis. Principal component analysis with oblique Orthotron rotation was employed. To be conservative, the number of factors to retain was taken as the lowest number of factors consistent across both the Kaiser rule and the scree method, while also taking simple structure [Thurstone, 1947] into consideration. The Kaiser rule suggested that three factors should be retained, whereas the scree method yielded four factors, thus three factors were initially retained. As Taylor et al. [1991, 1992] and Rachman and Taylor [1993] have noted, the scree and Kaiser methods may yield an excessive number of factors when items are being factored. Thus a two factor solution was examined as well. Table 1 summarizes the four, three, and two factor solutions.

TABLE 1. Summary of factor solutions

Factors (method)	4 (Scree)	3 (Kaiser)	2
Simple structure			
Complex items ^a	3	2	1
Hyperplane items ^b	0	1	1
Factors well-defined? ^c	4 of 4	3 of 3	2 of 2
Variance explained	61.9%	56.9%	51.6%
Factor intercorrelations ^d			
1-2	.30	.64	.75
1-3	.53	.61	—
1-4	.64	—	—
2-3	.32	.54	—
2-4	.43	—	—
3-4	.53	—	—
Factor coefficient alphas			
Factor 1	.90	.93	.93
Factor 2	.69	.83	.84
Factor 3	.71	.71	—
Factor 4	.85	—	—
Items/factor (<i>n</i>)			
Factor 1	8	9	11
Factor 2	4	8	9
Factor 3	3	3	—
Factor 4	5	—	—

^aComplex items are those with salient loadings (●.4) on more than one factor.

^bHyperplane items are those with no salient loading on any factor.

^cA factor is well-defined if at least three items have salient loadings on it.

^dFor the three-factor solution, intercorrelations of subscale scores were also examined; these ranged from .61 to .71 in the exploratory sample, and from .61 to .76 in the cross-validation sample.

Given the use of oblique rotation in the present study, pattern coefficients rather than correlations were utilized as the factor loadings. A cutoff of .4 was utilized to define salient loadings; this was somewhat arbitrarily defined, as such cutoffs typically are. The two-factor solution seems to be superior in terms of simple structure, having fewer complex items than the other solutions. The intercorrelation of factors is quite high for the two-factor solution. The three-factor solution is superior to the two-factor solution in terms of the amount of variance explained, and although the factors are moderately intercorrelated, they are not so highly correlated as to question the distinctiveness of the factors. Although only three items loaded on the third factor, all three had salient factor loadings, making it a well-defined factor. Moreover, the third factor appears in identical form in the four-factor solution. It therefore seems warranted to retain the third factor. The three-factor solution is comparable to the four-factor solution in terms of simple structure, but explains less variance. The four-factor solution, however, is less interpretable than either the three or two factor solution. The three-factor solution therefore seems to be the optimal solution. All but one item had salient loading on at least one of the three factors.

TABLE 2. Factor pattern loadings for the three-factor solution*

Item	Negative evaluation	Observable symptoms	Social helplessness
2. Appearing stupid	.92	.08	-.20
3. People laughing	.93	.02	-.16
6. People staring	.74	.05	-.04
9. Appearing incompetent	.45	.21	.20
12. Not performing adequately	.62	.09	.23
14. Appearing weird	.36	.19	.19
15. People ridiculing	.63	-.07	.34
17. Appearing ugly	.76	-.36	.33
19. People rejecting you	.68	-.16	.33
1. Trembling	-.25	.89	-.03
4. Blushing	.40	.48	-.32
7. Twitching	-.14	.71	.17
8. Voice quality	.00	.80	-.09
10. Being incoherent	.39	.46	-.06
13. Being tense	-.02	.57	.13
16. Mind going blank	.13	.47	.25
20. Sweating	-.01	.52	.19
5. People ignoring you	.10	.14	.58
11. Losing control	-.32	.11	.91
18. Appearing weak	.21	-.04	.64

*Factor loadings in bold indicate the assignment of items to factors.

There were two complex items (i.e., loading on more than one factor). These items were assigned to the factor on which they had the highest loading. All three factors were well-defined (i.e., had three or more items with salient loadings on the factor).

Items loading on the first factor pertain to concerns about “negative evaluation.” These items include concerns about appearing stupid, people laughing, and not performing adequately. Items loading on the second factor pertain to “observable symptoms.” These items include concerns about trembling, twitching, and one’s mind going blank. The three items loading on the final factor reflect the experience of “social helplessness”; these items are concerns about being ignored by others, losing control, and appearing weak. Table 2 presents the assignment of items to factors.

Coefficient α for the three factors were first calculated with data from the 350 participants whose data had been used for the exploratory factor analysis. Results were .91, .83, and .69 for scales 1, 2, and 3 respectively. These estimates were cross validated with data from the remaining 200 nonclinical participants. Results were .93, .83, and .71 for scales 1, 2, and 3, respectively.

CONSTRUCT VALIDITY

Table 3 shows the intercorrelation of 70 clinical participants’ ASC scores with other cognitive measures (IBT-SP, and the positive and negative scales of the SISST), three self-report measures of social phobia

TABLE 3. Intercorrelations of self-report indices

	Cognitive aspects				Social anxiety symptoms			General mood	
	ASC	IBT-SP ^a	SISST-N ^b	SISST-P ^c	SPAI	SPS	SIAS	BAI	BDI
ASC	1.00								
IBT3	.56	1.00							
SISST-N	.59	.54	1.00						
SISST-P	-.19	-.41	-.31	1.00					
SPAI	.54	.37	.74	-.42	1.00				
SPS	.58	.59	.57	-.35	.47	1.00			
SIAS	.40	.49	.76	-.37	.73	.51	1.00		
BAI	.44	.52	.33	-.19	.29	.68	.38	1.00	
BDI	.50	.59	.58	-.33	.41	.62	.53	.48	1.00

All correlations are significant at $P < .001$

^aIBT-SP, score on the three IBT scales most relevant to social phobics.

^bSISST-N, negative scale of SISST.

^cSISST-P, positive scale of SISST.

TABLE 4. Intercorrelations of ASC full scale and subscales with self-report indices

Measure	ASC full scale	Negative Evaluation subscale	Observable Symptoms subscale	Social Helplessness subscale
ASC	1.00	.95	.92	.82
IBT3	.56	.62	.41	.49
SISST-N	.59	.62	.47	.47
SISST-P	-.19	-.17	-.16	-.22
SPAI	.54	.51	.51	.42
SPS	.58	.59	.48	.53
SIAS	.40	.40	.31	.45
BAI	.44	.41	.37	.46
BDI	.50	.57	.30	.56

All correlations are significant at $P < .01$.

(SPAI, SPS, SIAS), and two measures of general mood (BAI, BDI). The ASC correlated significantly with both the IBT-SP and the negative scale of the SISST ($r = .56$ and $.59$, respectively), and showed little relationship to the positive scale of the SISST ($r = -.19$). The ASC also showed moderate correlations with measures of social anxiety, ranging from $r = .40$ with the SIAS to $r = .58$ with the SPS. The ASC correlation with the BAI fell between that for the other two cognitive measures. The ASC, as did all other measures except for the positive SISST scale, showed a moderate correlation with the BDI ($r = .50$ for the ASC, $.41$ – $.62$ for other measures).

The construct validity of the ASC was further explored via two separate discriminant function analyses with the nonclinical and the clinical samples. For the nonclinical sample, a cutoff score of 60 on the SPAI was used to split the sample into high ($n = 35$) and low ($n = 25$) social anxiety groups. The ASC score correctly identified 74.3% of the high anxiety participants and

72.0% of the low anxiety participants. These results were replicated with the clinical sample, where a median split led to a cutoff of 100 for assignment to higher ($n = 35$) and lower ($n = 35$) anxiety groups. The ASC score correctly identified 77.1% of the higher anxiety group and 80.0% of the lower anxiety group.

Construct validity of subscales. The correlations of the three ASC subscales with the battery of self-report measures are shown in Table 4. The second factor of the ASC (observable symptoms) seems to provide some discriminating power vis-à-vis depression, having a smaller correlation with the BDI ($r = .30$) than did the full-scale ASC and all self-report indices other than the positive subscale of the SISST. Factor two showed a somewhat lower correlation with the SIAS than did factors one (negative evaluation) and three (social helplessness). This may suggest that concerns about observable signs of anxiety are heightened in performance situations more than in social interaction situations, the latter being assessed by the SIAS.

SENSITIVITY TO TREATMENT

Results of a treatment outcome study [Lucas and Telch, 1993] showed the ASC to be sensitive to treatment effects. In a comparison of individual ($n = 18$) and group ($n = 18$) format cognitive-behavioral treatment, the pre-treatment mean ASC scores were 46.88 ± 20.29 and 47.72 ± 23.30 for the individual and group formats respectively. The post-treatment means were 19.36 ± 15.19 and 21.29 ± 22.58 . The within group change was significant ($P < .001$) for both conditions. The pre-post effect size for the individually treated participants was $d = 1.5$ and for the group treated participants $d = 1.13$. The pooled effect size for the two formats was 1.30, comparing favorably with pre-post effect sizes of .83 for the negative scale of the SISST, and 1.15 for the SPAI.

DISCUSSION

We report on the initial psychometric properties of a new cognitive assessment measure for use with social phobics, the Appraisal of Social Concerns (ASC). The ASC is a brief self-report instrument that assesses specific threat appraisals relevant to social anxiety. Our findings indicate that the ASC has good internal consistency and test-retest reliability. The convergent and discriminant validity of the ASC seems to be comparable to that of well-established measures in use with social phobics. An additional strength of the ASC is its sensitivity to the effects of treatment.

Three factors were suggested by results of the exploratory factor analysis and named 1) negative evaluation, 2) observable symptoms, and 3) social helplessness. The three subscales showed moderate to high correlations with each other, which is not surprising given the reciprocal relationship between threat appraisal domains [Beck and Emery, 1985]. Interestingly, the individual subscales showed a somewhat different pattern of association with other measures. For instance, Scale 2 (concerns about appearing anxious) showed a weaker association with the BDI and the SIAS than did Scale 1 (negative evaluation) or Scale 3 (social helplessness). The coefficient α for the third subscale (social helplessness = .69 and .71) in both the original and cross validation samples suggest that this subscale seems to require additional investigation before its reliability and validity can be fully supported. In addition, this subscale consisted of only three items and therefore, may benefit from the addition of items in future versions.

Gender differences on the ASC were observed in our clinical sample but not among our nonclinical sample. Consistent with previous epidemiological studies investigating social phobia prevalence and severity [Kessler et al., 1994; Schneier and Liebowitz, 1998], women scored higher than men. These gender differences may be due to different sex role expectations and behaviors among men and women [Craske and Barlow, 1988].

Preliminary evidence suggests that the ASC may discriminate between the generalized and non-generalized subtypes of social phobia. Not surprisingly, those displaying the generalized subtype tend to endorse significantly more concerns than patients displaying specific social anxiety in circumscribed settings such as public speaking. This finding suggests a possible linkage between the cognitive profile of the patient and the pervasiveness of their social phobia. It should be noted, however, that this result is based on a small number of participants with non-generalized social phobia ($n=12$). We are currently collecting additional data to clarify the relevance of the ASC in predicting social phobia subtype.

Clinically, the ASC provides a cost-effective measure that can be readily utilized to assist the clinician in tailoring specific intervention strategies to the idiosyncratic threat profile of the patient. For example, the social phobic who endorses significant concerns about blushing in front of others could be provided interoceptive exposure in the form of Niacin challenge to provide potent threat disconfirming evidence pertinent to blushing. Concerns identified by the ASC would need to be investigated further by the clinician before devising relevant exposures.

In addition to its potential use in clinical practice, the psychometric properties of the ASC support its use in social phobia research. Because of its demonstrated sensitivity to treatment, the ASC can be used as an outcome measure for indexing treatment-related changes in socially-relevant threat appraisals. The ASC may also be used to further our understanding of treatment change mechanisms. Baseline differences in each of the ASC subscales may be used in moderator analyses to predict differential treatment response. Moreover, because current accounts of social anxiety emphasize the potential role of cognitive factors in the origin or maintenance of social phobia [Clark and Wells, 1995; Rapee and Heimberg, 1997], the ASC may be used as a possible mediator variable to test whether symptom changes observed in treatment are governed by changes in patients' specific threat appraisals. Future studies should include normative data on non-anxious control samples and may also investigate the sensitivity of the ASC with pharmacotherapy and psychosocial treatments other than CBT.

In summary, the ASC is a brief, easy-to-administer, psychometrically sound instrument tapping clinically relevant threat appraisals of social phobics. The properties of the scale support its use in both clinical and research settings, with some caution warranted in the use of its subscales.

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