The Liebowitz Social Anxiety Scale for Children and Adolescents: An Initial Psychometric Investigation

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ABSTRACT

Objective: To examine the psychometric properties of a newly developed clinician rating scale, the Liebowitz Social Anxiety Scale for Children and Adolescents (LSAS-CA). **Method:** A total of 154 children and adolescents participated in an assessment consisting of a diagnostic interview, the LSAS-CA, and other measures of psychopathology and impairment. Sixty-one of these children also participated in a second LSAS-CA administration, by a different rater blind to diagnosis, within 7 days of the initial assessment. **Results:** High internal consistency (α = .90–.97 for full sample and .83–.95 for social phobia group) and test-retest reliability (intraclass correlation coefficient = 0.89–0.94) were obtained for LSAS-CA total and subscale scores. LSAS-CA scores had stronger associations with measures of social anxiety and general impairment than with a measure of depression. Subjects with social anxiety disorder had significantly higher LSAS-CA scores than subjects with other anxiety disorders and healthy controls. A LSAS-CA cutoff score of 22.5 represented the best balance of sensitivity and specificity when distinguishing between individuals with social phobia and normal controls, whereas a cutoff of 29.5 was optimal for distinguishing social phobia from other anxiety disorders. **Conclusion:** Initial findings suggest that the LSAS-CA is a reliable and valid instrument for the assessment of social anxiety disorder. *J. Am. Acad. Child Adolesc. Psychiatry*, 2003, 42(9):1076–1084. **Key Words:** clinician-rated, reliability, social phobia.

Fear of social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny is the hallmark of social phobia (American Psychiatric Association, 1994). Situations commonly feared by children and adolescents include interactions with peers, answering questions in class, public speaking, initiating conversations, attending parties or school, speaking to authority figures, and performing in front of others (Albano, 1995; Beidel, 1991; Hofmann et al., 1999). Social anxiety disorder in youth is associated with relatively few friends, disturbances in academic functioning, difficulties with intimate relationships, and alcohol use (Wittchen et al., 1999). Studies of social phobia suggest that there is significant stability into adulthood and that this disorder may contribute to increased risk for depression, suicide attempts, alcohol abuse, incomplete educational attainment, and severe social restrictions (Liebowitz et al., 1985; Pine et al., 1998; Schneier et al., 1992; Wittchen et al., 1999). Such information is of concern in view of data suggesting a rise in the prevalence of generalized social phobia in younger cohorts (Heimberg et al., 2000).

Recognition of the importance of social phobia has led to a surge of research on its etiology and treatment in youth (Beidel et al., 1995, 2000a,b; Hayward et al., 2000; Masia et al., 2001; Spence et al., 2000). These efforts have created the need for assessment instruments. Several psychometrically sound self-rating instruments for children and adolescents have been developed (Beidel et al., 1995; Birmaher et al., 1999; La Greca and Lopez, 1998; March et al., 1999; Muris and Steerneman, 2001), but no clinician-rating scales exist to assess the severity of social anxiety in children and adolescents. Although self-rating scales are an economical strategy for assessing large groups of children for prevention programs

and epidemiological studies, clinician ratings are more valuable for documenting clinical severity and treatment response (Klein and Pine, 2002).

The Liebowitz Social Anxiety Scale (LSAS) (Liebowitz, 1987), a clinician-rating scale for the assessment of social phobia in adults, has been widely used in studies of pharmacological and cognitive-behavioral treatment of social phobia. The 24 LSAS items are divided into two types: 11 questions assessing anxiety in social interactions (e.g., giving a party) and 13 questions reflecting anxiety in performance situations (e.g., speaking up at a meeting). The clinician asks for current severity of anxiety and avoidance on 0 to 3 Likert scales. The clinician adjusts the ratings based on clinical judgment and direct behavioral observations. Initial evidence suggests that the LSAS is a reliable, valid, and treatment-sensitive measure of adult social phobia (Heimberg et al., 1999; Safren et al., 1999). More specifically, the LSAS subscales have excellent internal consistency and are significantly correlated to other measures of social anxiety and avoidance. An exploratory factor analysis yielded four factors: (1) social interaction, (2) public speaking, (3) observation by others, and (4) eating and drinking in public (Safren et al., 1999). Finally, the LSAS has been shown to be sensitive to effects of pharmacological treatments for social phobia compared with pill placebo (Heimberg et al., 1999).

Based on the strength of the LSAS and the need for a clinician-rating scale for youth, we developed a similar instrument for children and adolescents, the Liebowitz Social Anxiety Scale for Children and Adolescents (LSAS-CA) (Masia et al.,1999). The LSAS-CA items were generated from two sources. First, items were formed from reports of the 10 most feared situations of a group of 33 adolescents with social phobia (Hofmann et al., 1999). Second, items on the adult version that were not generated by the first method were included with slight wording changes if they were considered developmentally appropriate. For example, the LSAS question, "Participating in small groups," was modified to "Participating in work groups in the classroom." The majority of the LSAS-CA items (15 items) were consistent across both sources.

The resulting measure consists of 24 items: 12 social interaction situations (e.g., "looking at people you don't know well in the eye") and 12 performance situations (e.g., "asking questions in class"). The administration procedure, rating scales, and scoring structure from the adult LSAS were retained. Clinician ratings of anxiety (0 = none, 1 = mild, 2 = moderate, 3 = severe) and avoidance (0 = never,

1 = occasionally, 2 = often, 3 = usually) are given for each of the 24 items for a total of 48 ratings. Thus, the LSAS-CA provides seven scores: (1) anxiety related to social interaction, (2) performance anxiety, (3) total anxiety, (4) avoidance of social interaction, (5) avoidance of performance situations, (6) total avoidance, and (7) a total LSAS-CA score.

The purpose of the present study is to examine the psychometric properties of the LSAS-CA. This measure is currently used in many clinical settings and in national pharmacological trials of social phobia in children and adolescents, and thus an examination of its reliability and validity is required. We addressed the following questions: (1) What is the internal consistency of the LSAS-CA items? (2) What is the relationship between the subscale and total scores? (3) Are LSAS-CA scores consistent when administered at two separate times by different clinicians? (4) Does the LSAS-CA correlate with other social anxiety and impairment measures? (5) Is the LSAS-CA more strongly associated with social anxiety than depression measures? (6) Is the LSAS-CA able to provide meaningful differentiation between subjects with and without a diagnosis of social phobia? (7) What threshold scores may indicate clinically significant levels of social anxiety and avoidance?

METHOD

Participants

Participants were obtained from three sources: (1) consecutive referrals to an anxiety clinic in Boston, (2) volunteers from a high school in suburban New York, and (3) children and adolescents enrolled in a multisite psychopharmacological clinical trial of social phobia. Written consent and assent to participate were provided by parents and children. Consent forms, however, were specific to the research study and institution.

Anxiety clinic subjects ($n = 30$) had the following primary diagnoses: social phobia ($n = 5$), panic disorder with agoraphobia ($n = 10$), separation anxiety disorder ($n = 8$), agoraphobia without panic ($n = 2$), obsessive-compulsive disorder ($n = 1$), specific phobia ($n = 1$), generalized anxiety disorder ($n = 1$), oppositional defiant disorder ($n = 1$), and depersonalization disorder ($n = 1$). There were no comorbid diagnoses of social phobia. All participants recruited from the multisite trial had a primary diagnosis of social phobia ($n = 92$). To obtain a normal comparison group, high school students enrolled in psychology and sociology classes ($n = 122$) were offered participation. Thirty-four students (28%) returned consent forms. Of these, 32 had no diagnosis, as assessed by a diagnostic interview. Two students were excluded from participation due to diagnoses of generalized anxiety disorder and posttraumatic stress disorder.

The final sample consisted of 154 children and adolescents (93 female and 61 male). Overall, the mean age of the sample was 13.4 years (SD 3.2 years, range 7–18 years). The ethnic composition was as follows: 85.7% white, 5.2% African American, 4.6% biracial, 3.9% Latin American, and 0.6% Asian American. The sample was classified into three diagnostic groups: group I, 97 subjects with a primary

diagnosis of social phobia (Social Phobia Group), group II, 23 participants with anxiety disorders other than social phobia (Mixed Anxiety Group), and group III, 32 subjects with no psychiatric diagnosis (Nonpsychiatric Control Group). Two participants recruited from the Boston anxiety clinic, one with a primary diagnosis of oppositional defiant disorder and the other with a diagnosis of depersonalization disorder, did not fit into any of the diagnostic groups. See Table 1 for demographics of the total sample and each diagnostic group. No significant differences were found in gender or ethnicity across groups. The social phobia and mixed anxiety groups were significantly younger than the control group, $F_{2,149} = 34.5, p < .001$.

Measures

Diagnostic Assessment. The Anxiety Disorders Interview Schedule for *DSM-IV*: Child and Parent Versions (ADIS-CP) (Silverman and Albano, 1996) assess anxiety and mood disorders and screen for the presence of disruptive behavior, psychotic, and eating disorders. Interviews are conducted with parents and children separately by one clinician, and diagnoses are assigned based on both informants. The interview has demonstrated good to excellent test-retest reliability for diagnoses (Silverman et al., 2001). The validity of the ADIS-CP has also been supported (Wood et al., 2002).

The LSAS-CA (Masia et al., 1999) assesses anxiety and avoidance in 24 situations. The independent evaluator asks the child to provide separate ratings for anxiety and avoidance but is given latitude to adjust ratings based on clinical judgment and direct behavioral observations. The LSAS-CA can be obtained from the first author.

Participants age 14 years and older completed the Social Phobia and Anxiety Inventory (SPAI) (Turner et al., 1989). The SPAI is a 45-item self-report instrument that assesses behavioral, physiological, and cognitive symptoms associated with social phobia. Items are scored on a 7-point Likert scale from 1 (never) to 7 (always). It consists of social phobia and agoraphobia subscales that are used to obtain a difference (total) score; the authors recommend the use of the difference score (Turner et al., 1989). The SPAI has demonstrated strong psychometric characteristics (for review see Clarke et al., 1997).

The Social Phobia and Anxiety Inventory for Children (SPAI-C) (Beidel et al., 1995), a self-report measure, was completed by participants younger than 14 years. The 26 items assess somatic symptoms, cognitions, and behavior across fear-producing situations. Questions are answered on a 3-point Likert-type scale ranging from 0 (never) to 2 (most of the time or always). The SPAI-C is internally consistent (Cronbach α = .95) and has adequate test-retest reliability (Beidel et al., 1995). It discriminates social phobia from other anxiety disorders, disruptive behavior disorders, and no psychiatric disorders (Beidel et al., 1996, 2000a).

The Children's Depression Rating Scale-Revised (CDRS-R) (Poznanski and Mokros, 1995) is a clinician-rated inventory of depressive symptoms. Ratings for each symptom range from 1 to 7.

The Clinical Global Impression-Severity of Illness (CGI) (National Institute of Mental Health, 1985) is a clinician rating of the severity of the participant's mental illness. The categories include the following: not assessed, normal, borderline ill, mild, moderate, marked, severe, and among the most extremely ill patients. This instrument has been extensively used in treatment studies of children and adolescents (Cook et al., 2001; Pliszka et al., 2000)

The Global Assessment of Functioning (GAF) (American Psychiatric Association, 1994) scale is a clinician rating of a patient's functioning considering psychological, social, and occupational functioning. Scores range from 0 to 100, with higher ratings indicating better functioning. Good psychometric data exist for the GAF (Hilsenroth et al., 2000; Jones et al., 1995).

TABLE 1
Demographics of Total Sample and Each Diagnostic Group

Demographics	Total Sample	Social Phobia	Mixed Anxiety	Nonpsychiatric Comparison
No.	154	97	23	32
% Female	60.4	59.8	60.9	62.5
% White	85.7	86.6	100	71.9
Mean age (SD)	13.4 (3.2)	12.4 (2.9)	13.0 (3.0)	16.8 (1.0)

Note: Social phobia and mixed anxiety groups are significantly younger than the control group, $F_{2,149} = 34.5, p < .001$.

Procedures

Training in the administration of the LSAS-CA consisted of an instructional meeting with the first author. The meeting consisted of a review of the scale's content and structure, as well as viewing a videotape that included administration directions and two practice interviews, one with a child and the other with an adolescent, conducted by Drs. Masia-Warner and Liebowitz. Clinicians completed the LSAS-CA for each videotaped interview, and disagreements in scoring were discussed and clarified. All clinicians had prior training and experience with the administration of the other measures.

An initial evaluation was scheduled with all participants that included administration of the ADIS-Child and Parent Versions, LSAS-CA, SPAI or SPAI-C (depending on the child's age), CDRS-R, CGI, and GAF. Assessments began with the diagnostic interview followed by the completion of the other study measures. The anxiety clinic and healthy volunteer participants were scheduled for a second administration of the LSAS-CA by a different rater who was blind to the first assessments, 3 to 7 days following the first evaluation. All assessments were conducted via in-person interviews. One child from the anxiety clinic did not participate in the second administration, leaving a total of 61 participants for the readministration of the LSAS-CA.

Data Analysis

Psychometric analyses were conducted using the initial completion of the LSAS-CA. Calculations were conducted both for the full sample (n = 154) and social phobia group (n = 97). Internal consistency of the LSAS-CA was evaluated with the Cronbach α coefficient. Reliability across the first and second LSAS-CA assessments was examined by calculating one-way random effects intraclass correlation coefficients (Shrout and Fleiss, 1979) between the LSAS-CA subscale and total scores across the two administrations (n = 61). Descriptive statistics for time 1 and time 2 were conducted, and paired sample t tests were used to compare mean values between the two administrations.

Pearson product-moment correlations examined the relation between LSAS-CA subscale and total scores, as well as between LSAS-CA scores and other measures of social anxiety, impairment, and depression. Differences in correlations between the LSAS-CA total and other measures for the full sample and social phobia group were examined using t tests for dependent correlations. One-way analysis of variance was used to investigate differences in LSAS-CA scores across diagnostic groups. All statistically significant analyses of variance were further examined using Tukey honestly significant difference follow-up tests.

Receiver operating characteristic (ROC) analysis (Kraemer, 1992; Swets et al., 2000) was performed on LSAS-CA total scores to identify the most useful cutoffs for discriminating individuals with social phobia from those with other anxiety disorders, and from those with no diagnosis. Parametric ROC analysis is based on logistic regression with

TABLE 2
Cronbach α Coefficients for the LSAS-CA
Total and Subscale Scores

LSAS-CA Scores	Total Sample (n = 154)	Social Phobia (n = 97)
Total score[a]	.97	.95
Total anxiety	.95	.91
Interaction anxiety	.92	.86
Performance anxiety	.91	.85
Total avoidance	.95	.90
Avoidance of interaction	.91	.83
Avoidance of performance	.90	.85

Note: LSAS-CA = Liebowitz Social Anxiety Scale for Children and Adolescents.

[a] Total Score = Total anxiety + Total avoidance.

a continuous predictor variable (LSAS-CA total score) and with a dichotomous criterion variable (positive or negative for social phobia). Probabilities of each value of the predictor are plotted on a graph with their associated sensitivity on the y-axis and 1 – specificity (the false-positive rate) on the x-axis. This curve is referred to as the test ROC. The greater the distance between the ROC curve of the measure and the random ROC diagonal line (0.50 or chance probability), the more accurate the test. The area between the random ROC and the test ROC, called the area under the curve, provides a summary index of a test's ability to classify individuals correctly. The score that maximizes both sensitivity and specificity is considered an optimal cutoff value.

RESULTS

Internal Consistency

As shown in Table 2, α coefficients for LSAS-CA scores were high (.83–.97). Internal consistency for performance and social interaction was comparable for the overall sample and the social phobia group.

Correlations Among LSAS-CA Total and Subscale Scores

Table 3 presents the correlations between the LSAS-CA total score and subscales for the full sample and social

phobia group. All correlations were statistically significant, p < .001. The total score was highly correlated with all other subscales (r = 0.93–0.99 for full sample and r = 0.88–0.98 for social phobia group). Anxiety and avoidance ratings were highly correlated at the total level (r = 0.96 for full sample and r = 0.92 for social phobia group), as well as within performance (r = 0.93 for full sample and r = 0.89 for social phobia group) and within social interaction situations (r = 0.97 for full sample and r = 0.94). Correlations between performance and social interaction subscales were significant but somewhat lower (r = 0.78–0.84 for full sample and r = 0.63–0.71 for social phobia group).

Reliability Across Assessments

One-way random effects intraclass correlation coefficient values were uniformly high for LSAS-CA scores, ranging from 0.89 to 0.94. Table 4 shows intraclass correlation coefficient values, 95% confidence intervals, and descriptive data for LSAS-CA scores at each administration. No significant mean differences were found between the two administrations in the LSAS-CA total score, total anxiety, performance anxiety, interaction anxiety, and interaction avoidance. Significant differences between time 1 and time 2 were found for performance avoidance (t_{60} = –3.2, p = .002) and total avoidance (t_{60} = –2.1, p = .04), with higher scores reported at the second administration.

Convergent and Divergent Validity

Table 5 presents correlations between the LSAS-CA scores and measures of social anxiety, depression, general impairment, and functioning. Correlations were highest between the LSAS-CA scores and social phobia measures (r = 0.69–0.82 for full sample and r = 0.23–0.70 for social phobia group). The LSAS-CA was only moderately correlated with measures of general impairment and func-

TABLE 3
Correlations of LSAS-CA Scores for all Participants (and Social Phobia Group)

LSAS-CA Scores	Total Score	Total Anxiety	Interaction Anxiety	Performance Anxiety	Total Avoidance	Avoidance of Interaction	Avoidance of Performance
Total score	1.0	.99 (.98)	.95 (.91)	.95 (.90)	.99 (.98)	.96 (.92)	.93 (.88)
Total anxiety		1.0	.97 (.93)	.96 (.92)	.96 (.92)	.94 (.87)	.89 (.81)
Interaction anxiety			1.0	.84 (.71)	.92 (.85)	.97 (.94)	.78 (.63)
Performance anxiety				1.0	.92 (.85)	.83 (.68)	.93 (.89)
Total avoidance					1.0	.96 (.92)	.95 (.92)
Avoidance of interaction						1.0	.82 (.68)
Avoidance of performance							1.0

Note: All correlations are statistically significant at the .001 level. LSAS-CA = Liebowitz Social Anxiety Scale for Children and Adolescents.

TABLE 4
Test-Retest Reliability of LSAS-CA Scores ($n = 61$)[a]

LSAS-CA Scores	ICC	95% CI	Time 1		Time 2	
			Mean	(SD)	Mean	(SD)
Total score	0.94	0.91–0.97	18.6	(18.4)	19.5	(19.7)
Total anxiety	0.93	.88–0.96	10.5	(9.5)	10.4	(10.3)
Interaction anxiety	0.89	0.82–0.93	5.8	(5.7)	5.3	(5.6)
Performance anxiety	0.90	0.84–0.94	4.7	(4.4)	5.1	(5.4)
Total avoidance	0.92	0.88–0.95	8.1	(9.2)	9.1	(9.7)*
Avoidance of interaction	0.91	0.85–0.94	4.5	(5.2)	4.6	(5.0)
Avoidance of performance	0.89	0.83–0.93	3.6	(4.5)	4.5	(5.4)*

Note: LSAS-CA = Liebowitz Social Anxiety Scale for Children and Adolescents; ICC = intraclass correlation coefficient; CI = confidence interval.
* Statistically significant difference between means, $p < .05$.
[a] Anxiety clinic $n = 29$; healthy subjects $n = 32$.

tioning ($r = 0.61–0.68$ for full sample and $r = 0.22–0.27$ for social phobia group), and more weakly correlated with the measure of depression ($r = 0.34–0.39$ for full sample and $r = 0.02–0.14$ for social phobia group).

For both the full sample and social phobia group, correlations between the LSAS-CA total and SPAI-C were significantly greater than those between the LSAS-CA total and CDRS-R ($t_{56} = 7.5, p < .001; t_{50} = 6.4, p < .001$) and more general measures of impairment (CGI: $t_{56} = 3.7, p < .001; t_{50} = 3.5, p < .001$ and GAF: $t_{56} = 3.5, p < .001; t_{50} = 3.2, p < .05$). The correlation of LSAS-CA total with the SPAI was only statistically higher than the LSAS-CA total with the CDRS-R ($t_{80} = 3.1, p < .05$) for the full sample.

Construct Validity

As shown in Table 6, LSAS-CA mean values differed significantly across groups. Tukey tests indicated significantly

higher scores for the social phobia group than for the mixed anxiety and nonpsychiatric comparison groups. Scores in the mixed anxiety group were significantly more elevated compared with the nonpsychiatric comparison group.

Using ROC analysis, we examined cutoff values that distinguished individuals with social phobia from those with no psychiatric diagnosis and those with other anxiety disorders. First, an ROC analysis was performed on the social phobia group ($n = 97$) and the nonpsychiatric control group ($n = 32$). As shown in Figure 1, the area under the curve was 0.99 and was significant versus the chance or random ROC line ($p < .0001$). An LSAS-CA total score of 22.5 provided optimal sensitivity and specificity. That is, 95.9% of individuals with social phobia were correctly classified and none of the nonpsychiatric comparisons was misclassified. As shown in Table 7, decreasing the LSAS-CA total score sacrifices specificity with minimal gain in sensitivity, whereas increasing the LSAS-CA total score

TABLE 5
Correlations Between LSAS-CA and Other Measures of Psychopathology for Total Sample (and Social Phobia Group)

LSAS-CA scores	SPAI	SPAI-C	CGI	GAF	CDRS-R
N of sample	83 (40)	59 (53)	152 (97)	153 (97)	153 (97)
Total score	.80** (.48)**	.75** (.70)**	.68** (.27)**	−.68** (−.26)**	.38** (.10)
Total anxiety	.79** (.45)**	.75** (.70)**	.67** (.26)*	−.66** (−.25)*	.39** (.07)
Interaction anxiety	.82** (.57)**	.69** (.63)**	.66** (.24)*	−.65** (−.22)*	.37** (−.10)
Performance anxiety	.69** (.23)	.73** (.68)**	.63** (.23)*	−.62** (−.24)*	.38** (.02)
Total avoidance	.80** (.49)**	.73** (.68)**	.68** (.27)**	−.67** (−.27)**	.37** (.14)
Avoidance of interaction	.80** (.53)**	.70** (.64)**	.68** (.26)*	−.67** (−.22)*	.36** (.12)
Avoidance of performance	.71** (.31)	.71** (.65)**	.61** (.24)*	−.61** (−.27)**	.34** (.09)

Note: LSAS-CA = Liebowitz Social Anxiety Scale for Children and Adolescents; SPAI = Social Phobia and Anxiety Inventory; SPAI-C = Social Phobia and Anxiety Inventory for Children; CGI = Clinical Global Impression-Severity of Illness; GAF = Global Assessment of Functioning; CDRS-R = Children's Depression Rating Scale-Revised.
* Correlation is significant at the .05 level (two-tailed); ** correlation is significant at the .01 level (two-tailed).

TABLE 6
Means (SD) of LSAS-CA Scores by Diagnostic Group

LSAS-CA Scores	Social Phobia (*n* = 97)		Mixed Anxiety (*n* = 23)		Nonpsychiatric Comparison (*n* = 32)		*F* value*	Tukey**
Total score	68.6	(28.9)	27.4	(15.5)	7.8	(5.8)	88.1	a > b > c
Total anxiety	35.3	(14.7)	14.7	(8.1)	5.2	(3.8)	83.1	a > b > c
Interaction anxiety	19.3	(8.2)	8.0	(4.8)	2.9	(2.9)	77.8	a > b > c
Performance anxiety	16.1	(7.7)	6.7	(4.2)	2.3	(1.7)	63.1	a > b > c
Total avoidance	33.3	(14.8)	12.7	(7.8)	2.6	(2.3)	85.7	a > b > c
Avoidance of interaction	18.9	(8.1)	7.0	(4.3)	1.5	(1.9)	90.8	a > b > c
Avoidance of performance	14.4	(8.0)	5.6	(4.5)	1.1	(1.4)	54.1	a > b > c

Note: LSAS-CA = Liebowitz Social Anxiety Scale for Children and Adolescents.
a Social phobia group.
b Mixed anxiety group.
c Nonpsychiatric comparison group.
* All *F* values are significant at the *p* <.001 level; ** all Tukey follow-up tests are significant at the *p* <.01 level.

lowers sensitivity with no gain in specificity. Another ROC analysis was conducted on the social phobia group (*n* = 97) and the mixed anxiety disorders group (*n* = 23). As illustrated in Figure 2, the area under the curve was 0.89 and was significantly different from the random ROC line (*p* < .0001). Sensitivity and specificity were maximized at a cutoff value of 29.5. The majority of the social phobia participants (91.8%) were correctly classified (true positives), and 34.8% of the mixed anxiety group was mis-

classified (false positives). As seen in Table 7, decreasing the cutoff score increases sensitivity only slightly while sacrificing specificity, whereas increasing the cutoff score lowers sensitivity with no gain in specificity.

DISCUSSION

This article describes the psychometric characteristics of a new clinician-rated measure to assess social anxiety in children and adolescents. Findings suggest that the LSAS-CA is a reliable and valid instrument for assessing social phobia in youth. The LSAS-CA scores had excellent internal consistency for the total score as well as the specific subscale scores. In addition, the LSAS-CA demonstrated excellent test-retest reliability within a 7-day retest interval with the stringent test of using different clinicians at each administration.

The overall pattern of higher correlations of LSAS-CA scores with social phobia measures than with measures of depression and general impairment provides support for the convergent and divergent validity of the LSAS-CA. Strong support for the construct validity of the LSAS-CA and its utility for assessing the severity of social phobia symptoms is evident by its ability to discriminate individuals with social phobia from healthy individuals, as well as to differentiate between social phobia and other anxiety disorders. ROC findings indicate that an LSAS-CA total score of 22.5 discriminates well between participants with social phobia and healthy nonpsychiatric volunteers, whereas a cutoff of 29.5 distinguishes participants with social anxiety disorder from those with other anxiety diagnoses. Of course, the appropriate cut-
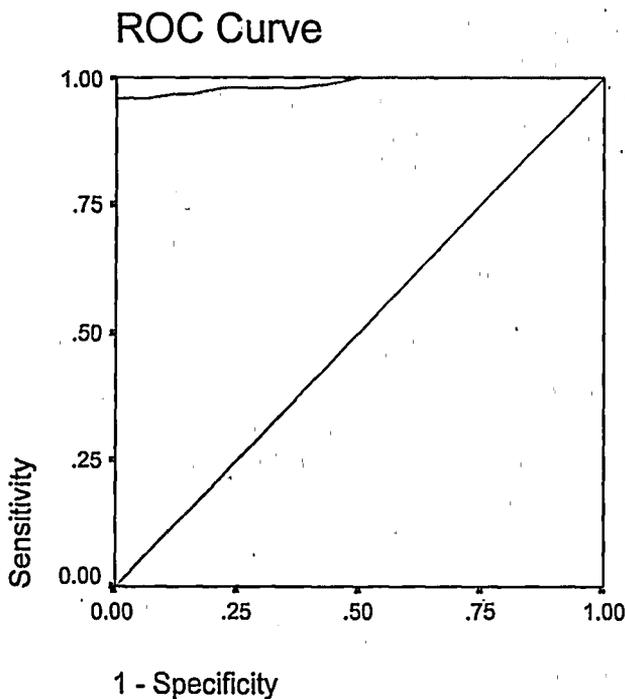

Fig. 1 Receiver operating characteristic (ROC) curve for social phobia (group I) and nonpsychiatric control (group III) participants. Diagonal segments are produced by ties.

TABLE 7
LSAS-CA Cutoff Scores and Their
Sensitivity and Specificity Values

LSAS-CA Total Score	Sensitivity	Specificity
Social Phobia vs. Nonpsychiatric Comparisons		
18	0.959	0.937
20	0.959	0.969
22.5	0.959	1.0
25	0.938	1.0
Social Phobia vs. Other Anxiety Disorders		
27	0.928	0.522
28.5	0.928	0.609
29.5	0.918	0.652
30.5	0.907	0.652

Note: LSAS-CA = Liebowitz Social Anxiety Scale for Children and Adolescents.

off for the LSAS-CA depends on its purpose. For example, if the LSAS-CA were used in medical or school settings to assist with the early identification of social anxiety disorder, a lower cutoff might be indicated, which would maximize identifying more affected cases but at the cost of a higher rate of false positives.

An uncertain issue is what scoring structure for the LSAS-CA will be most appropriate and economical. That is, do separate ratings of anxiety and avoidance provide important information or are they redundant? Are some performance anxiety items better categorized as social interaction anxiety and vice versa? Is the distinction between performance and social interaction situations, as well as between anxiety and avoidance, valid for constructing subscales? Similar to the findings of Heimberg et al. (1999) with the LSAS, the LSAS-CA anxiety and avoidance subscales were highly associated, and correlations between performance and social interaction subscales were noticeably lower than associations between subscales in a given domain (e.g., performance anxiety and performance avoidance). We also found that the LSAS-CA social interaction scores, as compared to its performance scores, had a stronger association with self-ratings on the SPAI. Correlations with other measures were similar across LSAS-CA subscales. Further investigations incorporating factor analysis will inform on the best format and scoring structure for the LSAS-CA.

Limitations

Although our findings support the reliability and validity of the LSAS-CA, some limitations should be noted. First, the generalizability of the findings is not certain.
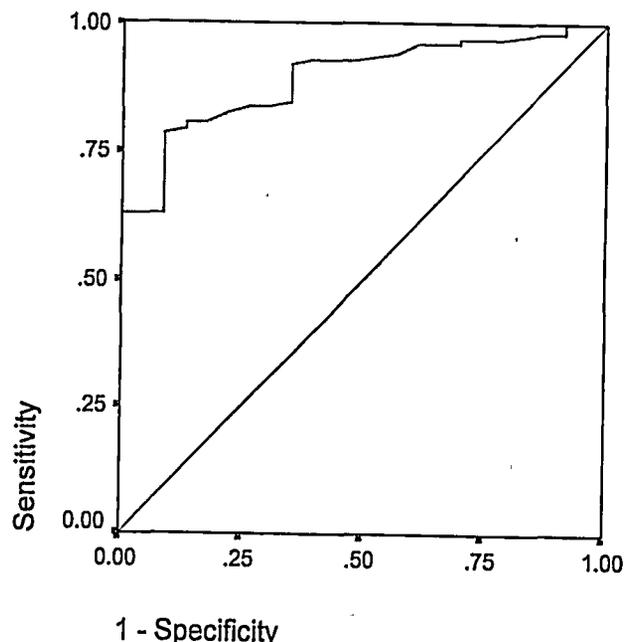
ROC Curve

Fig. 2 Receiver operating characteristic (ROC) curve for social phobia (group I) and mixed anxiety disorders (group II) participants. Diagonal segments are produced by ties.

Participants were recruited from different sources and were largely white. In addition, the nonpsychiatric group was composed of volunteers with a low consent rate and was significantly older than the two diagnostic groups. Because of our concern that the older age of the normal comparison group may have influenced our results, we examined the possibility of age differences in reporting within each diagnostic group using the lower age range of the nonpsychiatric comparison group (age 14 years) as the cutoff. There were no significant differences in LSAS-CA values of participants younger than 14 years and those 14 years of age and older in either diagnostic group, indicating that the observed differences between diagnostic groups were not a function of age.

Moreover, the *DSM-IV* social phobia criteria allow for a "generalized" classifier if the fears include most situations (American Psychiatric Association, 1994). Alternatively, a "specific" descriptor has been used if the fears are in one or a limited number of discrete social situations (e.g., public speaking, only performance situations) (Boone et al., 1999; Heimberg et al., 1993; Kessler et al., 1998). The pharmaceutical clinical trial, from which the majority of social phobia participants were obtained, did not include these descriptors. Therefore, it was not possible to examine the association of social phobia subtypes with

performance and social interaction subscales or potential subtype differences in LSAS-CA mean values and cutoff scores, as has been studied for the adult LSAS (Mennin et al., 2002).

Finally, we do not have information on the interrater reliability of the study interviewers. One indication that rater agreement was high is the strong test-retest reliability values even with the use of different raters. In other words, strong consistency is shown between two LSAS-CA administrations separated by time and completed by different interviewers, which is a stringent test of reliability.

Clinical Implications

The LSAS-CA was found to be a reliable and valid clinician-rating scale for assessing social anxiety in children and adolescents. This instrument is a quantitative measure of the severity and pervasiveness of anxiety and avoidance, which is a reflection of impairment or distress. The specificity of LSAS-CA items may be helpful in treatment planning and monitoring progress. The LSAS-CA is not meant to be used to establish a diagnosis. Further work on the LSAS-CA needs to address its treatment sensitivity, factor structure, and, possibly, the development of a briefer version.

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Community Norms on Toy Guns. Tina L. Cheng, MD, MPH, Ruth A. Brenner, MD, MPH, Joseph L. Wright, MD, MPH, Hari Cheryl Sachs, MD, Patricia Moyer, BS, Malla Rao, MEngg, MPH

Objective: Toy gun play has been associated with aggressive behavior, and it has been suggested that child health professionals counsel families on limiting exposure. Effective violence prevention counseling requires an understanding of norms regarding parental attitudes, practices, and influencing factors. Both theories of reasoned action and planned behavior emphasize that subjective norms and attitudes affect people's perceptions and intended behavior. Few normative data exist on this issue from a cross-section of families. By establishing behavioral norms and understanding the spectrum of parental attitudes, community-sensitive and community-specific interventions for violence prevention can be developed. The objective of this study was to assess community norms on the topic of toy gun play from the perspective of parents. *Methods:* An anonymous self-report assisted survey was administered to a convenience sample of parents/guardians who visited child health providers at 3 sites: an urban children's hospital clinic, an urban managed care clinic, and a suburban private practice. The parent questionnaire included questions on child rearing attitudes, practice, and sociodemographic information. *Results:* A total of 1004 eligible participants were recruited for the study; 922 surveys were completed (participation rate 92%). The 830 (90%) respondents who were parents and had complete child data were the focus of additional analysis. Regarding toy guns, 67% of parents believed that it was never "OK for a child to play with toy guns," and 66% stated that they never let their children play with toy guns. Parents who thought that it was okay for children to play with toy guns and allowed them to play with toy guns were more likely to be male parents, have male children, and be white. *Conclusions:* There is variability in norms regarding toy gun play among parents, with most discouraging toy gun play. Norms varied based on gender of the child, gender of the parent, and race. Understanding norms is a first step in designing effective community-sensitive interventions. Pediatrics 2003;111:75–79.

"They're Too Smart for That": Predicting What Children Would Do in the Presence of Guns. Susan M. Connor, PhD, Kathryn L. Wesolowski, BS

Objectives: We examined parents' beliefs about how children would react to finding guns, with particular emphasis on how parents reasoned about the children's actions. *Methods:* Based on a randomized telephone survey of Northeast Ohio residents, we focused on the 317 urban and 311 rural respondents who had children 5 to 15 years old in their homes. Respondents were asked about gun ownership and their expectations of how children would react to finding guns. Analysis examined responses in relation to various demographic and socioeconomic variables. *Results:* All respondents—regardless of gun ownership, geography, race, gender, education level, income, or child age—were equally likely (~87%) to believe that their children would not touch guns they found. Fifty-two percent of those reasoned that children were "too smart" or "knew better." Only 40% based their predictions on specific instructions they had given their children. Only 12% (15/122) of owners stored guns locked and unloaded. Only 3 of 13 variables tested were positively associated with safe storage: having a child 5 to 9 years old, having at least a 4-year college education, and having an income ≥ $65 000 per year. *Conclusion:* Results indicate that parental beliefs may effectively relieve adults of responsibility and place the burden on children to protect themselves. The implication for injury prevention is that caregivers' unrealistic expectations of children's developmental levels and impulse control may influence storage decisions or the inclination to address gun safety issues with children or other adults with whom children spend time (relatives, playmates' parents). Pediatrics 2003;111:e109–e114.