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Evaluation of the Social Interaction Self-Statement Test with a Social Phobic Population

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Abstract

The convergent and discriminant validity of the Social Interaction Self-Statement Test (SISST) were evaluated in a sample of men and women awaiting treatment for fear and avoidance of social interactions. Partial correlations revealed that negative, but not positive, self-statement scores were generally related to self-report measures of anxiety and depression. Heart rate and subjective anxiety ratings derived from a behavioral simulation of a personally relevant anxiety-provoking situation were unrelated to SISST scores. However, subjects' reports of negative thoughts obtained via the thought-listing procedure were related to the SISST negative self-statement scores, suggesting that the negative subscale of the SISST and the thought-listing procedure tap similar dimensions. Finally, the negative subscale of the SISST discriminated between social phobics whose primary fear involved social interactions and social phobics whose anxiety was confined to public-speaking situations. The findings support the use of the SISST with clinically socially anxious patients.

Keywords: social anxiety, cognitive assessment, self-statements, social phobia

In the last few years, cognitive-behavioral therapists have emphasized the importance of self-referent speech (Kendall & Hollon, 1981). For example, self-statements are believed to

contribute to the maintenance of social anxiety by facilitating untoward emotional reactions and/or inhibiting performance in social interactions (e.g., Beck & Emery, 1985; Cacioppo, Glass, & Merluzzi, 1979). Although several studies have examined the effectiveness of cognitive-behavioral procedures in the treatment of social anxiety (e.g., Glass, Gottman, & Schmurak, 1976; Heimberg, Madsen, Montgomery, & McNabb, 1980; Kanter & Goldfried, 1979; reviewed by Heimberg, Dodge, & Becker, 1987), analysis of the mechanisms of change has been limited by the inadequacy of our cognitive assessment techniques. Although substantial effort has been devoted to the development of cognitive assessment procedures, validation studies have typically been conducted with college students. Little validation information or normative data have been published for clinical samples.

Two primary approaches have been taken to the assessment of cognitive processes related to social anxiety—thought-listing and self-statement endorsement. The thought-listing procedure requires subjects to directly report their thoughts before, during, or after the problematic situation. Several studies have demonstrated that high and low socially anxious individuals can be discriminated on the basis of their cognitive reports (Cacioppo et al., 1979; Heimberg, Acerra, & Holstein, 1985; Heimberg, Nyman, & O'Brien, 1987). The endorsement method described by Kendall and Hollon (1981) utilizes a questionnaire format that presents empirically derived self-statements typical of the target population in specific situations or mood states. Self-statement inventories have been developed and validated for such concerns as nonassertiveness (Heimberg, Chiauzzi, Becker, & Madrazo-Peterson, 1983; Schwartz & Gottman, 1976), depression (Hollon & Kendall, 1980), adjustment to stressful medical procedures (Kendall et al., 1979), and interview anxiety (Heimberg, Keller, & Peca-Baker, 1986). Glass, Merluzzi, Biever, and Larsen (1982) have developed a similar inventory for the assessment of self-statements related to social anxiety.

The Social Interaction Self-Statement Test (SISST; Glass et al., 1982) is a 30-item questionnaire that assesses the frequency of positive (facilitative) and negative (inhibitory) self-statements in heterosexual social situations. Subjects use a 5-point scale to rate how frequently they experience each thought during an immediately previous role-played interaction. In a series of psychometric analyses, Glass et al. demonstrated the reliability and concurrent validity of the SISST subscales. High socially anxious individuals obtained higher negative and lower positive self-statement scores than low socially anxious individuals. SISST-negative scores were inversely related to ratings of social skill and positively related to ratings of anxiety obtained from subjects, confederates, and judges. SISST-positive scores were positively related to self- and judges' evaluations of social skill and inversely related to self-ratings of anxiety.

Zweig and Brown (1985) investigated the validity of the scale when it was completed following an imaginal rather than a role-played interaction. Their modified instructions directed subjects to complete the questionnaire after reading a description of a heterosocial situation and imagining themselves as participants. Both subscales demonstrated adequate internal consistency and correlated in the expected directions with three criterion measures. This alternative method of administering the SISST not only appears reliable and valid but offers a more economical approach to measuring self-statements.

In an effort to examine the SISST in a clinical population, Merluzzi, Burgio, and Glass (1984) administered the SISST and the MMPI to a heterogeneous sample of 92 psychiatric

outpatients. Administration of the SISST occurred without a role-play, but subjects were asked to rate the probable frequency of each thought as they imagined a recent social interaction with an acquaintance. The findings most relevant to this study were significant correlations between shyness ratings (clinician and self-ratings) and both subscales of the SISST. Clinicians' global assessments regarding the severity of shyness were associated with patients' self-talk.

Although the Merluzzi et al. (1984) study supports the use of the SISST with clinical populations, it did not address the specific role of self-statements in social anxiety. As described earlier, the SISST was originally designed to assess cognitions reported by socially anxious individuals prior to, during, or following social interactions. Merluzzi and colleagues investigated the relationship between the SISST and a variety of other measures, but the subjects were not necessarily socially anxious. Therefore, to further the goal of validating cognitive measures for use in social anxiety research and treatment, the present study evaluated the SISST with individuals awaiting treatment for social phobia.

The goal of this study was to explore the relationship between self-statements and anxiety in a clinically relevant population by comparing the positive and negative subscales of the SISST to several criterion measures. It was expected that self-report measures of social anxiety would be positively related to SISST-negative and inversely related to SISST-positive scores. However, in light of the relative independence of the cognitive, physiological, and behavioral response systems in anxiety (Lang, 1958; Rachman & Hodgson, 1974), it was not expected that SISST scores would be related to physiological measures of anxiety. In fact, Turner and Beidel (1985) have reported that socially anxious students' SISST scores were unrelated to systolic blood pressure during role-plays of social interactions and impromptu speeches. We sought to further evaluate this phenomenon by examining the relationship between the SISST subscales and subjects' heart rate during a simulation of their phobic situation. Following the suggestion of Kendall and Hollon (1981), we also examined the convergent validity of SISST scores by comparing them to self-statement data obtained with the thought-listing procedure. Finally, we assessed the discriminant validity of the SISST by comparing the scores of social phobics seeking treatment for fear and avoidance of social interactions with individuals whose phobia was confined to public-speaking situations.

Method

Subjects

Subjects were 13 women and 15 men aged 20 to 42 ($M = 27.83$, $SD = 5.29$) who sought treatment at the Center for Stress and Anxiety Disorders, State University of New York at Albany, for anxiety in social interactions. Most subjects listed heterosexual interactions as their primary fear, and all listed heterosexual interactions as one of their treatment targets. One-third of the subjects had completed college, and 73% had never been married. All subjects were screened with the Anxiety Disorders Interview Schedule (ADIS; DiNardo, O'Brien, Barlow, Waddell, & Blanchard, 1983) or its recent revision (Barlow, 1985) and received a primary diagnosis of Social Phobia according to DSM-III criteria (American Psychiatric Association, 1980). The ADIS is a structured interview with demonstrated

reliability for the diagnosis of anxiety disorders ($\kappa = .91$ for social phobia) (Barlow, 1985). Interviews were conducted by licensed clinical psychologists or advanced doctoral students. The ADIS interviewer also rated each subject on the Phobic Severity Rating Scale developed by Watson and Marks (1971). Only subjects reporting moderate to severe impairment in daily functioning, as indicated by a severity rating of 4 or greater on the 0-to-8 scale, participated in the study ($M = 5.88$, $SD = 1.07$). Prior to entering treatment, subjects underwent an extensive assessment procedure that included a self-report questionnaire battery and a behavioral simulation of a personally relevant anxiety-provoking situation.

Questionnaires

Each subject completed both the negative and positive subscales of the SISST. The original instructions of Glass et al. (1982) were modified to delete references to a role-played social situation. Subjects were simply asked to rate how frequently they may have experienced each thought before, during, or after interaction with the opposite sex on a scale from 1 (hardly ever had the thought) to 5 (very often had the thought).

In addition to the SISST, each subject completed a variety of questionnaires assessing anxiety and depression. These included two measures of social anxiety—the Social Avoidance and Distress Scale (SADS; Watson & Friend, 1969) and the Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969)—and one measure of public speaking anxiety—the Personal Report of Confidence as a Speaker (PRCS; Paul, 1966). The trait portion of the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970) was used to assess generalized anxiety, and depression was assessed with the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). Subjects also completed the Self-Consciousness Scale (SCS; Fenigstein, Scheeier, & Buss, 1975) as a measure of their dispositional tendency to focus on either the internal aspects of themselves (private self-consciousness subscale) or how they appear to others (public self-consciousness subscale). The SCS also contains a third subscale, which assesses social anxiety.

Subjects were given the questionnaire packets when they came to the clinic for the behavioral simulation described below. They completed the questionnaire measures at home prior to the start of treatment.

Behavioral Simulation

All subjects participated in an individualized behavioral simulation of an anxiety-provoking situation. Each simulation was selected on the basis of questionnaire data and initial interviews to recreate a situation from the individual's life that typically evoked high levels of anxiety. The simulations included such situations as initiating a conversation with a member of the opposite sex or talking with two strangers at a party. Graduate and undergraduate assistants served as role-play partners.

Heart Rate

Subjects' physiological arousal in anticipation of the simulation and during the simulation itself was assessed with a portable heart rate monitor (Exersentry III, Model No. 51330, by Respironics, Inc.), as described in detail by Heimberg, Gansler, Dodge, and Becker (1987). Heart rate assessment consisted of three phases. After assuring that the equipment was

functioning properly, subjects were asked to stand quietly for a 3-minute adaption period. During the next 3 minutes (the anticipatory phase), the experimenter described the topic of the upcoming simulation and asked the subject to think about it. Finally, subjects were escorted to another room equipped with a video camera for the actual simulation. This final phase, referred to as the performance phase, lasted 4 minutes.

Subjective Anxiety

In addition to heart rate, subjective anxiety in response to the simulation was assessed. At 1-minute intervals, subjects rated their anxiety on a 0-to-100 Subjective Units of Discomfort Scale (SUDS; Wolpe & Lazarus, 1966). This resulted in three anticipatory and five performance SUDS ratings, which were averaged separately across each phase.

Thought Listing

Cognitive assessment utilized the thought-listing procedure used previously with socially anxious college students (cf. Cacioppo et al., 1979; Heimberg et al., 1985). Immediately following the simulation, subjects were given prepared forms and asked to record the thoughts they experienced during the anticipatory and performance phases, ignoring spelling, grammar, and punctuation. Graduate assistants, unaware of the hypotheses of this study, categorized the thoughts as positive (facilitating relaxed and effective performance), negative (hindering relaxed and effective performance), or neutral. Interrater agreement for a sample of 17 subjects was 86% for positive thoughts and 95% for negative thoughts (Kappa = .79 and .93, respectively).

Results

Subjects' mean score on the negative subscale of the SISST was 54.75, with a standard deviation of 12.68. On the positive subscale subjects achieved a mean of 36.21, with a standard deviation of 11.44. The two subscales were significantly correlated, $r = -.67$, $p < .001$.

Pearson product-moment correlations were calculated to examine the relationship between the positive and negative subscales of the SISST and the self-report questionnaires, phobic severity, and the behavioral simulation measures. Since the SISST subscales were highly correlated, partial correlations controlling for the other subscale were calculated in the event of a significant zero-order correlation. This procedure allowed the examination of the independent effects of each SISST subscale.

Self-Report Questionnaires

The correlations between the SISST subscales and the self-report measures are presented in Table I. As expected SISST-negative was related to most other questionnaires, including the SADS, the PRCS, the FNE, the STAI, the BDI, and the public self-consciousness and social anxiety subscales of the SCS. Although partialing out the effects of SISST-positive reduced the magnitude of these correlations, four of the seven (with the SADS, FNE, BDI, and SCS-public) remained significant. Awareness of the internal aspects of oneself as measured by the private self-consciousness subscale of the SCS was not related to negative self-statements.

Table I. Correlations of Positive and Negative Self-Statement Scores with Self-Report Measures^a

	SISST-Positive	SISST-negative
SADS	-.58 ^d (-.30) ^b	.60 ^d (.35) ^c
PRCS	-.51 ^d (-.25)	.52 ^d (.28)
FNE	-.57 ^d (-.27)	.62 ^d (.39) ^c
STAI	-.32 ^c (-.08)	.40 ^c (.26)
BDI	-.20	.39 ^c (.35) ^c
SCS-private	.08	.03
SCS-public	-.28	.44 ^c (.35) ^c
SCS-social anxiety	-.60 ^d (-.43) ^c	.48 ^d
% of negative thoughts listed	.07	.39 ^c (.59) ^d
% of positive-thoughts listed	-.08	-.18

a. *N*s vary from 24 to 28, owing to missing data. SADS = Social Avoidance and Distress Scale, PRCS = Personal Report of Confidence as a Speaker, FNE = Fear of Negative Evaluation Scale, STAI = State-Trait Anxiety Inventory, BDI = Beck Depression Inventory, SCS = Self-Consciousness Scale.

b. Coefficients in parentheses represent partial correlations controlling for the other SISST subscale that were calculated in the event of significant zero-order correlations.

c. $p < .05$

d. $p < .01$

Although there were some significant zero-order correlations between the self-report anxiety measures and SISST-positive, an examination of the partial correlations reveals that, with the exception of SCS-social anxiety, these effects were generally mediated by SISST-negative. Positive self-statements were only indirectly related to the SADS, FNE, PRCS, and STAI.

Phobic Severity

Clinicians' ratings of phobic severity were not related to either SISST subscale. Although the zero-order correlation between SISST-negative and phobic severity was significant (zero-order $r = .32$, $p < .05$), the partial correlation was not (partial $r = .18$, n.s.). The zero-order correlation between SISST-positive and phobic severity was not significant, $r = -.28$, n.s.

Behavioral Simulation Measures

Heart Rate and SUDS

Mean heart rate (in beats per minute) and mean SUDS were calculated separately for the anticipatory and performance phases of the simulation. There was a trend for anticipatory heart rate to be positively related to SISST-negative (zero-order $r = .29$, $p < .10$), but not to SISST-positive (zero-order $r = -.07$, n.s.). Neither performance heart rate nor SUDS ratings in either phase was significantly correlated with the SISST subscales (zero-order r s = $-.06$ to $.17$, n.s.).¹

Thought Listing

The percentage of listed thoughts classified as negative ($M = 79.12$, $SD = 20.77$) correlated positively with negative self-statements, and this relationship remained significant after

partialing out the effects of positive self-statements.² Percentage of negative thoughts listed was unrelated to SISST-positive. Neither SISST subscale was related to the percentage of positive ($M = 6.35$, $SD = 10.07$) thoughts listed by subjects (See Table I).

Comparison of Social Phobic Subtypes

The SISST subscale scores of the 28 subjects described in the Method section whose primary phobia involved social interaction were compared to 17 other social phobics seeking treatment for anxiety about speaking in public who also took part in our treatment program. Since public-speaking phobics were initially rated as less severe than interaction phobics ($M_s = 5.05$ and 5.88 , respectively; $t(43) = 2.69$, $p < .01$), analyses of covariance with phobic severity as the covariate were utilized for comparisons between groups. Interaction phobics scored higher than public-speaking phobics on the negative self-statement subscale of the SISST ($F(1, 41) = 8.20$, $p < .007$). The groups did not differ significantly on the positive self-statement subscale ($F(1, 41) < 1.0$).

Discussion

This study examined the usefulness of the SISST with a social phobic population by assessing concurrent, discriminant, and convergent validity. Not surprisingly, our clinical sample endorsed more negative and fewer positive self-statements than previous college samples (e.g., Glass et al., 1982; SISST-positive $M = 49.62$, SISST-negative $M = 38.00$), demonstrating the importance of assessing the properties of a scale with a clinical population following its development with an analogue sample.

Previous studies with college students have demonstrated significant relationships between both SISST subscales and self-report measures of social anxiety. However, in this study, negative self-statements were much more likely to be related to social anxiety and depression than positive self-statements. Kendall and Hollon (1981) and Heimberg and colleagues (1986) have suggested that negative self-statements may play a more important role in psychopathology than positive self-statements. More recently, Schwartz and Garamoni (1986) have asserted that successful emotional adjustment may be related to a proper but asymmetrical balance between positive and negative self-statements. They suggest that the ratio of positive self-statements to the sum of positive and negative self-statements should approximate .62. Increasing deviations from this figure may be associated with increasing degrees of psychopathology. Using the SISST scores of the social interaction phobics results in a score of .398. According to Schwartz and Garamoni, this score represents a "negative dialogue," a state of mind in which negative thoughts and feelings predominate and which is associated with moderate pathology. Using thought-listing scores to calculate the ratio leads to similar but more extreme conclusions.

As discussed above, cognitive-behavioral theory (e.g., Lang, 1968; Rachman & Hodgson, 1974) states that the cognitive, physiological, and behavioral components of anxiety are relatively independent. Therefore, it was predicted that a cognitive assessment device such as the SISST would not be highly related to measures of physiological arousal. Although there was one nonsignificant trend, social phobics' SISST scores were generally unrelated to heart rate prior to or during the behavioral simulation. This finding and Turner and

Seidel's (1985) report that SISST scores were unrelated to systolic blood pressure suggest that the SISST may assess cognitive activity that is independent of physiological reactivity. However, these findings do not take individual specificity or variability of physiological responding into account. Clearly, more detailed concurrent assessment of multiple physiological and cognitive responses to anxiety-provoking situations is needed before firm conclusions can be drawn.

Comparison of the two cognitive assessment procedures—thought listing and self-statement endorsement—suggests that, at least for negative self-statements, both were tapping the same underlying construct. A strong relationship between two unique assessment techniques administered at two different times provides converging evidence that social phobics report consistently on their cognitive activity under varying stimulus conditions. As a result, cognitive-behaviorists can be more confident that their cognitive assessments reflect true cognitive activity rather than measurement artifact.

SISST-negative scores successfully discriminated between social phobics who fear and avoid social interactions and social phobics who fear and avoid public speaking situations. Interaction phobics endorsed significantly more negative self-statements than public-speaking phobics. Thus, the negative subscale of the SISST not only appears to distinguish between socially anxious and nonanxious groups but may also be useful in the identification of social phobic subtypes. This is particularly relevant in light of new DSM-III-R (Work Group to Revise DSM-III, 1986) criteria for social phobia, which define a "generalized" subgroup comparable to our interaction phobics who exhibit anxiety in most or all social situations. The differences between these subtypes may warrant further examination.

Somewhat surprisingly, the SISST subscales were unrelated to clinician ratings of phobic severity or subjective anxiety before or during the behavioral simulation. However, neither the phobic severity nor the SUDS ratings specifically focus on cognitive distress. The phobic severity rating is based on clients' reports of the extent to which anxiety and avoidance interfere with their functioning, and the SUDS rating is a subjective assessment of an individual's total anxiety experience in a specific situation. These more generalized ratings may be based on behavioral and physiological, as well as cognitive, aspects of anxiety and are therefore less likely to be strongly related to a strictly cognitive measure such as the SISST. It should also be noted that subjects with low scores on the severity rating were excluded, and it is possible that a restricted range of severity scores attenuated the correlation between this rating and SISST scores. Otherwise, it remains unclear why Glass et al. (1982) found correlations between the SISST subscales and judges' ratings of anxiety and we did not.

In viewing our findings, one may question whether method variance might account for our results. Significant partial correlations occurred most frequently between the SISST and other self-report measures. The correlations between SISST scores and non-self-report measures were generally not significant. However, several considerations suggest otherwise. First, significant correlations were much more frequent for SISST-negative than SISST-positive. Second, SISST-negative was significantly related to two measures of social anxiety (SADS and FNE) but not to a measure of public-speaking anxiety (PRCS), and this relationship was supported by the difference between interaction and public-speaking

phobics. Third, the correlation between SISST-negative and thought-listing scores was robust despite substantial differences in method of administration.

In summary, researchers investigating the role of self-statements in the development and maintenance of social anxiety should be encouraged by the convergent and discriminant validity of the SISST demonstrated in this study. Whether or not the SISST (or any cognitive assessment device) actually reflects the thoughts occurring in heterosocial situations remains an elusive empirical question. However, this study represents another step in the validation process and offers increased optimism for the utility of cognitive assessment measures. Future research in social anxiety should employ multiple methods of cognitive assessment in order to further our understanding of these measures and the role of negative self-statements in anxiety and performance.

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Notes

1. All analyses involving heart rate data were also conducted with heart rate computed as a change score from baseline. This analysis did not affect the outcome of the comparisons with the SISST subscales.
2. The partial correlation was .59. When the magnitude of the partial correlation exceeds that of the zero-order correlation, the presence of a suppressor variable is indicated. According to Cohen and Cohen (1983), the suppressor effect is due to the partialing out of irrelevant variance contributed by a third variable (SISST-positive) that masks the relationship between the first two variables (SISST-negative and negative thoughts). For the hypotheses under examination in this paper, the significant fact is not that the partial correlation is larger than the zero-order correlation but that it is not smaller.

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