

## **Psychometric Evaluation of a Written Stimulus Presentation Format for the Social Interaction Self-Statement Test<sup>1</sup>**

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*This study reports on the psychometric characteristics of an alternate format for the Social Interaction Self-Statement Test (SISST) developed by Glass, Merluzzi, Biever, and Larsen (1982). The original SISST instructed subjects to rate the frequency with which they experienced each of 15 positive and 15 negative thoughts after participating in a live heterosocial interaction or after responding to audiotaped stimulus situations. In this study, subjects were asked to rate the frequency of occurrence of the 30 self-statements after reading a description of a heterosexual situation and imagining themselves participating in it. Reliability analyses revealed this form of the SISST to have adequate internal consistency reliability and test-retest stability. Validity data indicated significant correlations with measures of social anxiety, fear of negative evaluations, and irrational beliefs, and non-significant correlations with a measure of social desirability. Also, nearly equivalent reliability and validity data were obtained from subjects who read and responded to same or contextually different stimulus situations at each test-retest period.*

The importance of cognitive assessment to the advancement of research on cognitive theory and therapy has been emphasized by a number of researchers in recent years (e.g., Glass & Merluzzi, 1981; Goldfried, 1979; Kendall & Korgeski, 1979). The availability of convenient and psychometrically sound measures of theoretically important cognitive variables would enable research-

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ers to examine the role of specific cognitive processes in the development and maintenance of both normal and pathological states (Kendall & Korgeski, 1979). Equally important, such instruments would allow clinical researchers to assess whether the behavioral and emotional changes often found following cognitive intervention do, in fact, covary with changes in hypothesized and targeted cognitive processes (Glass & Merluzzi, 1981; Kendall & Korgeski, 1979).

In recent years, several studies have appeared in the literature reporting on the development and psychometric evaluation of assessment instruments designed to provide measures of cognitive processes assumed to contribute to specific normal and pathological conditions. Among these have been instruments developed to provide quantitative indices of covert self-statements identified to be associated with depression (Hollon & Kendall, 1980), assertiveness (Schwartz & Gottman, 1976), creativity (Henshaw, 1978), and coping with stressful medical procedures (Kendall et al., 1979). Glass et al. (1982) reported on the development and validation of a self-statement instrument for heterosexual social anxiety: the Social Interaction Self-Statement Test (SISST). Such an instrument appears both timely and necessary, given the paucity of attention in outcome research that has been devoted to assessing changes in cognitive variables concomitant with changes in social anxiety. For example, in their review of 49 controlled therapy outcome studies, Glass and Merluzzi (1981) found that only 13 studies testing cognitive interventions in the treatment of social-evaluative anxiety actually assessed cognitive variables, and all but 5 relied solely on one cognitive measure (most often the Irrational Beliefs Test; Jones, 1969). To a great extent, this limited amount of attention to assessing changes in cognitive processes in outcome research may stem from a distinct lack of valid, convenient, and easily administered cognitive measures.

The SISST is a 30-item self-report measure consisting of 15 positive and 15 negative self-statements and appears to have adequate split-half reliability and concurrent validity, correlating significantly with independent measures of social skill, social anxiety, and irrational beliefs. Further, Glass et al. (1982) reported reliability and validity data using two different methods for obtaining SISST scores. In the first, subjects rated the frequency they had each of the 30 thoughts (self-statements) immediately after completing a 3-minute live interaction with a confederate of the opposite sex. In the second, subjects completed the SISST after being presented with 16 audiotaped social situations that required overt verbal responses from them.

The purposes of the present study were twofold. First, it was designed to replicate the results reported by Glass et al. (1982) using a potentially simpler method of obtaining SISST scores that instructed subjects to complete the SISST after reading a description of a heterosocial situation and imagin-

ing themselves participating in it. Second, it sought to extend the Glass et al. (1982) results by (a) collecting test-retest reliability data on the instrument, (b) comparing test-retest reliability and concurrent validity data obtained from subjects who received same and different written test stimuli, (c) assessing the relationship of SISST scores to a measure of social desirability, and (d) adding a third criterion measure (Fear of Negative Evaluations) to assess the relationship between SISST scores and concurrent levels of apprehension about being evaluated by others.

## METHOD

### *Subjects*

Subjects were 86 (42 men and 44 women) introductory psychology students at the University of Minnesota who received course credit for their participation. Their average age was 20.13 years ( $SD = 2.42$ ) and most were single (single = 79, married = 6, divorced = 1). The class standing of the subjects in this sample was distributed as follows: freshmen = 16, sophomores = 43, juniors = 21, seniors = 6.

### *Procedure and Instruments*

Subjects were administered a battery of five questionnaires in eight groups (varying in size from 8 to 20) three times during a single academic quarter. There was a 2-week interval between the first and second administrations and a 3-week interval between the second and third testing periods. The questionnaire battery, distributed in five different random orders to control for order effects, included (a) the Social Avoidance and Distress Scale (SAD; Watson & Friend, 1969), which measures tendencies to avoid or experience anxiety in social situations; (b) the Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969), which focuses on the anticipation of negative evaluations by others and fears of evaluative situations; (c) the Irrational Beliefs Test (IBT; Jones, 1969), which assesses the extent to which individuals endorse 10 irrational beliefs described by Ellis (1962); (d) the Marlowe-Crowne Social Desirability Scale (MC; Crowne & Marlowe, 1960), which measures the degree to which people endorse socially desirable behaviors; and (e) the SISST.

The questionnaire battery was identical at all three administrations with the exception of the social situation preceding the SISST. All 86 subjects were given the same social situation at the first testing period. However, at the

second and third administrations subjects were randomly divided into two groups. Half of the men ( $n = 21$ ) and half of the women ( $n = 23$ ) from the original sample were given the same social situations upon which to base their SISST responses at each of the subsequent testing periods ("same" sample). The second group received a different stimulus situation at each administration ("different" sample). Two female subjects in the "same" sample dropped out of the study before completing all three testing periods. Their data were eliminated, leaving a total of 42 (21 men and 21 women) subjects in the "same" sample and 44 (21 men and 23 women) in the "different" group.

### *SISST*

The SISST employed in the present study used the same 15 positive and 15 negative self-statements developed by Glass et al. (1982) and instructed subjects, after reading a description of one of three heterosocial situations, to rate on a 5-point scale how frequently they had each thought while reading and imagining themselves in the situation (1 = hardly ever, 5 = very often). The situations, adopted from Goldfried and Sobocinski (1975) and Twentyman and McFall (1975), all involved initiating a conversation with an attractive member of the opposite sex under three different sets of circumstances. Subjects in the "same" sample responded at all three testing periods to a situation description involving being introduced and having to initiate a conversation at a party (Goldfried & Sobocinski, 1975). The situations serving as test stimuli for the "different" sample of subjects involved having to initiate a conversation with a member of the opposite sex after being introduced in a college library (Time 2), and having to initiate a conversation after sitting with a member of the opposite sex at a crowded university or local cafeteria (Time 3) (based on items from the Survey of Heterosocial Interactions; Twentyman & McFall, 1975). All situations and the SISST self-statements had male and female forms that differed only in the gender of pronouns and in references to males and females.<sup>3</sup> Total frequency of positive self-statement and total frequency of negative self-statement scores were calculated for each subject by summing ratings over the 15 positive and 15 negative statements, respectively.

<sup>3</sup>Copies of this version of the SISST, including instructions and situation descriptions, are available from the first author upon request.

## RESULTS

*Sample Characteristics*

Independent sample *t* tests and Chi-square analyses revealed no significant differences in demographic characteristics (age, sex, year in school, and marital status) of subjects who received the same social situation at each administration of the SISST and those who received contextually different social situations as test stimuli at each testing period (all *p*'s > .10). On questionnaire criterion measures (FNE, SAD, IBT) and SISST scale scores, independent sample *t* tests also revealed no significant differences between groups at any testing period (all criterion measure *p*'s > .07; all SISST *p*'s > .27). Thus, it appears that the two groups were comparable and that the use of same or different social situations as test stimuli did not influence differentially the obtained SISST positive and negative self-statement scores. Group means and standard deviations for all measures are presented in Table I.

*Reliability*

Cronbach's alpha was used to estimate the reliability of both scales of the SISST for the total sample of 86 subjects at each testing period. At initial testing, calculations of coefficient alpha yielded a correlation of .85 for

**Table I.** Means and (Standard Deviations) on SISST Scales and Criterion Questionnaires<sup>a</sup>

Questionnaires	Testing periods				
	Time 1	Time 2		Time 3	
	Total	Same	Different	Same	Different
FNE	13.31 (7.52)	14.29 (8.50)	12.07 (7.31)	13.17 (8.12)	10.68 (7.61)
SAD	8.10 (6.10)	6.45 (4.63)	6.91 (6.78)	6.98 (5.52)	5.91 (6.89)
IBT	294.00 (26.82)	292.69 (28.66)	286.20 (28.64)	287.55 (32.00)	279.59 (33.55)
SISST-Positive	50.17 (9.11)	52.50 (9.86)	52.11 (9.27)	53.26 (9.14)	51.61 (9.73)
SISST-Negative	34.78 (11.01)	34.83 (13.19)	31.84 (11.13)	33.83 (13.27)	30.93 (11.23)

<sup>a</sup>FNE = Fear of Negative Evaluations; SAD = Social Avoidance and Distress Scale; IBT = Irrational Beliefs Test; SISST-Positive = Social Interaction Self-Statement Test – Positive Self-Statements; SISST-Negative = Social Interaction Self-Statement Test – Negative Self-Statements; Total = total sample (*n* = 86); Same = "same" sample (*n* = 42); Different = "different" sample (*n* = 44).

positive statements and .91 for negative statements. At subsequent testing sessions when approximately one-half of the subjects completed the SISST using different situations, alpha coefficients were again quite satisfactory (Time 2: positive self-statements = .89, negative self-statements = .94; Time 3: positive self-statements = .88, negative self-statements = .95).

Test-retest reliability coefficients were calculated separately for subjects who received same and different test stimuli during repeated testing and revealed substantial temporal stability at both 2-week and subsequent 3-week test-retest intervals. For subjects who received the same written social situations, test-retest coefficients were .72 for positive self-statements and .73 for negative self-statements over the initial 2-week test-retest period, and .76 for positive self-statements and .89 for negative self-statements over the 3-week interval between the second and third testing sessions. Similar results were obtained for subjects who received contextually different test stimuli (2-weeks: positive self-statements = .77, negative self-statements = .81; 3 weeks: positive self-statements = .79, negative self-statements = .89).

### *Validity*

*Discriminant Validity.* Means and standard deviations on the SISST scales for low ( $SAD \leq 6$ ) and high ( $SAD \geq 7$ ) socially anxious subjects (group assignment based on a median-split procedure) at each testing period are displayed in Table II, along with values obtained from independent sample *t* test comparisons of the criterion groups on each scale. Similar to Glass et al. (1982), high-anxious subjects obtained significantly lower positive self-statement scores and significantly higher negative self-statement scores than did low-anxious subjects at initial testing. These results were replicated at the second and third testing periods.

However, unlike the Glass et al. (1982) results that revealed significant gender differences on both positive and negative statement scores and SAD scores, our results indicated significant sex differences for negative self-statements,  $t(84) = 1.97, p < .05$ , and SAD scores,  $t(84) = 2.54, p < .01$ , only. Men reported significantly more frequent negative thoughts and higher levels of social anxiety than did women, but no differences in positive thoughts.

*Concurrent Validity.* Pearson product-moment correlation coefficients were calculated among all questionnaires at each testing period to provide estimates of the relationship between SISST positive and negative self-statement indices and independent measures of social anxiety, fear of negative evaluations, and irrational beliefs. Focusing first on the total sample of 86 subjects tested with identical situations at the first testing session, all corre-

**Table II.** Means and (Standard Deviations) on SISST Scales for High and Low Socially Anxious Subjects<sup>a</sup>

SISST scales	Anxiety criterion groups		<i>t</i> (84)
	Low anxious	High anxious	
Time 1			
Positive	54.3 (7.9)	46.1 (8.4)	4.66 <sup>b</sup>
Negative	28.0 (8.4)	41.5 (9.0)	7.19 <sup>b</sup>
Time 2			
Positive	56.8 (7.9)	48.2 (8.9)	4.82 <sup>b</sup>
Negative	26.4 (8.6)	40.1 (11.5)	6.56 <sup>b</sup>
Time 3			
Positive	56.0 (8.1)	48.8 (9.4)	4.63 <sup>b</sup>
Negative	25.9 (8.2)	38.8 (12.3)	4.92 <sup>b</sup>

<sup>a</sup>Low anxious:  $n = 43$ , SAD  $\leq 6$ ; High anxious:  $n = 43$ , SAD  $\geq 7$ ; Positive = Social Interaction Self-Statement Test – Positive Self-Statements; Negative = Social Interaction Self-Statement Test – Negative Self-Statements.

<sup>b</sup> $p < .001$ .

lations were significant in a predicted direction. Positive self-statements correlated  $-.32$  ( $p < .001$ ) with fear of negative evaluations,  $-.57$  ( $p < .001$ ) with social avoidance and distress, and  $-.20$  ( $p < .05$ ) with irrational beliefs. Negative self-statements correlated positively with all three criterion measures: FNE =  $.58$ , SAD =  $.74$ , IBT =  $.37$  (all  $p$ 's  $< .001$ ).

Correlations calculated separately for the "same" and "different" samples at the subsequent two testing periods are displayed in Table III. Although the correlations tend to be somewhat higher for subjects who used different social situations to complete the SISST, all but two correlations for both samples were statistically significant and in the expected direction. No significant correlations were obtained between Marlowe-Crowne Social Desirability Scale scores and SISST scores for total or separate samples at any testing period, indicating that SISST scores were not related to a tendency to present oneself in a socially desirable manner.

Finally, intercorrelations between the positive and negative self-statement scales of the SISST yielded coefficients of  $-.48$ , for the total sample at Time 1,  $-.41$ , for the "same" sample at Time 2,  $-.66$ , for the "different" sample at Time 2,  $-.32$ , for the "same" sample at Time 3, and  $-.58$ , for the "different" sample at Time 3 (all  $p$ 's  $< .001$ ).

Table III. Correlations of SISST Scale Scores and Criterion Variables for Total, Same, and Different Samples<sup>a</sup>

Criterion measures	Time 1			Time 2			Time 3								
	Positive	Negative		Same	Positive		Same	Negative		Same	Positive		Same	Negative	
			Different		Different	Different		Different	Different		Different	Different		Different	Different
FNE	-.32 <sup>c</sup>	.58 <sup>d</sup>	-.47 <sup>d</sup>	-.24 <sup>b</sup>	.41 <sup>d</sup>	.64 <sup>d</sup>	-.15	-.56 <sup>d</sup>	.67 <sup>d</sup>	.64 <sup>d</sup>	-.15	-.45 <sup>d</sup>	-.66 <sup>b</sup>	.69 <sup>d</sup>	.67 <sup>d</sup>
SAD	-.57 <sup>d</sup>	.74 <sup>d</sup>	-.71 <sup>d</sup>	-.59 <sup>d</sup>	.28 <sup>b</sup>	.75 <sup>d</sup>	-.16	-.29 <sup>b</sup>	.33 <sup>b</sup>	.31 <sup>b</sup>	-.16	-.14	-.16	.15	.03
IBT	-.20 <sup>b</sup>	.37 <sup>c</sup>	-.30 <sup>b</sup>	-.26 <sup>b</sup>	.64 <sup>d</sup>	.34 <sup>c</sup>	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01
MC	.01	-.12	.00	.00	-.11	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01	-.01

<sup>a</sup>FNE = Fear of Negative Evaluations; SAD = Social Avoidance and Distress Scale; IBT = Irrational Beliefs Test; MC = Marlowe-Crowne Social Desirability Scale; Positive = Social Situation Self-Statement Test - Positive Self-Statements; Negative = Social Interaction Self-Statement Test - Negative Self-Statements; Same = "same" sample ( $n = 42$ ); Different = "different" sample ( $n = 44$ ).

<sup>b</sup> $p < .05$ .

<sup>c</sup> $p < .01$ .

<sup>d</sup> $p < .001$ .

## DISCUSSION

The results of this investigation revealed that a version of the SISST employing written social situations as test stimuli (a) had adequate internal consistency reliability, (b) correlated in expected directions with independent measures of social anxiety, fear of negative evaluations, and irrational beliefs, and (c) did not correlate with a measure of social desirability. In addition, the SISST demonstrated substantial test-retest stability and acceptable concurrent validity regardless of whether identical or contextually different social situations were used as test stimuli. Its use in the assessment of cognitions related to heterosocial anxiety, therefore, appears to be tentatively justified. Although the sensitivity of this form of the SISST to change as a result of cognitive intervention was not investigated, its demonstrated temporal stability across three types of stimulus situations in the absence of planned interventions suggests that its use in outcome studies for making pretreatment to posttreatment comparisons is justified.

It must be emphasized that the test stimuli employed in the present validation effort all involved situations requiring subjects to imagine themselves initiating conversations in heterosexual situations. At face value, then, they all presented subjects with similar task demands (i.e., conversation initiation) in different situational contexts (i.e., a party, a library, and a cafeteria). Thus, the stable results obtained by subjects who responded to contextually different situations may have been primarily due to the similar task demands inherent in all three situations. Stated simply, the situations might have been contextually different but functionally identical. Nonetheless, it appears that subjects in the present study responded similarly to the SISST across three different situations in which conversation initiation was required and that these situations may be used interchangeably when investigators are interested in assessing the type and frequency of self-statements that heterosocially anxious people use in conversation initiation situations. Parenthetically, the use of these different situations may be preferable to increase variety and reduce potential response set biases in outcome research in which subjects may be repeatedly tested with the SISST.

This alternate method of eliciting responses on the SISST is susceptible to the strength and weaknesses typical of all self-statement inventories. On the positive side, they are economical to administer and easy to score, and provide a basis for comparisons across studies. On the negative side, it has been suggested that self-statement inventories are particularly likely to elicit "postperformance" rationalizations rather than the actual thoughts that subjects experience in a situation, especially if the experimental stimuli upon which people base their responses lack vividness (Meichenbaum & Turk, 1982). Within the framework of analogue studies, presenting written, imag-

inal material is probably the least vivid and realistic method of eliciting self-statements, potentially less realistic than the Glass et al. (1982) role-playing and audiotaped stimulus methods. Thus, the SISST responses in the present study may represent what subjects believed they would think in hypothetical stimulus situations rather than reflect their actual cognitions while imagining the social situations. Nonetheless, the reliability and validity data generated in this study are quite similar to those presented by Glass et al. (1982) through both role-play and audiotape stimulus methods. Whether or not the present method (or any other method, for that matter) is actually measuring thoughts elicited in the stimulus situations remains an important empirical question.

Meichenbaum and Turk (1982) suggested that self-statement inventories may be prone to elicit socially desirable responses. This, however, does not appear to be the case with the SISST since the correlations reported in this study between the SISST scales and the Marlowe-Crowne Social Desirability Scale were quite low and not statistically significant.

Finally, the often stated caveat that results of investigations using moderately to minimally socially anxious college students may not generalize to clinical populations of socially anxious subjects must, of course, be repeated for this investigation, particularly since SAD means for our total sample were relatively low (see Table I). Whether or not investigations using clinical populations of socially anxious individuals will report similar frequencies of positive or negative thoughts and similar reliability and validity data remains to be investigated. Nonetheless, the results of this study provide additional data on the SISST as a potentially useful instrument for self-statement assessment among socially anxious college students. They further suggest that the written stimulus situation format for the SISST may be usefully employed by investigators seeking convenient, but psychometrically sound, measures of self-statement involvement in heterosexual social anxiety.

## REFERENCES

- Crowne, D. P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology, 24*, 349-354.
- Ellis, A. (1962). *Reason and emotion in psychotherapy*. New York: Lyle Stuart.
- Glass, C. R., & Merluzzi, T. V. (1981). Cognitive assessment of social-evaluative anxiety. In T. V. Merluzzi, C. R. Glass, & M. Genest (Eds.), *Cognitive assessment*. New York: Guilford.
- Glass, C. R., Merluzzi, T. V., Biever, J. L., & Larsen, K. H. (1982). Cognitive assessment of social anxiety: Development and validation of a self-statement questionnaire. *Cognitive Therapy and Research, 6*, 37-55.
- Goldfried, M. R. (1979). Anxiety reduction through cognitive-behavioral intervention. In P. C. Kendall & S. D. Hollon (Eds.), *Cognitive-behavioral interventions: Theory, research and procedures*. New York: Academic Press.

- Goldfried, M. R., & Sobocinski, D. (1975). Effect of irrational beliefs on emotional arousal. *Journal of Consulting and Clinical Psychology, 43*, 504-510.
- Henshaw, D. A. (1978). *A cognitive analysis of creative problem-solving*. Unpublished doctoral dissertation, University of Waterloo.
- Hollon, S. D., & Kendall, P. C. (1980). Cognitive self-statements in depression: The automatic thoughts questionnaire. *Cognitive Therapy and Research, 4*, 383-395.
- Jones, R. G. (1969). A factored measure of Ellis' Irrational Belief System (Doctoral dissertation, Texas Technological College, 1968). *Dissertation Abstracts International, 29*, 43793-438013. (University Microfilms No. 69-6443)
- Kendall, P. C., & Korgeski, G. P. (1979). Assessment and cognitive-behavioral interventions. *Cognitive Therapy and Research, 3*, 1-22.
- Kendall, P. C., Williams, L., Pechacek, T. F., Graham, L. E., Schisslak, C., & Hertzoff, N. (1979). Cognitive-behavioral and patient education interventions in cardiac catheterization procedures: The Palo Alto medical psychology project. *Journal of Consulting and Clinical Psychology, 47*, 49-58.
- Meichenbaum, D., & Turk, D. (1982). Stress, coping, and disease: A cognitive-behavioral perspective. In R. Neufeld (Ed.), *Psychological stress and psychopathology*. New York: McGraw-Hill.
- Schwartz, R. M., & Gottman, J. M. (1976). A task analysis approach to clinical problems: A study of assertive behavior. *Journal of Consulting and Clinical Psychology, 44*, 910-920.
- Twentyman, C. T., & McFall, R. M. (1975). Behavioral training of social skills in shy men. *Journal of Consulting and Clinical Psychology, 43*, 384-395.
- Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting and Clinical Psychology, 33*, 448-459.