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Abstract

Two studies were conducted evaluating aspects of the States of Mind (SOM) Model proposed by Schwartz (1986; Schwartz & Garamoni, 1986, 1989) with a sample of social phobic subjects. First, the SOM ratio [positive thoughts/(positive + negative thoughts)] based on a thought-listing task was compared to a ratio based on Kendall and Hollon's (1981) "power-of-nonnegative-thinking" model [negative thoughts/(positive + negative + neutral thoughts)], and the relationship of each ratio to criterion measures was assessed. The two ratios were highly correlated and related to several criterion measures, raising questions about the role of neutral thoughts in the internal dialogue. Second, SOM ratios derived from a thought-listing task and from the Social Interaction Self-Statement Test (SISST) were compared to assess the reactivity of the SOM ratio and classification scheme to method of cognitive assessment. In that study, large differences were detected. SISST SOMs were less likely to classify subjects in the more pathological SOM categories and more likely to be significantly related to criterion measures. Findings are discussed in the context of the validity of the SOM model and the effects of cognitive assessment methodology on the magnitude of derived self-statement ratios.

Keywords: cognitive assessment, self-statement, social phobia, states of mind, thought listing

Cognitive-behavioral researchers have had a continuing interest in the nature of the internal dialogue and its relationship to psychopathology and adjustment (Kendall & Hollon,

1981). As early as 1979, Kendall and Korgeski suggested that measurement of the internal dialogue was central to the developing field of cognitive-behavior therapy and that the development of valid and reliable assessment measures was a top priority. Since that time, a variety of endorsement (e.g., self-statement questionnaire) and production (e.g., thought listing) methods have been developed to assess cognitive contents relevant to a wide variety of target behaviors. For instance, self-statement inventories have been developed for the assessment of the internal dialogue related to depression (Hollon & Kendall, 1980), assertiveness (Heimberg, Chiauzzi, Becker, & Madrazo-Peterson, 1983; Schwartz & Gottman, 1976), job-interview anxiety (Heimberg, Keller, & Peca-Baker, 1986), social anxiety (Glass, Merluzzi, Biever, & Larsen, 1982), and reactions to stressful medical procedures (Kendall, Williams, Pechacek, Graham, Shisslak, & Herzoff, 1979), to name just a few.

Almost all studies of the internal dialogue have assessed the valence of reported or endorsed self-statements and classified them as either positive (facilitative of adaptive behavior), negative (hindering adaptive behavior), or neutral (not clearly positive or negative or not related to the target behavioral event). The predominant finding to arise from these studies has been that the frequency of negative self-statements has had a stronger impact than the frequency of positive self-statements, either showing a stronger relationship to measures of psychopathology or a greater degree of separation between functional and dysfunctional groups. This has led Kendall and Hollon (1981) and other authors (e.g., Amkoff & Glass, 1989; Heimberg et al., 1986) to comment on the "power of nonnegative thinking" and promote the idea that it may be more important to reduce negative thinking than it is to increase the frequency of other categories of self-statements.

Recent authors, however, have begun to place greater emphasis on the potentially important role of positive thought and affect. For instance, Watson and Tellegen (1985) have suggested that anxiety and depression may be differentiated by examining the differences between anxious and depressed persons on measures of both positive and negative affectivity. While both groups may be characterized by high negative affectivity, only depressed persons appear to demonstrate impairments in positive affectivity. This reasoning has recently led Ingram and Wisnicki (1988) and Kendall, Howard, and Hays (1989) to develop measures of positive automatic thoughts that would accompany or expand the more established but negative-thought-oriented Automatic Thoughts Questionnaire (Hollon & Kendall, 1980) in the assessment of depression.

Schwartz (1986) and Schwartz and Garamoni (1986, 1989) have presented another model of the balance of positive and negative cognition in psychopathology, the States of Mind (SOM) model, which has received a large amount of recent attention in the literature. They present an elegant treatise suggesting that optimal adjustment is represented in a balance of positive and negative cognition such that the ratio of positive thoughts to the sum of positive and negative thoughts $[P/(P + N)]$ approaches 0.618. In the development of their model, they have suggested that there are potentially five different states of mind, characterized by different values of the SOM ratio. As noted, optimal adjustment is associated with a "set point" of 0.618 and a possible range of values of 0.56 to 0.68 (the Positive Dialogue). This SOM is said to represent the most adaptive combination of optimism and necessary attention to negative events. Mild pathology, such as may be seen in analogue samples of socially anxious, depressed, or nonassertive college students, is associated with

a SOM labeled the Internal Dialogue of Conflict, with a set point of 0.50 and a range of values between 0.45 and 0.55. Moderate pathology, which may characterize many clinical samples of depressed or anxious persons, is associated with the SOM labeled Negative Dialogue, with a set point of 0.38 and a range of 0.32–0.44. Severe psychopathology, such as that manifested in profound depression or acute panic, is associated with the SOM labeled Negative Monologue, associated with ratio values less than 0.32. Finally, values in excess of 0.68 are associated with the SOM-labeled Positive Monologue, which is characterized by insufficient attention to negative events and hypothetically related to pathological states as acute mania.

Empirical evaluation of the SOM model is just beginning. However, Schwartz and Garamoni (1986, 1989) have presented data derived from a review of cognitive assessment studies that provide support for a number of their hypotheses. On the basis of their 1989 review, they conclude that (a) functional groups are, in fact, best characterized by a Positive Dialogue, (b) mildly dysfunctional groups are characterized by an Internal Dialogue of Conflict, and (c) moderately dysfunctional groups are characterized by Negative Dialogue. They also present data suggesting that the method of assessment (e.g., self-statement inventory vs. other methods) does not significantly influence these conclusions. Furthermore, Schwartz and Michelson (1987) demonstrated that the SOM ratio in a sample of agoraphobics treated with cognitive-behavior therapy improved in predicted fashion and was related to both clinical improvement and end-state functioning. Kendall et al. (1989) report supportive data for points (b) and (c) above in samples of dysphoric college students and psychiatrically depressed patients.

The current literature leaves many questions unanswered, two of which are addressed in the present studies with a clinical sample of individuals with social phobia. First, the SOM model and the "power-of-nonnegative-thinking" model have yet to be compared. A measure used to test the power of nonnegative-thinking model is the ratio of negative thoughts to total thoughts, and the first study reported below addresses the question of whether the SOM ratio differs from the percent of negative thoughts in its relationships to other measures of social anxiety and performance. The key to this question actually revolves around the role of neutral thoughts in the internal dialogue. Are they "cognitive noise" and therefore to be omitted from the thought ratio, as suggested by Schwartz and Garamoni's ratio of $P/(P + N)$? Or might the presence of a quantity of neutral thoughts alter the impact of negative thoughts, as suggested by their place in the denominator of the Negative Thoughts ratio of $N/(P + N + Ne = \text{Total})$? The two ratios differ only on the inclusion of neutral thoughts, since without neutral thoughts, the negative thoughts ratio equals the inverse of the SOM ratio.

Second, the question of mode of assessment requires further examination. Schwartz and Garamoni (1989) have concluded that SOM ratios are unaffected by mode of assessment. However, their argument requires further evaluation for two reasons. First, their analysis is based on the comparison of group means provided in already-conducted studies and therefore cannot address the question of whether one individual would be similarly classified by SOM ratios derived from different assessment techniques. Second, the published literature on which they based their conclusion was incomplete since it included no studies in which self-statement inventories were completed by a moderately dysfunctional group

of subjects, such as the ones included in the present report. Thus, the second study reported below assesses the concordance between self-statement inventory and thought-listing measures administered to the same group of subjects and examines whether the two assessments of SOM are, in fact, equivalent.

Study 1

Method

Subjects

Subjects in this study were 28 men and 23 women aged 19 to 50 (*M* = 30.29) who sought treatment for a variety of social-evaluative fears at the Phobia and Anxiety Disorders Clinic, University at Albany, State University at New York. Thirty-two subjects listed social interaction as their primary fear while an additional 19 subjects reported fears in performance-related situations such as public speaking, working while being observed or eating, drinking, or writing in public. Fifty-five percent of the subjects had completed college, and 69 percent had never been married. All subjects were screened with the Anxiety Disorders Interview Schedule (ADIS; DiNardo, O'Brien, Barlow, Waddell, & Blanchard, 1983) or its revision (DiNardo & Barlow, 1988) and received a primary diagnosis of social phobia according to DSM-III (American Psychiatric Association, 1980) or DSM-III-R (American Psychiatric Association, 1987) criteria. The ADIS is a structured interview with demonstrated reliability for the diagnosis of anxiety disorders (kappa = 0.91 for social phobia) (Barlow, 1987). 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 rating of 4 or greater on the 0-to-8 scale, participated in the study (*M* = 5.56; *SD* = 1.11). Forty-six of the 51 subjects received cognitive-behavioral or education-supportive group treatment in a study reported by Heimberg, Dodge, Hope, Kennedy, Zollo, and Becker (1990). The data presented in this paper were collected as part of subjects' pretreatment assessment.

Assessment

Questionnaires. Subjects completed a battery of self-report measures including the Social Avoidance and Distress Scale (SADS; Watson & Friend, 1969), the Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969), and the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). They also completed the positive and negative subscales of the Social Interaction Self-Statement Test (SISST; Glass et al., 1982), a self-report measure of self-statement activity during social interactions. The original instructions for the SISST were modified to delete references to a role-played social situation. Subjects were simply asked to rate how frequently they may have experienced each self-statement before, during, or after interaction with the opposite sex on a scale from 1 (hardly ever had the thought) to 5 (very often experienced the thought). Data supportive of the validity of

this approach to the use of the SISST with social phobics have been reported by Dodge, Hope, Heimberg, and Becker (1988).

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

Individualized Behavioral Test. All subjects participated in an individualized behavioral simulation of an anxiety-provoking situation. Each test situation 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. These included such situations as initiating a conversation with a person of the opposite sex, talking with two strangers at a party, or giving a speech. Graduate and undergraduate assistants served as role-play partners or audience members. During the 4-min simulation, measures of physiological and subjective arousal were collected.

Heart rates. Subjects' physiological arousal during the behavioral simulation was assessed with a portable heart rate monitor (Exersentry III, Model 51330, by Respironics, Inc.), as described in detail by Heimberg, Gansler, Dodge, and Becker (1987) and Heimberg et al. (1990). After a baseline for adaptation to physiological recording and a period for the measurement of anticipatory arousal (see Heimberg et al., 1990), subjects' arousal in the 4-min test situation was monitored. Heart rate in beats per minute was calculated for the first 30 s of the performance and the 30 s surrounding each SUDS rating given by the subject (see below). The mean of these samples served as the measure of physiological arousal for the present study.

Subjective anxiety. Subjects reported their subjective anxiety at 1 min intervals (initial, end of minutes 1–4) during the behavioral simulation on a 0–100 Subjective Units of Discomfort Scale.(SUDS). The mean of these ratings served as one measure of subjective anxiety for the present study. After the simulation, subjects also completed the State portion of the State-Trait Anxiety Inventory (STAI-state; Spielberger, Gorsuch, & Lushene, 1970).

Thought listing. Cognitive activity in response to the behavioral stimulation was assessed with the thought-listing procedure used previously with socially anxious college students (Cacioppo, Glass, & Merluzzi, 1979; Heimberg, Nyman, & O'Brien, 1987). Immediately following the simulation, subjects were given prepared forms and asked to record the thoughts they experienced, ignoring spelling, grammar, and punctuation. Graduate assistants, unaware of the hypotheses of the present study, categorized the thoughts as positive, negative, or neutral (as defined above). Interrater agreement for a subsample of 17 subjects was 95% (kappa = 0.93).

Calculation of SOM and Percent Negative Thoughts Ratios. The formula for the SOM ratio was $P/(P + N)$, while the formula for the Percent Negative Thoughts ratio was $N/(P + N + Ne)$. However, recent research conducted by Amsel and Fichten (1990) suggests that calculation of ratios based on these raw frequencies may lead to spurious results because

of difficulties associated with zero frequencies of positive or negative thoughts. For instance, the SOM ratio will always have a value of 0 when the frequency of positive thoughts is 0, regardless of the number of negative thoughts recorded, and a value of 1 when no negative thoughts are recorded, regardless of the frequency of positive thoughts. To overcome this problem, Amsel and Fichten (1990) have suggested that it would be most appropriate to add a constant of 1.0 to the frequency of positive or negative thoughts when either (but not both) of these values is 0. This practice was followed in the present study. A similar modification was made to the Percent Negative Thoughts ratio.[1]

Results

SOM ratios could not be computed for two subjects who completed the behavioral test but listed only neutral thoughts, and they were omitted from further analysis. The remaining 49 subjects achieved a mean SOM ratio of 0.28 (*SD* = 0.16), a score placing the average subject in the Negative Monologue range. Their mean percentage of listed negative thoughts was 63% (*SD* = 19%).[2] The SOM and Negative Thoughts ratios were very highly correlated (*r* = –0.79, *N* = 49, *p* < .001, arcsine transformation applied).

Table I. Comparison of Correlations between SOM Ratio, Percent Negative Thoughts Ratio, and Measures of Social Anxiety and Depression[a]

Measure	*M*	*SD*	SOM ratio	Negative Thoughts ratio
SADS[b]	18.89	8.84	–.57[e]	.38[d]
FNE	24.44	6.29	–.35[d]	.37[d]
SISST-Positive	36.89	11.62	.29[c]	–.17
SISST-Negative	48.17	15.30	–.51[e]	.48[e]
Behavioral Test Measures				
STAI-State	51.44	12.09	–.26[c]	.28[c]
Heart Rate	102.44	19.51	.11	.02
SUDS	51.28	22.08	–.29[c]	.32[c]
BDI	14.85	8.71	–.29[c]	.19
Phobic Severity	5.52	1.07	–.13	–.07

a. **Note:** *ns* vary between 38–49 because of missing data. SOM and Negative Thoughts ratios are both derived from the thought-listing task. SOM = States of Mind, SADS = Social Avoidance and Distress Scale, FNE = Fear of Negative Evaluation Scale, SISST = Social Interaction Self-Statement Test, STAI = State-Trait Anxiety Inventory, SUDS = Subjective Units of Discomfort, BDI = Beck Depression Inventory.

b. Correlation between measure and SOM ratio is significantly different from correlation between measure and Negative Thoughts ratio (*p* < .05, 2-tailed test).

c. *p* < .05

d. *p* < .01

e. *p* < .001

Table I displays the means and standard deviations for the criterion measures in this sample of 49 social phobics and the correlations between these measures and the two-self-statement ratios (arcsine transformation applied). Of nine measures included in Table I, the SOM ratio was significantly related to seven while the Negative Thoughts ratio was

significantly related to 5. Both ratios were significantly related to scores on the SADS and FNE and to self-rated anxiety during (SUDS) and after (STAI-State) the behavioral test. Both ratios were significantly related to the negative self-statement subscale of the SISST, but only the SOM ratio was significantly related to SISST positive self-statement scores. The SOM ratio was also significantly related to depression as measured by the BDI while the Negative Thoughts ratio was not. However, the two ratios were differentially related to only a single measure, the SADS.

Study 2

Method
Subjects in Study 2 were the subset of 30 subjects (15 men, 15 women) from Study 1 who sought treatment specifically for their fears concerning social interactions and who provided the listings of positive or negative thoughts necessary for calculating the SOM ratio. The mean age of this subsample was 27.23 years (range = 19–44). Forty percent of this group had completed college, while 80% had never been married. Other subjects, who reported a variety of noninteractional fears, were excluded in order to increase the probability that subjects' responses to the SISST and their thought listings after the behavioral test would concern the same behavioral domain. Since the behavioral test was individualized, only subjects with primary fears of social interaction could be included.

In this study, assessment data collected as described above were utilized to test the impact of deriving SOM ratios from the thought-listing task or from the SISST.

Results

Subjects achieved a mean score on the negative self-statement subscale of the SISST of 52.67 (*SD* = 14.12) and a mean score on the positive self-statement subscale of 35.07 (*SD* = 11.81). These scores are similar to those reported by Glass and Furlong (1990) for clinical samples of socially anxious individuals.

SOM ratio scores based on thought listing (*M* = 0.25, *SD* = 0.09) were significantly lower than ratio scores based on the SISST (*M* = 0.40, *SD* = 0.12), $t(29) = 6.32$, $p < .001$. In addition, the mean scores placed the average subject into different SOMs—Negative Dialogue for the SISST and Negative Monologue for thought listing.

SOM ratios based on SISST and thought-listing data differed not only on mean score but also on distribution characteristics as suggested by a nonsignificant r of 0.19 (n = 30, arcsine transformation applied). Table II displays the number of subjects whose SOM ratios would classify them into the various SOM categories when these have been calculated on the basis of either thought listing or SISST data. As can be seen clearly from this table, thought listing not only resulted in mean SOM scores that were more negative but also placed the greatest percentage of individuals into the most negative category (Negative Monologue, 70%). Eight of the remaining nine subjects were placed in the Negative Dialogue category. In contrast, the most common classification of subjects based on their SISST scores was in the Negative Dialogue category (13 subjects, 43%) compared to only eight subjects (27%) who are classified into Negative Monologue. Five subjects' (17%) SISST

scores placed them in the Internal Dialogue of Conflict range, while four (13%) were classified into Positive Dialogue. No subjects in this sample were placed in the Positive Monologue SOM by either assessment device.

Table II. Classification of Subjects into SOM Categories as Determined by Thought Listing and SISST

SOM category	Thought Listing	SISST
Negative Monologue	21	8
Negative Dialogue	8	13
Internal Dialogue of Conflict	1	5
Positive Dialogue	0	4
Positive Monologue	0	0

Note: SOM = States of Mind

Another way to examine classification differences resulting from the use of SISST and thought-listing scores is to look at the specific instances of agreement and disagreement in individual classification into SOMs. Thirteen subjects (43%) were classified identically by the two procedures, while the classifications of 17 subjects (57%) were in conflict. One subject (3%) received a classification based on the SISST that was one category more negative than the classification based on thought listing. The remaining 16 subjects (53%) received a classification based on their thought-listing scores that was one or more categories more negative than their classification based on SISST scores. Of these, the classifications of seven subjects (23%) disagreed by two or more steps (e.g., a disagreement between negative monologue and internal dialogue of conflict or positive dialogue).

While the two procedures for deriving SOMs appear to have different classification consequences, it is not clear from the above if one or the other has greater validity. In order to get a preliminary reading on this question, we calculated zero-order correlations (arcsine transformation applied) between several of the measures included in Study 1 and the SISST and thought listing SOMs, and these are presented in Table III.

In general, SOM ratios derived from the SISST were more closely related to the criterion measures than SOMs derived from thought listing. Of seven measures included in Table III, the SISST SOM ratio was significantly related to four, while the thought-listing measure was related to only two. Tests of the difference between dependent correlations revealed that the SISST SOM was significantly more highly related to scores on the SADS ($p < .05$) and tended ($p < .10$) to be more highly related to scores on the FNE. In only one case (STAI-state) was the relationship stronger for the thought-listing SOM, but this difference between correlations failed to achieve statistical significance.[3]

Table III. Comparison of Correlations of SOM Ratio Derived from Thought Listing and from SISST and Measures of Social Anxiety and Depression[a]

Measure	M	SD	Thought Listing	SISST
SADS[b]	21.59	7.17	−.21	−.66[d]
FNE	25.37	5.71	−.30[c]	−.66[d]
Behavioral Test Measures				
STAI-State	54.52	13.02	−.3l[c]	−.17
Heart Rate	99.68	17.47	−.12	−.07
SUDS	48.34	19.08	−.08	−.04
BDI	16.68	8.51	.04	−.31[c]
Phobic Severity	5.81	1.01	.04	−.36[c]

a. **Note:** *ns* vary between 23–30 because of missing data. SOM = States of Mind, SISST = Social Interaction Self-Statement Test, SADS = Social Avoidance and Distress Scale, FNE = Fear of Negative Evaluation Scale, STAI = State-Trait Anxiety Inventory, SUDS = Subjective Units of Discomfort, BDI = Beck Depression Inventory

b. Correlation between measure and Thought Listing SOM ratio is significantly different from correlation between measure and SISST SOM ratio ($p < .05$, 2-tailed test).

c. $p < .05$

d. $p < .001$

General Discussion

The studies we conducted were intended to shed light on conceptual and methodological issues surrounding the States of Mind model proposed by Schwartz and Garamoni (1986, 1989). In the first study, the SOM ratio was evaluated by comparing it to a ratio of negative thoughts to the total of positive + negative + neutral thoughts. This Negative Thoughts ratio was derived from the approach to the internal dialogue that suggests that negatively biased cognition may have a relatively greater effect on coping and adjustment than positive cognition (Kendall & Hollon, 1981). The SOM model's concept of positive asymmetry has begun to generate empirical support, yet measures derived from the two approaches have not been previously compared.

The results of Study 1 are supportive of both models. The SOM and Negative Thoughts ratios were highly correlated, and both were significantly related to several criterion measures. While the number of significant correlations was somewhat larger for the SOM ratio (7 vs. 5), the differences appear smaller than the similarities.

Since the SOM and Negative Thought ratios differ only in the inclusion of neutral thoughts, these findings may be used to evaluate Schwartz and Garamoni's (1986, 1989) contention that neutral thoughts contribute little to the internal dialogue. In fact, in Study 1, the inclusion of neutral thoughts appeared to add little if anything. Since the SOM ratio was significantly related to a few more criterion measures than the Negative Thoughts ratio, the inclusion of neutral thoughts may actually have detracted from the validity of the ratio.

Two additional points deserve mention about the results of Study 1. First, while the relationship of SOMs derived from thought listing and the SISST is described below, Study 1 reports the relationship of the thought-listing SOM ratio and Negative Thoughts ratio to

the positive and negative self-statement subscales of the SISST. Both ratios were significantly related to the negative self-statement subscale. Only the SOM ratio was significantly related to the positive self-statement subscale. In both cases, however, the correlation with negative self-statements was significantly larger than the correlation with positive self-statements ($p < .05$ for both, 2-tailed tests). Both ratios appear to be most heavily influenced by negative thoughts, at least in this sample of social phobics.

Second, the SOM ratio derived from thought listing in Study 1 averaged 0.28. This value places the sample average in the Negative Monologue range, a range characterized by Schwartz and Garamoni (1989) as related to severe psychopathology such as profound depression or acute panic. However, their descriptions of the different SOMs and the degree of psychopathology associated with each suggest that these social phobics are better described as "moderately" pathological.

Study 2 compared SOM ratios and classifications derived from the two cognitive assessment measures. This study was undertaken to test Schwartz and Garamoni's (1989) assertion that method of assessment does not influence the SOM ratio. Their conclusion was based on a review of an incomplete literature—no moderately pathological samples who responded to self-report inventories and no individual subject data were included. Contrary to their assertion, significant differences between thought-listing and SISST SOMs did arise. As in Study 1, thought listing led to an average score in the Negative Monologue range, but the SISST led to an average score in the Negative Dialogue range. The latter classification appears to provide a better fit with Schwartz and Garamoni's description of moderate pathology.

In addition to the overall description of the sample, the two cognitive assessment methods differed in the likelihood of classification of individual subjects in the various SOM categories. Disagreements between method appeared for nearly two-thirds of the subjects in Study 2. In 16 of these 17 cases, thought listing led to a more negative judgment than did the SISST.

The SISST SOM also appeared to be more closely related to the criterion measures than the thought-listing SOM. The SISST SOM was more closely related to scores on the SADS and tended to be more closely related to scores on the FNE. It was also significantly correlated with the clinician's rating of phobic severity, an important finding since it suggests that the remaining pattern of correlations was not a simple artifact of method variance.

Why do SOMs from the two sources differ? While a conclusive answer to that question is not available, there is a substantial literature suggesting that the outputs of thought listing and questionnaire methods are not that closely related (see Amkoff & Glass, 1989, for a review of this question in the context of social anxiety and social phobia). However, an additional notion is worth considering in the present context. In our research, the thought listing procedure is administered *after* the behavioral test with instructions to report on thoughts related to subjects' performance and the minutes leading up to it (a "state" measure), while the SISST is administered as a more general "trait" measure as reported by Dodge et al. (1988). Thus the thought listing is more closely tied to acute exposure to the phobic situation. As a result, subjects may be more acutely anxious and more attuned to their current negative thinking, thus classifying themselves more often into Negative Monologue. The more general instructions of our version of the SISST may prompt a less acute,

and therefore less extreme, self-evaluation. Therefore, in a sense, both assessments may be accurate. This logic may also explain the greater likelihood of (or greater magnitude of) relationship between the SISST SOM and the SADS, FNE, and BDI (measures of relatively stable characteristics), and the finding that only the thought listing SOM was significantly related to a measure of anxiety administered directly after the behavioral test. It might also account for the finding of a significant relationship between the clinician rating of phobic severity and the SISST SOM (but not the thought listing SOM) since this measure assesses general level of impairment in functioning rather than acute distress in a phobic situation. Schwartz and Garamoni (1986, 1989; Schwartz, personal communication 12/27/89) have previously noted that SOM ratios may be generally stable but may fluctuate to some degree as a function of situational factors such as success or failure.

Given this logic, a comparison to a recent study by Glass and Furlong (1990) is instructive. In the context of a larger study, highly socially anxious community volunteers completed a behavioral test, the SISST, and a thought-listing task. The SISST was administered with Glass et al.'s (1982) original instructions and followed the behavioral test. Despite the differences between studies, however, the SISST SOMs were quite similar (Glass & Furlong: .44; present study: .40), both resulting in classification in Negative Dialogue. In their study, thought listing was administered in advance of the behavioral test and led to a different finding than the present study (Glass & Furlong: .39; present study: .25). Thus, at least as far as thought listing is concerned, it may be quite reactive to its relative placement in the overall cognitive-behavioral assessment. Further studies of the reactivity of thought listing and of the different pictures that may be drawn by "trait" vs. "state" cognitive assessment measures appear warranted.

Overall the results of Studies 1 and 2 suggest support for the SOM model but an increased degree of caution in generalizing across assessment devices and assessment situations than has been previously asserted. It should be noted that our own results should not be generalized beyond moderately dysfunctional subjects. Future studies should examine the performance of. the SOM ratio against other potential measures of the internal dialogue and in a variety of assessment situations. This may be of special interest in assessing the SOM ratio as a measure of treatment response as has been done by Schwartz and Michelson (1987).

Notes

1. While Amsel and Fichten (1990) have demonstrated the utility of adding the correction factor in a sample of undergraduates, its value in a clinical sample has yet to be demonstrated. This is potentially important because of the extreme infrequency with which social phobics report positive thoughts at pretreatment assessment. In this study, 31 subjects listed zero positive thoughts. Of these 31, two subjects listed no negative thoughts and were omitted. Three additional subjects listed no negative thoughts, so that the correction factor suggested by Amsel and Fichten (1990)

was applied to the scores of 32 of 49 subjects. As a precautionary measure, all analyses reported in this paper were also conducted without the correction factor, and analyses were conducted substituting raw frequencies of positive and negative thoughts for ratio scores. As reported by Amsel and Fichten (1990), the results for corrected ratios were most similar to the results for raw frequencies. Therefore, only results for corrected ratios are reported in this paper. A summary of results and revised tables based on uncorrected thought listing ratios are available from the first author.

2. Subjects' mean SOM ratio calculated without the Amsel-Fichten correction factor was 0.17 (*SD* = 0.27). Their uncorrected percentage of negative thoughts was 68% (*SD* = 31 %). Mean frequencies of specific thought categories were: positive thoughts 0.69 (*SD* = 1.18), negative thoughts 337 (*SD* = 1.74), neutral thoughts 0.86 (*SD* = 1.08), and total thoughts 4.92 (*SD* = 1.26).

3. An anonymous reviewer noted the apparent difference between correlations for the thought listing SOM ratio reported in Tables I and III. Specifically, correlations between the thought-listing SOM ratio and the SADS, the BDI, and SUDS ratings from the behavioral test were significant in Table I but not in Table III. This discrepancy is the result of dropping performance-anxious subjects from the Study 2 sample, a move necessitated by the evaluation of the SISST, an instrument specifically focused on social interaction. Analyses of Study I data separately for performance-anxious and socially anxious subjects (i.e., discrete vs. generalized social phobics) suggests that these measures may be more closely related among performance-anxious subjects. We have previously reported greater "cognitive involvement" among performance-anxious subjects (Heimberg, Hope, Dodge, & Becker, 1990). However, since these issues are not the focus of the present research, they will be reported in a future publication.

References

American Psychiatric Association (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, OC: Author.

American Psychiatric Association (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed., rev.). Washington, OC: Author.

Amsel, R., & Fichten, C. S. (1990). Ratio versus frequency scores: Focus of attention and the balance between positive and negative thoughts. *Cognitive Therapy and Research, 14*, 257–277.

Amkoff, D. B., & Glass, C. R. (1989). Cognitive assessment in social anxiety and social phobia. *Clinical Psychology Review, 9*, 61–74.

Barlow, D. H. (1987). The classification of anxiety disorders. In G. L. Tischler (Ed.), *Diagnosis and classification in psychiatry: A critical appraisal of DSM-III.* Cambridge, England: Cambridge University Press.

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4*, 561–571.

Cacioppo, J. T., Glass, C. R., & Merluzzi, T. V. (1979). Self-statements and self-evaluations: A cognitive-response analysis of heterosocial anxiety. *Cognitive Therapy and Research, 3*, 249–262.

DiNardo, P. A., & Barlow, D. H. (1988). *Anxiety Disorders Interview Schedule–Revised (ADISR).* Albany, NY: Center for Stress and Anxiety Disorders, University at Albany, State University of New York.

DiNardo, P. A., O'Brien, G. T., Barlow, D. H., Waddell, M. T., & Blanchard, E. B. (1983). Reliability of DSM-III anxiety disorder categories using a new structured interview. *Archives of General Psychiatry, 40,* 1070–1074.

Dodge, C. S., Hope, D. A., Heimberg, R. G., & Becker, R. E. (1988). Evaluation of the Social Interaction Self-Statement Test with a social phobic population. *Cognitive Therapy and Research, 12,* 211–222.

Glass, C. R., & Furlong, M. (1990). Cognitive assessment of social anxiety: Affective and behavioral correlates. *Cognitive Therapy and Research, 14,* 365–384.

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.

Heimberg, R. G., Chiauzzi, E. J., Becker, R. E., & Madrazo-Peterson, R. (1983). Cognitive mediation of assertive behavior: An analysis of the self-statement patterns of college students, psychiatric patients, and normal adults. *Cognitive Therapy and Research, 7,* 455–464.

Heimberg, R. G., Dodge, C. S., Hope, D. A., Kennedy, C. R., Zollo, L. J., & Becker, R. E. (1990). Cognitive-behavioral group treatment for social phobia: Comparison to a credible placebo control. *Cognitive Therapy and Research, 14,* 1–23.

Heimberg, R. G., Gansler, D., Dodge, C. S., & Becker, R. E. (1987). Convergent and discriminant validity of the Cognitive-Somatic Anxiety Questionnaire in a social phobic population. *Behavioral Assessment, 9,* 379–388.

Heimberg, R. G., Hope, D. A., Dodge, C. S., & Becker, R. E. (1990). DSM-III-R subtypes of social phobia: Comparison of generalized social phobics and public speaking phobics. *Journal of Nervous and Mental Disease, 178,* 172–179.

Heimberg, R. G., Keller, K. E., & Peca-Baker, T. (1986). Cognitive assessment of social-evaluative anxiety in the job interview: The Job Interview Self-Statement Schedule. *Journal of Counseling Psychology, 33,* 190–195.

Heimberg, R. G., Nyman, D., & O'Brien, G. T. (1987). Assessing variations of the thought listing technique: Effects of instructions, stimulus intensity, stimulus modality, and scoring procedures. *Cognitive Therapy and Research, 11,* 13–24.

Hollon, S. D., & Kendall, P. D. (1980). Cognitive self-statements in depression: Development of an automatic thoughts questionnaire. *Cognitive Therapy and Research, 4,* 283–395.

Ingram, R. E., & Wisnicki, K. S. (1988). Assessment of positive automatic cognition. *Journal of Consulting and Clinical Psychology, 56,* 898–902.

Kendall, P. C., & Hollon, S. D. (1981). Assessing self-referent speech: Methods in the measurement of self-statements. In P. C. Kendall & S. D. Hollon (Eds.), *Assessment strategies for cognitive-behavioral interventions* (pp. 85–118). New York: Academic Press.

Kendall, P. C., Howard, B. L., & Hays, R. C. (1989). Self-referent speech and psychopathology: The balance of positive and negative thinking. *Cognitive Therapy and Research, 13,* 583–598.

Kendall, P. C., & Korgeski, G. P. (1979). Assessment and cognitive-behavioral interventions. *Cognitive Therapy and Research, 3,* 1–21.

Kendall, P. C., Williams, L., Pechacek, T. F., Graham, L. G., Shisslak, C. S., & Henoff, 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.

Schwartz, R. M. (1986). The internal dialogue: On the asymmetry between positive and negative coping thoughts. *Cognitive Therapy and Research, 10,* 591–605.

Schwartz R. M., & Garamoni, G. L. (1986). A structural model of positive and negative states of mind: Asymmetry in the internal dialogue. In P. C. Kendall (Ed.), *Advances in cognitive-behavioral research and therapy* (Vol. 5, pp. 1–62). New York: Academic Press.

Schwartz, R. M., & Garamoni, G. L. (1989). Cognitive balance and psychopathology: Evaluation of an information processing model of positive and negative states of mind. *Clinical Psychology Review, 9,* 271–294.

Schwartz, R. M., & Gattman, J. M. (1976). Toward a task analysis of assertive behavior. *Journal of Consulting and Clinical Psychology, 44,* 910–920.

Schwartz, R. M., & Michelson, L. (1987). States of mind model: Cognitive balance in the treatment of agoraphobia. *Journal of Consulting and Clinical Psychology, 55,* 557–565.

Spielberger, C. D., Gorsuch, R. W., & Lushene, R. E. (1970). *State-Trait Anxiety Inventory.* Palo Alto: Consulting Psychologists Press.

Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting and Clinical Psychology, 33,* 448–457.

Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin, 98,* 219–235.

Watson, J. P., & Marks, I. M. (1971). Relevant and irrelevant fear in flooding—A crossover study with phobic patients. *Behavior Therapy, 2,* 275–293.