

THE UNIVERSITY OF MANITOBA

COMPONENTS OF SOCIAL SKILL

BY

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A DISSERTATION

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF PSYCHOLOGY

WINNIPEG, MANITOBA

JUNE, 1983

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A thesis submitted to the Faculty of Graduate Studies of  
the University of Manitoba in partial fulfillment of the requirements  
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## ABSTRACT

Studies which have examined how social skill is manifested in behavior have typically produced sparse findings. This investigation used a variety of constructs, measures, and behaviors to test the social skill-behavior relationship. A large group of undergraduates completed three self-report instruments measuring shyness, social anxiety, and loneliness. Some were subsequently recruited to engage in two videotaped laboratory social conversations. Study I focused exclusively on observing conversation behavior. In Study II, attention (self-directed or other-directed) was manipulated prior to the second conversation. After the conversations, participants evaluated their own social skill and comfort in the situation, as well as how well they liked each partner. A group of untrained undergraduate judges rated participants' social skill, and trained raters recorded selected behaviors. Results showed that skilled participants talked more than unskilled participants. Attention direction correlated to several indices of social skill, but the nature of the relationship was dependent on the skill measure. These results suggest that social skill may have few general behavioral referents. Several suggestions are made on how to account for inter-person dependency in studies of social skill.

## ACKNOWLEDGEMENTS

I am thankful to many people for help in completing this project. Maureen Krenn and Daryl Gill sat through hours of eye-straining rating of videotapes. Bruce Tefft, as my advisor, saw through many details and generally performed well beyond the call of duty. The Manitoba Mental Health Research Foundation provided generous financial support. John Houlihan, Diana Robanski and Joseph Milar at Boston University provided technical help when I really needed it. Terry Tivnan consulted with me on statistical procedures. I am grateful to all these people for their help. In addition, I wish to thank my parents for their constant support, my husband John Eckelman for taking up the slack when I was busy with this thesis, and to my son Matthew for being such a placid baby and patient youngster.

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The importance of social relationships to psychological well being has long been recognized. It is only recently that clinicians have begun to view an inadequate repertoire of social behavior as one source of psychological disturbance and to directly teach social skills to their clients. This approach is used to ameliorate immediate problems and equip people with skills which will prove personally valuable and rewarding after the termination of therapy. The use of social skills training for people whose interpersonal skills are deficient has become an increasingly popular clinical intervention. It has been used with a wide variety of people from socially unskilled psychiatric patients (Trower, Bryant & Argyle, 1978) to college students with dating problems (Arkowitz, 1977).

Clinicians initially developed social skills training programs based on their personal and clinical observations of what behaviors constituted social skill. Evaluations of the effectiveness of social skills training have shown mixed results (Marzillier, 1978). Clinical researchers have begun asking the more basic question concerning which behaviors are actually involved in social skill. When behaviors forming the content of social skills training programs were tested for their differential appearance in socially skilled and unskilled people, results were disappointing. Studies typically found either that only a

small minority of these behaviors discriminated people of differing social skill levels (Arkowitz, Lichtenstein, McGovern & Hines, 1975; Glasgow & Arkowitz, 1975; Mandel & Shrauger, Note 1) or that none of the tested behaviors discriminated significantly (Borkovec, Fleischmann & Caputo, 1973; Borkovec, Stone, O'Brien & Kaloupek, 1974). Slightly greater success has been achieved in studies using the social skills subconcept of assertiveness (Eisler, Miller & Hersen, 1973). The working definitions of assertiveness, however, typically emphasize verbal behaviors which are situation-specific (e.g., giving compliments, refusing requests). When the components of basic social skills remain largely unknown, it seems premature to focus on the assertiveness construct.

The task of discovering what specific behaviors comprise social skill is more difficult than it would first appear. The first problem is to find behaviors which are of trans-situational importance. Human behavior differs greatly across situations (Mischel, 1968). The degree to which someone's behavior matches the situation and complements the behavior of others is important in evaluating the appropriateness and skillfulness of that behavior. Such situational appropriateness is, however, difficult to capture in an investigative program. Self-report instruments for the assessment of social functioning often incorporate the idea of situational variability (e.g., Bryant

& Trower, 1974; Zimbardo, 1977), but the actual recording of overt social behavior has been restricted to the two person laboratory conversation or a simulation of social behavior.

A second difficulty in this kind of research is that the methodology for the assessment of ongoing interactive behavior is in its infancy. Most statistical techniques are geared to the detection of differences in the static behavior of single persons. The assessment of social behavior, however, calls for data analytic techniques which can assess dependency between interacting persons, detect sequences of behavior, and analyze exchanges between persons.

A third difficulty involves the selection of a criterion variable. The concept of social skill has everyday social validity but this is informal. Yet, if we want to observe the specific behaviors of socially skilled and unskilled people, we must have some way of deciding who is skilled and who is not. The most frequently used means of classifying people are self-report questionnaires and observers' global judgments of a person's laboratory social interaction. These modes of assessment correlate poorly with one another (Hersen & Bellack, 1976) and appear to be inconsistently related to social behavior in natural settings (Bellack, Hersen & Lamparski, Note 2; Glasgow & Arkowitz, 1975). Because of this, the validity of these

assessment procedures is questionable (Bellack, Hersen & Turner, 1978). Curran and Mariotto (1980), noting the criterion problem, have even suggested that a behavioral definition of social skill is perhaps not possible.

While recognizing these problems, the existing literature on the behavioral components of social skill has produced some tentative conclusions. Several covert states are correlated with social skill and some overt behaviors have been replicated as social skill components.

#### Covert aspects of social skill deficit

Two chief categories of covert processes have been linked to social skill: anxiety and cognitive processes.

Anxiety. Self-rated anxiety correlates well with self-ascribed shyness (Mandel & Shrauger, Note 1), but the findings on its relationship to indices of observable social behavior are mixed. O'Banion and Arkowitz (1977) found people high in self-reported anxiety to be low in judged social skill but other studies have failed to demonstrate this relationship (Clark & Arkowitz, 1975; Curran, Wallander & Fischetti, Note 3). The only physiological index of anxiety which has been investigated is heart rate. There is some evidence that shy or unassertive people experience greater heart rate increases during social interaction than do normals (Schwartz & Gottman, 1976, Twentyman & McFall, 1975). Several treatment studies

demonstrating improvements in self-reported anxiety and social activity have failed to show corresponding improvements in judged social skill. It may be that subjective anxiety interferes with the observable social performance of only some people, or that it affects only some of the behaviors involved in social skill. It is clear, nonetheless, that self-reported anxiety correlates with self-reported shyness but does not necessarily imply poor social performance.

Cognitive processes. The cognitive processes which have been linked to socially skilled behavior are many and varied, and no single cognitive mechanism has been extensively researched. Much of the existing research has attempted to associate cognitive processes and subjective anxiety, both via self-report instruments.

Expectations exert a powerful influence over behavior (Mischel, 1973; Mischel, Ebbeson & Zeiss, 1976), and socially anxious people expect to be negatively evaluated by others (Smith & Sarason, 1975). Socially anxious people have been shown to be highly fearful of this negative evaluation (Smith, 1972; Watson & Friend, 1969) and exaggerate the proportions of negative evaluation when they receive it (Clark & Arkowitz, 1975; Smith & Sarason, 1975). The only study which examined the behavioral consequences of this sensitivity did not detect an effect (Mehrebian, 1970).



The literature on normal nonverbal behavior suggests that eye gaze may be a meaningful behavioral index of negative evaluation expectations. Argyle and Dean (1965) have hypothesized that fear of seeing the rejection of others causes gaze avoidance. Exline and Winters (1965) demonstrated that negative evaluation by others produces a decrease in other-directed gaze.

Another cognitive property thought to characterize socially unskilled people involves self-evaluation. Socially anxious and lonely people give excessively negative estimates of their social performances (Clark & Arkowitz, 1975; Schwartz & Gottman, 1976). When normal people were induced to make negative self-statements, their social behavior came to resemble that of shy people (Mandel & Shrauger, Note 1).

The cognitive variables discussed above all involve fears and concerns about the self and may be viewed as components of an "overconcern with self" syndrome. Shy people attend to themselves, showing a corresponding decrease in attention to the other person (Hatvany, Souza e Silva & Zimbardo, Note 4; Souza e Silva, Note 5). Since adequate social behavior involves monitoring the other person's behavior (Argyle & Kendon, 1967), interference with this function has serious implications for someone's level of social skill.

### Performance variables in social skill

In order for someone to learn and be successful at social interaction, he or she must engage in contact with other people. Active avoidance of social interaction characterizes people with extreme social skill deficits (Bryant & Trower, 1974; Pilkonis, 1977a). Lack of initiative, perhaps a milder form of avoidance, is found in the behavior of people with moderate levels of social difficulty. Shy people take a long time to initiate conversation in a waiting room (Mandel & Shrauger, Note 1; Pilkonis, 1977b) and they avoid initiating social contact when allowed to do so (Twentyman & McFall, 1974). Avoidance of social situations has serious implications for social skill, as one's skill in avoided situations cannot improve (Bryant & Trower, 1974).

Speech quantity has been consistently associated with social skill and many studies have examined this variable. There are several indices of speech quantity: total time speaking, length of utterance, number of utterances, number of words, rate of speech, latency to begin speaking, and the number and length of silences. Socially unskilled people are generally inactive during social interaction (Gillingham, Griffiths & Care, 1977; Shrout, Note 6; Weiss, 1968), implying low speech production. Total time talking emerged as a sensitive and effective predictor of

social skill level in several studies (Glasgow & Arkowitz, 1975; Minkin, Braukman, Minkin, Timbers, Timbers, Fixsen, Phillips & Wolf, 1976; Pilkonis, 1977b). Length of utterance (Arkowitz et al., 1975; Bellack, Hersen & Turner, 1978; Eisler, Miller & Hersen, 1973; Trower, Bryant & Argyle, 1978) and number of utterances (Pilkonis, 1977b) have also been found to covary with social skill level. Socially unskilled people allow long silent periods before beginning their speaking turns (Arkowitz et al., 1975; Eisler et al., 1973; Jones, Note 7; Trower, Bryant & Argyle, 1978). Several of the studies just cited, however, failed to detect significant effects for at least one index of speech quantity and several additional studies have found no speech quantity effects (Borkovec et al., 1973; Fischetti, Curran & Wessburg, 1977). Overall, speech quantity appears to be abnormally low in socially deficient individuals. The most appropriate index of speech quantity is, however, still in question.

The quality of speech (i.e., its volume, tone, pitch, etc.) has been infrequently studied, but may be important in social skill. Socially unskilled people speak more softly (Eisler et al., 1973; Trower et al., 1978; Zimbardo, 1977) and with less intonation (Bellack, Hersen & Turner, 1978) than skilled people. Several researchers have tested the hypothesis that speech disfluency is

indicative of social skill deficit, but these studies have produced uniformly negative results (Bellack, Hersen & Lamparski, Note 2; Borkovec et al., 1973; Borkovec et al., 1974).

Speech content is difficult to study because the content areas which have trans-situational relevance to social skill are difficult to identify. The small amount of research to date indicates that unskilled people ask few questions and talk excessively about themselves (Jones, Note 7; Minkin et al., 1976; Trower et al., 1978). They choose dull, stereotyped topics (Trower et al., 1978), and change the topic frequently (Jones, Note 7). They also use fewer short verbal affirmations (e.g., "yes", "that's interesting", etc.) (Minkin et al., 1976; Shrout, Note 6). While social skill deficit was initially thought to involve avoidance of intimate subjects, empirical studies have failed to confirm this hypothesis (Fischetti et al., 1977; Glasgow & Arkowitz, 1975). The behavioral constellation described above can perhaps be summarized as excessive concern about the self and lack of attention to others, a syndrome also seen in the covert processes of socially unskilled people.

Some nonverbal behaviors have been implicated in social skill. Socially unskilled psychiatric patients manifest blank expressions and smile infrequently (Bellack,

Hersen & Turner, 1978; Trower et al., 1978). Shy college women, on the other hand, smile and nod a great deal (Pilkonis, 1977b). There may be an optimal frequency of such nonverbal behaviors and extreme deviations from this frequency indicate social skill deficit. There may also be normative gender differences in skill-related behaviors.

The most frequently studied nonverbal behavior has been eye contact or gaze. People who habitually avert their gaze are seen as nervous and lacking self-confidence (Cook & Smith, 1975). Total amount of gaze is low in socially unskilled psychiatric patients (Gillingham et al., 1977; Trower et al., 1978) and shy college students (Mandel & Shrauger, Note 1; Pilkonis 1977b). Social skill researchers have studied only total amounts of gaze. The general literature on the functions of gaze suggests, however, that the pattern of gaze may be as important as its absolute amount. Specifically, long glances are preferred to short, frequent glances (Argyle & Cook, 1976). Also, other-directed gaze which occurs at the ends of phrases and utterances is thought to serve the purpose of monitoring the reactions of other people (Kendon, 1967). This type of gaze may thus be a behavioral indicator of other-directed attention (Argyle, 1969), a property whose relationship to social skill has been discussed.

### Summary and hypotheses

Researchers have used many different constructs and methods to study social skill. Two general syndromes appear to be associated with social skill deficit. First of all, unskilled people are inactive in social interaction. Specifically, they fail to initiate interaction and talk comparatively little once the conversation begins. The underactivity syndrome in social skill deficit has been replicated several times using differing constructs (e.g., social anxiety, shyness, etc.).

Other isolated findings on social incompetence, taken together, point to a second theme: overconcern with the self. Covert aspects of incompetence exemplified by this overconcern syndrome include excessive anxiety, sensitivity to negative social evaluation, and prominent negative covert monologue. Overconcern with the self is manifested overtly by excessive talk about oneself, few questions, few short verbal affirmations, and little other-directed gaze. The overconcern with self syndrome, has not been comprehensively investigated.

Based on the literature, the following hypotheses are advanced:

1. Different global indices of social skill will demonstrate distinctive relationships with observed social behavior.
2. Skilled people will have a higher activity level in interaction than will unskilled people.

3. Socially unskilled people will demonstrate signs of overconcern with themselves and modification of this quality will affect their social performance.
4. Socially skilled people will adapt their behavior to their partners, showing more inter-partner correspondence in behavior than that demonstrated in dyads of unskilled people.
5. Patterns of ongoing behavior will differ between skilled and unskilled people.

The present study comprehensively examined the social skill construct in an exploratory fashion. Its aims were twofold: First, it sought to understand the social skill construct itself by examining the correspondence among several specialized constructs and techniques of measuring social skill (Hypothesis 1). Second, the study attempted to discern behavioral differences between people who could be defined as socially skilled versus people defined as socially unskilled (Hypotheses 2 through 5). A wide variety of social skill measures and behaviors were analyzed.

The investigation of observed behavior was broken into two parts. Study I was purely observational. Study II contained a true experiment wherein attention direction was manipulated in a test of Hypothesis 3. The study utilized data from both members of the interacting dyads to evaluate dependency between partners.

## METHOD

Study I

Overview. The purpose of this study was to make detailed observations of social interaction. No experimental manipulations were done. After filling out self-report questionnaires, participants were instructed to conduct two short two-person conversations. Each participant was paired with one shy and one non-shy partner. The interactions were videotaped and the tapes rated for global social skill and selected behaviors.

Participants. Students of both sexes currently enrolled in an Introductory Psychology course at the University of Manitoba participated in this study. They received course credit for their participation. Two large classes were administered the Stanford Shyness Survey (Zimbardo, 1977), the UCLA Loneliness Scale (Russell, Peplau & Ferguson, 1978), and the Fear of Negative Evaluation Scale (Watson & Friend, 1969). Copies of these instruments appear in Appendices A through C. The order of administration of the scales was varied randomly.

Respondents were classified as either shy or not shy based on their responses to the simple self-assessment in the first section of the shyness instrument. After an interval of three weeks, respondents from the two shyness lists were telephoned and asked to participate in the



laboratory conversations. The study was presented as an examination of natural conversational behavior. No connection was drawn to the administered questionnaires, although this was not disavowed to respondents who questioned this.

Willing participants were scheduled to come to the next observation session convenient to their schedules. Four people were scheduled to attend an observational session: two listed as shy and two reporting no shyness. When all four scheduled participants did not appear, those present were either taken through the procedure to generate training tapes or were given credit and dismissed. Data from one group (four participants) was disregarded because the quality of the videotape did not allow accurate recording.

Apparatus. The study took place in a suite of rooms with one-way mirrors for observation. Sony videotape recording equipment was placed behind the one-way mirrors. A visual-display digital timer was used to encode time onto the tapes. Participants sat in classroom-style chairs placed along adjacent sides of a table. A 14" x 24" mirror was positioned on the table to reflect a full face view of the sideways participant into the camera. Two such rooms were used. Figure 1 shows the layout of the laboratory.

Procedure. The experimenter (the author) greeted the participants in the waiting room. When all four had arrived, she explained the purpose of the experiment and obtained participants' written permission to videotape their interactions for research use. The experimenter

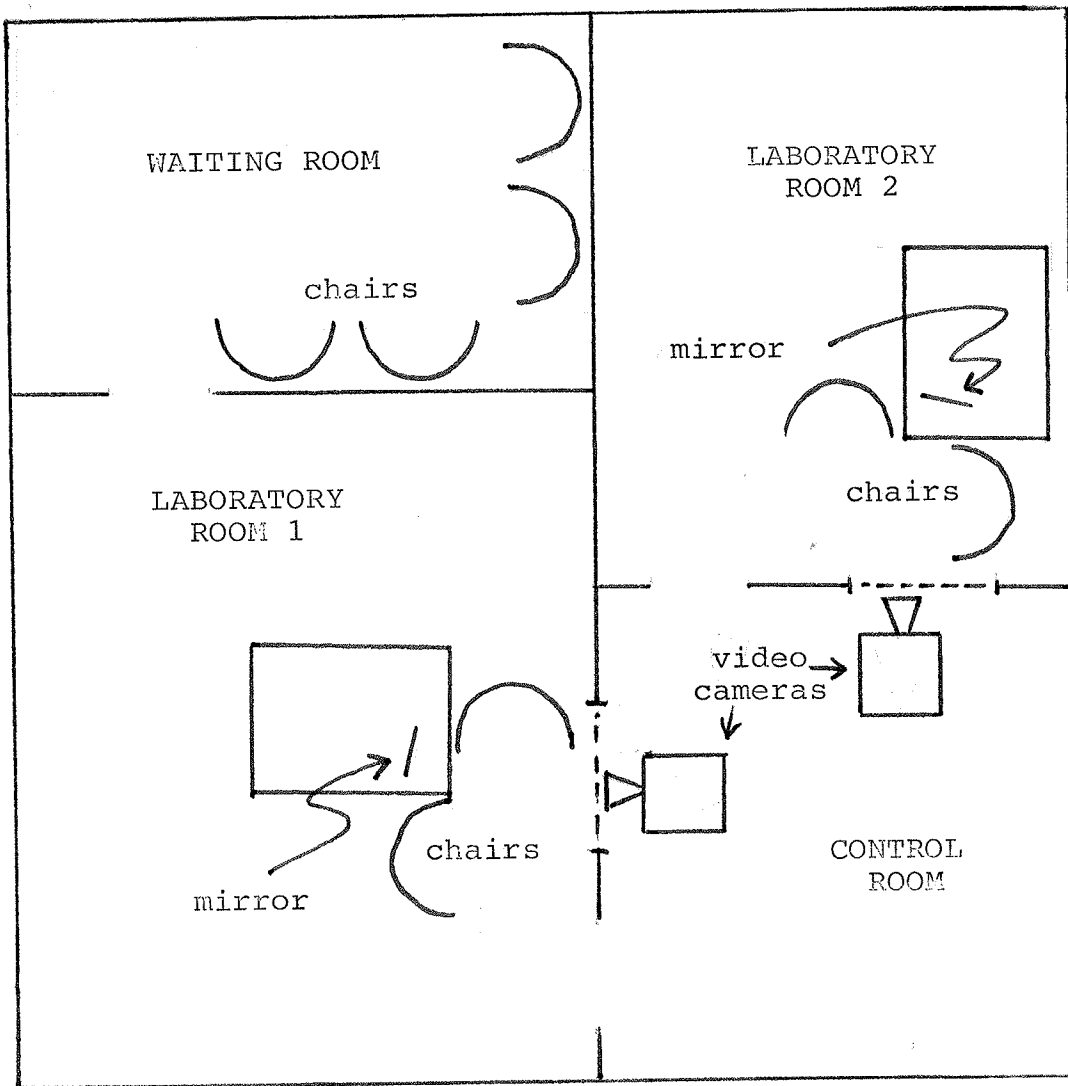


Figure 1  
Diagram of the laboratory

conducted the first two participants, one shy and one not shy, to the first observation room. After they were seated and the mirror adjusted, the participants were given a neutral topic (e.g., travel, summer activities, movies, etc.) and told to spend the next ten minutes discussing this and any related topics that they wished. The experimenter adjourned to the control room and started the videotape recording. She then returned to the waiting room and repeated the procedure for the remaining two participants. After ten minutes of conversation, participants were re-paired and a second ten-minute conversation recorded. The pairings were arranged so that each participants interacted with one shy and one non-shy person. Dyads in Conversation 1 were heterogeneous for shyness, whereas dyads in Conversation 2 involved two shy or two non-shy people.

Following the two conversations, the participants were given a simple questionnaire (designed for this study) asking them to rate the following on a scale from one to five: (1) their own level of social skill, (2) how well they liked each of their partners, and (3) their comfort during the interactions. A copy of this instrument appears in Appendix D. Participants, upon handing in their questionnaires, were thanked, given course credit, and excused.

## Study II

Overview. Study II, like Study I, used observation of two separate conversations to study social interaction. Study II, however, was designed also to experimentally assess the ways in which attentional focus affects social behavior. The first conversation occurred as in Study I. Prior to the second conversation, attentional focus (thought to be self-directed in shy people and other-directed in non-shy people) was manipulated in the direction opposite to that indicated by a participant's shyness status. The manipulation duplicated that used by Hatvany, Souza e Silva & Zimbardo (Note 4), who assessed memory for a speech delivered via videotape.

Procedure. The procedure was identical to that in Study I until the completion of the first conversation. At that time, the self-reported shy participant in the first dyad was conducted back to the waiting room. He or she was verbally instructed that, in the next conversation, he/she was to serve as a judge of his/her partner's personality and, therefore, to pay close attention to the partner. This participant was then conducted to the opposite laboratory room and the dyad given a different topic to begin Conversation 2. The non-shy participant in the other dyad was then instructed to focus attention on his/her own emotional and visceral responses during the

second conversation. That participant was then conducted to the first laboratory room and that dyad started into Conversation 2. The pairings in Study II were thus all heterogeneous for shyness. The sessions ended as in Study I.

#### Data coding

The videotapes of the interactions were coded for two kinds of data: global perceptions of social skill and specific behaviors. Separate groups of raters were employed for each of these types of ratings.

Global perceptions of social skill were obtained from five undergraduate students. These judges were recruited by posted advertisements around the university campus. None of the three women and two men had extensive experience in psychology. No special instructions on how to evaluate social skill were given to these raters, as this type of rating was intended as a analogue of real-life social evaluation. In group sessions, raters viewed all taped conversations and rated each participant on a seven point scale of overall social skill from extremely high to extremely low social skill. The summed rating of the five judges was used in subsequent data analysis.

A second group of raters was employed to rate and record specific behaviors. These were three honours-level psychology students. Two of the raters were trained by

the experimenter to make frequency counts of certain behaviors hypothesized to be relevant to social skill. They were also trained to use an event recorder to make moment-by-moment recordings of speech and gaze behaviors. These two students also judged several specific personal qualities of the videotaped participants. A third honours student replaced one original rater (who had competing demands for his time) to finish the frequency counts of specific behaviors. She was trained in the use of the remaining categories by the two original trained raters. Approximately one-third of all the videotaped conversations were rated by two observers for the purposes of formal reliability assessment. The event recorder data were only collected once, as there are no conventions for estimating the reliability of this data form.

The non-usable videotapes (generated when less than the required four study participants appeared for a session) were used to train the raters. Training sessions included a review of the behavior categories to be rated. These categories included four utterance types: questions, answers to questions, voluntary statements and short verbal affirmations. Also counted were two classes of personal pronouns, silence breaks, smiles and head nods. The written definitions of these categories, which appear in Appendix E, represent definitions worked out during the

training procedure. Two planned categories, laughs and abrupt topic changes, were not pursued because definitions promising reasonable discriminability were not achieved.

During the training sessions, the author and the raters practiced counting the behaviors of the videotaped conversants using hand counters. After each taped conversation, counts were compared and the category definition reviewed for necessary increases in specificity. This process continued until a consistently usable definition was reached and the frequency counts were above 80% agreement (smaller score/larger score) for each of the four participants in two continuous conversations.

Additional training sessions focused on the operation of the event recorder. This is a mechanical device which prints multiple pen tracks on a continuously-moving strip of paper tape (the variety used in adding machines). The two raters practiced making ongoing behavior records of the videotaped conversations. Viewing one taped conversant, one rater recorded a track denoting the presence or absence of audible speech, while the other rater recorded the occurrence of partner-directed gaze (discernable gaze toward the partner's face). No complex definitions were involved here and, as noted above, no reliability criteria were available to estimate accuracy. The training sessions aimed at achieving familiarity with the equipment and provided practice at the task of using the audio and visual cues from the tape to discern speech and gaze.

At the completion of training, each rater was given a list denoting the order in which he or she should rate the videotaped conversations. Selected tapes used to assess inter-rater reliability appeared on both lists. Raters were also given two structured rating sheets, copies of which appear in Appendix F. Besides counting the behaviors on which they had been trained, the raters were provided with four five-point Likert-type scales on which they rated conversants' personal qualities from low to high. These were voice quality, dominance, hostility and friendliness. Raters were instructed to rate overall voice quality primarily on the basis of the intelligibility of the participant's speech, including appropriate volume, clear articulation, pleasant tone and moderate pacing. The other rated qualities reflected the raters' own personal judgments of a participant's apparent characterological dominance, evident hostility (toward partner, task or life in general) and evident interpersonal friendliness toward the partner. Each rater viewed a recorded conversation multiple times until the first data sheet for that conversation was complete. These viewing sessions were conducted separately by the two raters.

The records of ongoing speech and gaze were made with one rater recording each behavior. These records were therefore made during viewing sessions where both raters were present.



The replacement of one original rater occurred after completion of the first data sheet and the behavior stream event recordings. The second data sheets, used to record frequency counts of pronoun use, silence breaks, smiles and head nods, were completed by one original and one newly trained rater. This new rater was trained in the use of these categories by the original two raters using the same training format described earlier.

All the rating described above was coded on the basis of an eight-minute interval starting thirty seconds into the tape. The digital time display on each taped conversation permitted exact timing. Where this display was illegible (due to equipment malfunction), the rater timed the sequence himself, noting the event beginning the eight-minute interval. Subsequent viewings of that conversation used the noted event to begin timing.

Several taped conversations were unusually short, due to inaccuracies in the timing during the taping sessions. For these conversations, the thirty-second waiting period was eliminated and, if necessary, the data prorated. Four of thirty-six conversations (11%) were shorter than eight minutes. Only one, about six minutes long, was shorter than seven minutes.

## RESULTS

The examination of a large number of variables in a descriptive study carries with it the problem of maintaining a defineable error rate. In traditional, hypothesis-testing research, only relationships directly relevant to specific hypotheses are tested. The error rate can be set per hypothesis or per experiment. The spirit of the present investigation was more exploratory than hypothesis-testing, and many relationships were examined. The hypotheses offered were general. The traditional methods of error rate control were not feasible for this type of analysis.

The general problem of drawing conclusions from seemingly strong relationships which could occur by chance was dealt with in this study by executing analyses on several samples, thus providing a cross-validation of results. The structure of the study allowed for several cross-validations. The most obvious of these was the separation between Study I and Study II, each of which used its own sample of participants. It was also possible to cross-validate between the two conversations, which were two samples of behavior from a single participant group. Data were, therefore, neither pooled between Studies I and II nor, for the most part, between the first and second conversations of each study. This way, cross-validation could be used as a means of selecting truly significant findings.

### Reliability of ratings

Inter-observer reliability was assessed for the four rated characteristics (Voice Quality, Dominance, Hostility, and Friendliness) and for the behaviors which were counted (Questions, Answers, Statements, Affirmations, Self-referent Pronouns, Other-referent Pronouns, Silence Breaks, Smiles and Nods). Of the 144 rated conversations in the two studies, 44 (31%) were subjected to a formal assessment of reliability between raters.

The variable Silence Breaks was given special treatment. Because the number of a participant's breaks in a conversational silence depended on the number of joint silences which occurred, the latter had to be taken into account. The complex task of counting breaks in silences was divided into its components: (1) determining how many conversational silences occurred, and (2) determining how many of those were broken by the given subject. The number of Silences was computed by adding the Silence Breaks of the conversation partners. A second new variable was computed reflecting the proportion of occurring silences which were broken by the subject. Both the allowing of silences (Silences) and the breaking of silences (Breaks) were carried forward as variables. They are the only variables having an inherent computational inter-partner dependency.

Since total scores on the above behaviors were used as dependent measures, a summary index (rather than an

event-based index) of reliability was selected. While the Pearson correlation is the most widely used summary measure of reliability, it does not reflect differences in means. With the Pearson  $\underline{r}$ , any constant bias in a rater is not regarded as a problem in reliability. An alternative reliability index was therefore selected for which rater bias lowers the reliability coefficient: the intraclass correlation. This statistic uses analysis of variance procedures to estimate a reliability coefficient " $\underline{r}$ " (see Winer, 1971, pp. 124-132, for details).

Intraclass reliability coefficients for the above ratings and frequency counts are summarized in Table 1. Of the rated qualities, Voice Quality ( $\underline{r}=.81$ ) and Hostility ( $\underline{r} = .90$ ) were clearly reliable from rater to rater. At .72, the reliability of Dominance was borderline. Friendliness, with an  $\underline{r}$  of .39, was clearly unreliable and was disqualified from consideration in the analyses.

The behaviors Questions and Answers, both with  $\underline{r}$ s of .87, were easily discriminable responses for the raters. Raters had a more difficult time teasing out Statements ( $\underline{r} = .76$ ) and Affirmations ( $\underline{r} = .77$ ). A possible reason for this borderline reliability of Statements is the difficulty in distinguishing Statements from Answers to questions. Non-prompted statements often occurred in the same speaking turn as answers to questions. Raters had difficulty deciding whether to code the entire turn as an

Table 1

## Intraclass Reliability Coefficients

<u>Ratings</u>	<u>r</u>
Voice Quality	.81
Dominance	.72
Hostility	.90
Friendliness <sup>a</sup>	.39
<u>Frequencies</u>	
Questions	.89
Answers	.89
Statements	.76
Affirmations	.77
Self-referent Pronouns	.97
Other-referent Pronouns	.92
Silences	.76
Breaks <sup>a</sup>	.49
Smiles <sup>a</sup>	.41
Nods	.83

<sup>a</sup> Excluded from further analyses

Answer, or to demarcate the latter part of the turn to code as a Statement. The utterances coded as Affirmations were similarly hard to distinguish, perhaps because they co-occurred with all other types of verbal response.

The variables with the highest inter-rater reliability were those involving specific words. The reliability index for number of Self-referent Pronouns was .97; for Other-referent Pronouns, the correlation was .92.

The dyadic variable of Silences showed passable reliability ( $r = .76$ ). The individual variable Breaks in occurring silences was, however, unreliable across raters ( $r = .49$ ). It was, therefore, dropped from further consideration. These results seem to indicate that the two raters were identifying different occasions to count. The variable Silences should therefore be regarded critically in the following results.

The two nonverbal behaviors, Smiles and Nods, were difficult for the raters to code. They demonstrated good agreement, though, on coding the number of Nods ( $r = .83$ ). They were unable to reliably count Smiles, however ( $r = .41$ ), and this variable was not included in analyses.

#### Methodological checks

Four factors exerted a potential bias in this investigation: participant self-selection, gender of participant, seating position, and conversation number.

Participant self-selection. Recruitment for the live conversation sessions required volunteers to make special plans, to know that they would be put in a

social situation, and to actually appear for the session. Participation in the conversation studies was, then, more strictly "voluntary" than responding to the questionnaire battery administered in an assembled class. Mechanisms for self-selection had greater play in the recruitment for the conversations than in the questionnaire administration. To the extent that self-selection occurred, the sample of conversation participants was unrepresentative of the surveyed classrooms. To determine the presence of such bias, the questionnaire scores of the conversation participants were contrasted with those of the people who responded to the questionnaire but did not participate in the conversations. Two-sample  $t$ -tests were performed on the questionnaire scores for the participating and non-participating respondents. The results appear in Table 2.

The Stanford Shyness Survey and the Fear of Negative Evaluation scores were not significantly different in the participant and non-participant samples. The participant group reported significantly less loneliness on the UCLA Loneliness Scale than the group who were not (for whatever reasons) recruited for the conversation studies. This finding supports the idea that avoidance of social situations occurs among people with social problems. This result also predisposes the conversation study to have weak effects using the loneliness measure, since individuals reporting more loneliness were not proportionally represented.

Table 2

Differences on questionnaire measures in the  
participant and non-participant respondents

	Participants (n=72)		Non-participants (n=132)		<u>t</u>	<u>df</u>	<u>p</u> <sup>a</sup>
	Mean	SD	Mean	SD			
SSS	113.81	72.63	112.09	84.06	.14	202	.891
FNE	15.82	7.09	16.42	7.46	.56	202	.573
UCL	16.41	18.37	20.27	15.52	2.31 <sup>b</sup>	201.9	.022

<sup>a</sup> All probabilities are two-tailed.

<sup>b</sup> Because sample variances were unequal, separate variance t-tests were employed.

Note: SSS = Stanford Shyness Survey; FNE = Watson-Friend Fear of Negative Evaluation Scale; UCL = UCLA Loneliness Scale



Gender differences. In order to determine if a sizeable proportion of the variance on either the global or the behavior measures could be attributed to gender, t-tests were performed on all of these variables in the Study I sample.

None of the t-values shows significant gender differences on the global social skill measures. The t-tests performed on the behaviors observed are reported in Table 3. Silences was excluded because it is a dyadic variable. All but one of these t-tests were nonsignificant for both Conversation 1 and Conversation 2. There is some indication that women emitted a greater number of Affirmations ("uh-huh", "yes") than did men in the study. This finding was only significant for Conversation 1 ( $t_{34} = 2.65$ ;  $p = .012$ ), although there was a similar trend in Conversation 2 ( $t_{34} = 1.23$ ;  $p = .225$ ). Another finding of note is the nonsignificant but consistent trend for women to nod their heads more than men (Conversation 1:  $t_{34} = 1.80$ ,  $p = .082$ ; Conversation 2:  $t_{32} = 1.75$ ,  $p = .089$ ). Both of these behaviors may function as facilitators for partner speech.

Another set of analyses was performed to assess the effect due to the gender of the person with whom each participant spoke. The results of these t-tests are shown in Table 4. Of the global social skill measures, only Peer Rating was specific to conversation and, therefore, suitable for the assessment of partner gender effects.

Table 3

## Gender Differences in Conversation Behavior

		Males		Females		t	df	p <sup>b</sup>
		Mean	SD	Mean	SD			
Voice Quality	C1 <sup>a</sup>	2.75	1.13	2.70	1.17	.13	34	.898
	C2	2.75	1.48	3.05	1.23	.66	34	.512
Dominance	C1	2.94	1.12	2.85	0.99	.25	34	.805
	C2	2.69	1.30	2.80	1.24	.26	34	.793
Hostility	C1	1.00	0.00	1.10	0.31	1.30	34	.204
	C2	1.00	0.00	1.10	0.45	.89	34	.379
Questions	C1	13.44	7.67	9.97	6.36	1.48	34	.147
	C2	10.44	9.06	7.75	5.41	1.05	23.2	.347 <sup>c</sup>
Answers	C1	9.87	5.59	11.55	8.24	.70	34	.490
	C2	8.37	6.68	8.98	7.87	.24	34	.809
Statements	C1	25.80	11.05	24.92	8.16	.28	34	.784
	C2	23.75	10.97	22.17	10.01	.45	34	.655
Affirmations	C1	14.66	10.97	25.31	12.71	2.65	34	.012
	C2	17.56	9.81	22.83	14.63	1.23	34	.225
Self-pronouns	C1	27.99	12.46	30.56	12.86	.60	33	.554
	C2	29.69	18.23	30.62	13.35	.17	32	.865
Other-pronouns	C1	20.69	9.00	16.02	8.10	1.62	33	.116
	C2	19.56	8.21	18.65	8.19	.32	32	.748
Nods	C1	11.95	10.39	19.27	13.39	1.80	34	.082
	C2	12.87	13.31	25.17	25.06	1.75	32	.089
Speech Duration	C1	25.44	6.95	23.75	6.19	.77	34	.447
	C2	27.40	7.98	22.58	7.43	1.82	32	.078
Speaking Turns	C1	74.94	29.07	68.25	23.12	.77	34	.447
	C2	60.33	20.32	55.21	16.74	.81	32	.426
Gaze Duration	C1	34.37	12.59	35.10	8.03	.21	34	.835
	C2	30.14	14.02	35.89	7.49	1.41	31	.167
Looking Turns	C1	49.19	18.74	53.00	23.60	.53	34	.602
	C2	47.93	26.79	44.84	11.49	.40	16.5	.691 <sup>c</sup>

<sup>a</sup> C1 = Conversation 1; C2 = Conversation 2

<sup>b</sup> All probabilities are two-tailed.

<sup>c</sup> Because sample variances were unequal, separate variance t-tests were used.

Differences in Conversation Behavior and Peer Rating  
Due to Gender of Partner

		<u>Males</u>		<u>Females</u>		<u>t</u>	<u>df</u>	<u>p</u> <sup>b</sup>
		<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>			
Voice Quality	C1 <sup>a</sup>	2.63	1.26	2.80	1.06	.45	34	.653
	C2	3.56	1.21	2.40	1.23	2.84	34	.008
Dominance	C1	2.56	1.03	3.15	0.99	1.74	34	.091
	C2	2.81	1.17	2.70	1.34	.26	34	.793
Hostility	C1	1.06	0.25	1.05	0.22	.16	34	.875
	C2	1.13	0.50	1.00	0.00	1.12	34	.270
Questions	C1	10.25	5.67	12.52	8.05	.95	34	.347
	C2	8.82	7.01	9.05	7.59	.09	34	.928
Answers	C1	13.04	7.93	9.01	6.07	1.72	34	.094
	C2	10.45	9.16	7.32	5.25	1.21	22.7	.237 <sup>c</sup>
Statements	C1	22.58	10.64	27.50	7.91	1.81	34	.223
	C2	21.89	10.38	23.66	10.48	.50	34	.618
Affirmations	C1	17.83	12.67	22.77	13.09	1.14	34	.262
	C2	21.89	14.01	19.37	12.04	.58	34	.565
Self-pronouns	C1	28.85	15.01	29.79	10.77	.22	33	.829
	C2	27.88	15.24	32.23	16.05	.81	32	.424
Other-pronouns	C1	16.34	7.17	17.28	9.44	.89	33	.382
	C2	16.88	8.25	21.03	7.64	1.52	32	.138
Nods	C1	15.63	12.67	16.33	12.77	.16	34	.870
	C2	26.32	27.59	13.22	10.14	1.80	18.6	.089 <sup>c</sup>
Speech Duration	C1	21.63	5.63	26.80	6.35	2.55	34	.015
	C2	22.40	7.83	26.53	7.75	1.53	32	.135
Speaking Turns	C1	66.44	19.91	75.05	29.58	1.00	34	.326
	C2	60.40	24.07	55.16	12.25	.77	19.7	.451 <sup>c</sup>
Gaze Duration	C1	33.38	10.92	35.90	9.64	.74	34	.467
	C2	38.60	7.84	29.17	12.96	2.46	31	.019
Looking Turns	C1	47.06	22.04	54.70	20.74	1.07	34	.293
	C2	44.40	17.21	47.61	21.08	.47	31	.640
Peer Rating	C1	17.03	7.08	21.80	5.59	2.25	34	.031
	C2	19.50	6.54	20.40	7.20	.39	34	.700

<sup>a</sup> C1 = Conversation 1; C2 = Conversation 2

<sup>b</sup> All probabilities are two-tailed

<sup>c</sup> Because sample variances were unequal, separate variance t-tests were used.

Of these fifteen variables, only one showed a gender of partner effect in both conversations. Speech Duration was higher for those talking to females in Conversation 1 ( $t_{34}=2.55$ ;  $p = .015$ ). While this effect was not statistically significant in Conversation 2, the trend there supports the Conversation 1 effect ( $t_{32} = 1.53$ ;  $p = .135$ ).

The stable gender effects are weak, but indicate that women tend to emit more verbal and non-verbal encouragers and that (perhaps because of this) people conversing with women tend to talk more than people interacting with men.

Seating position. A check on the effect of seating position was necessary because there was not a complete counterbalancing of seating position in the conversation sessions. Using data from Study I, a set of t-tests was conducted comparing the behavior and Peer Rating scores of participants seated on the left or on the right. The results of these analyses appear in Table 5.

Of the 28 individual t-tests conducted, only two were statistically significant. In Conversation 2, people seated facing the one-way mirror had a lower number of Speaking Turns ( $t_{25.01}=2.41$ ,  $p = .024$ ) and a lower number of Looking Turns ( $t_{31}=2.07$ ,  $p = .047$ ). While these findings may indicate a seating position effect, this number of significant differences would be expected by chance. Furthermore, these differences were not replicated across conversations.

Table 5

Differences in Conversation Behavior and Peer Rating  
Due to Seating Position

		<u>Left</u>		<u>Right</u>		<u>t</u>	<u>df</u>	<u>p</u> <sup>b</sup>
		<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>			
Voice Quality	C1 <sup>a</sup>	2.78	1.26	2.67	1.03	.29	34	.774
	C2	2.78	1.31	3.06	1.39	.62	34	.541
Dominance	C1	3.00	1.09	2.78	1.00	.64	34	.528
	C2	2.61	1.34	2.89	1.18	.66	34	.513
Hostility	C1	1.06	.24	1.06	.24	.00	34	1.000
	C2	1.11	.47	1.00	0.00	1.00	34	.324
Questions	C1	11.63	6.07	11.39	8.16	.10	34	.919
	C2	6.84	5.51	11.05	8.32	1.79	34	.083
Answers	C1	10.88	7.73	10.72	6.74	.07	34	.948
	C2	10.76	8.17	6.66	5.85	1.73	34	.092
Statements	C1	27.97	7.58	22.77	10.49	1.74	34	.091
	C2	21.89	11.51	23.85	9.21	.56	34	.577
Affirmations	C1	16.38	11.75	24.77	13.06	2.03	34	.051
	C2	19.15	11.22	21.83	14.45	.62	34	.537
Self-pronouns	C1	32.89	10.35	25.68	13.89	1.75	33	.090
	C2	30.90	18.34	29.47	12.81	.26	32	.793
Other-pronouns	C1	18.56	9.61	17.72	7.95	.28	33	.778
	C2	17.53	8.18	20.63	7.93	1.12	32	.270
Nods	C1	14.85	12.87	17.18	12.47	.55	34	.584
	C2	15.35	14.28	23.42	25.98	1.12	32	.270
Speech Duration	C1	26.22	5.30	22.78	7.26	1.63	32	.113
	C2	22.18	8.15	27.24	6.08	1.93	32	.062
Speaking Turns	C1	77.89	28.35	64.56	21.75	1.59	34	.122
	C2	50.42	11.74	64.53	21.14	2.41	25.01	.024 <sup>c</sup>
Gaze Duration	C1	35.61	11.36	33.94	9.05	.49	34	.629
	C2	35.06	13.87	31.75	9.22	.80	31	.429
Looking Turns	C1	50.33	18.81	52.28	24.17	.27	34	.789
	C2	39.76	18.37	52.94	18.18	2.07	31	.047
Peer Rating	C1	17.06	7.08	21.80	4.49	.52	34	.605
	C2	19.89	7.38	29.11	6.45	.10	34	.924

<sup>a</sup> C1 = Conversation 1; C2 = Conversation 2<sup>b</sup> All probabilities are two-tailed<sup>c</sup> Because sample variances were unequal, separate variance t-tests were used.

Conversation order. Differences in behavior between the two conversations are also of interest. In Study I, each participant conversed with one shy and one non-shy person. The pairings were made so that the dyads in Conversation 1 contained persons of differing shyness. Dyads in Conversation 2 were homogeneous for shyness. Said another way, a shy person always spoke first to a non-shy and second to another shy person. A non-shy person had the opposite order of partners. Conversation number was, then, confounded with dyad type (mixed versus homogeneous). Systematic differences between Conversation 1 and Conversation 2 would reflect both practice effects and effects due to dyad type.

The differences in behavior from the first to the second conversation were analyzed by paired  $t$ -tests on the behaviors measured. These results are presented in Table 6.

For the most part, the  $t$ -tests in Table 6 do not show significant differences between a behavior in Conversation 1 and that behavior in Conversation 2. However, the number of Questions asked in Conversation 1 was significantly higher than the number of Questions asked in Conversation 2 ( $t_{35}=2.44$ ;  $p=.020$ ). Also, participants decreased their number of Speaking Turns from Conversation 1 to Conversation 2 ( $t_{33}=2.61$ ;  $p=.013$ ).

Table 6

## Differences Between Conversation 1 and Conversation 2

	Conversation 1		Conversation 2		Difference		<u>r</u>	<u>p</u>	<u>t</u>	<u>df</u>	<u>p</u>
	Mean	SD	Mean	SD	Mean	SD					
Voice Quality	2.72	1.37	2.92	1.34	-.19	1.01	.679	.000	1.16	35	.255
Dominance	2.89	1.04	2.75	1.25	.14	1.15	.507	.002	.72	35	.474
Hostility	1.06	.23	1.06	.33	0.00	.41	-.041	.812	0.00	35	1.000
Questions	11.51	7.09	8.95	6.28	2.57	6.32	.613	.000	2.44	35	.020
Answers	10.80	6.15	8.71	7.31	2.09	9.39	.156	.363	1.34	35	.190
Statements	25.31	9.42	22.87	10.32	2.44	12.27	.230	.166	1.19	35	.240
Affirmations	20.58	12.96	20.49	12.82	.09	12.90	.500	.002	.04	35	.969
Self-Pronouns	29.164	12.68	20.18	15.59	-1.02	13.23	.579	.000	.45	33	.657
Other-Pronouns	18.27	8.82	19.08	8.09	-.81	9.18	.414	.015	.51	33	.612
Nods	16.25	12.73	19.38	21.05	-3.13	21.91	.233	.185	.83	33	.411
Speech Duration	24.32	6.62	24.71	7.94	-.38	8.87	.269	.124	.25	33	.803
Speaking Turns	67.06	19.55	57.47	18.30	9.59	21.39	.363	.035	2.61	33	.013
Gaze Duration	34.67	10.34	33.46	11.79	1.21	11.86	.433	.021	.59	32	.561
Looking Turns	51.82	21.62	46.15	19.19	5.67	30.38	-.105	.562	1.07	32	.292

Because of the confounding of dyad type with occasions, it is not clear whether these changes should be attributed to a practice effect (i.e., people habituate by the second conversation) or to an effect due to dyad type (i.e., dissimilar partners act differently together than do similar partners). In any case, this result leads one to expect these two variables to behavior differently depending on conversation number. Caution is suggested in interpreting the results of the experimental manipulation in Study II, which uses between-conversation differences to assess an effect.

Hypothesis 1: Global measures, their interrelationship in the participant sample

Hypothesis 1 predicted that different ways to evaluate overall social skill were not equivalent. This investigation utilized four different modes of measuring social skill: self-report questionnaires targeting general social behavior (the Stanford Shyness Survey, the Fear of Negative Evaluation Scale, and the UCLA Loneliness Scale), self-assessment in the specific situation observed (comfort and own social skill questions of the post-session questionnaire), in-vivo evaluation (liking by partner) and judgments of uninvolved peers (ratings by a team of peer judges). The interrelationships among three of these means of indexing social skill are present in the form of Pearson correlations in Tables 7a and 7b (partner liking is presented separately). All



Table 7a

Correlations Among Six Global Measures of Social Skill:  
Study I

	SSS	FNE	UCL	Self-rate	Comfort	Peer Rating
SSS	1.00	.33 (p=.030)	.40 (p=.005)	.30 (p=.038)	.21 (p=.100)	-.28 (p=.048)
FNE		1.00	.40 (p=.005)	.26 (p=.063)	.40 (p=.005)	.08 (p=.317)
UCL			1.00	.38 (p=.008)	.06 (p=.386)	.08 (p=.228)
Self-rate				1.00	.30 (p=.038)	-.11 (p=.228)
Comfort					1.00	-.22 (p=.097)
Peer Rating						1.00

Table 7b

Correlations Among Six Global Measures of Social Skill:  
Study II

	SSS	FNE	UCL	Self-rate	Comfort	Peer Rating
SSS	1.00	.42 (p=.003)	.29 (p=.040)	.48 (p=.002)	.28 (p=.048)	-.29 (p=.040)
FNE		1.00	.15 (p=.194)	.49 (p=.002)	.29 (p=.040)	.21 (p=.100)
UCL			1.00	.26 (p=.063)	-.02 (p=.647)	-.20 (p=.100)
Self-rate				1.00	.49 (p=.002)	-.21 (p=.100)
Comfort					1.00	-.47 (p=.002)
Peer Rating						1.00

Note: SSS=Stanford Shyness Survey; FNE=Fear of Negative Evaluation Scale  
UCL=UCLA Loneliness Scale

All p-values based on one-tailed tests.

measures were coded in the same direction (with low scores indicative of more effective functioning) except for Peer Rating (where high scores reflect better functioning). The generally negative intercorrelations with Peer Rating occur because of this direction reversal.

Of the thirty meaningful Pearson correlations, nineteen were significant at the  $p \leq .05$  level. The three inventories intercorrelated moderately: only one correlation of six failed to reach significance. Similarly, the two post-session questions (Self-rate and Comfort) were significantly correlated in both tests of the relationship. The nonsignificant correlations appeared mostly in the tests between different types of social skill measure. The general inventories correlated significantly with the post-session questions in only eight of the twelve tests of these relationships. The chief demonstration of a modality effect is seen in the low number of significant relationships between self-assessment and other-assessment of social skill. In only three of ten tests were these correlations significant.

Hypothesis 1, which predicted differences among different ways of measuring social skill, was partially supported by the weak cross-modality correlations. The generally significant correlations between self-report measures of social skill, however, point to commonality among these. Even though these instruments utilized

different sub-constructs of social skill, they tended to co-vary. These data, then, support Hypothesis 1 most clearly when the measurement devices utilize different methods of evaluating social skill.

Being liked by the people one interacts with is another indicant of social skill. On the post-session questionnaire, each participant rated his degree of liking for each of his partners. This liking rating can be attributed either to the person making the rating or to the person being rated. In Table 8, the intercorrelations of liking are presented with liking interpreted in both senses. In Table 8, "Liking for" rows show ratings as attributed to the rater, viewing the rating as a behavior. The "Being liked" rows regard the rating as an indicator of the social skill of the person being rated. Extreme dislike received a high score. Other ratings were scaled as in earlier tables.

The table of intercorrelations provides little support for viewing liking as a behavior related to the social skill of the rater. On the other hand, there are significant correlations between Being liked and the skill ratings by peer judges (three of the four correlations significant at the  $p \leq .05$  level). Further, being liked by one's partner was fairly stable across conversations (and, therefore, partners), as indicated by the correlation of .48 ( $p \leq .05$ ). The negligible intercorrelations between being liked by the partner and self-rated social skill provide further demonstration of the modality effect mentioned above: self-rating does not appear to covary with rating by others.



Table 8

Correlations Between Liking Variables and Social Skill Measures: Study I

	Self-rate	Conversation 1			Conversation 2		
		Liking	Being liked	Peer Rate	Liking	Being liked	Peer Rate
Self-rate	1.00	.10	.20	-----	.21	.26	-----
Liking for Partner 1		1.00	.26	-.03	.17	.08	-.01
Being Liked by Partner 1			1.00	-.22	.15	.48*	-.36*
Peer Rating--Conv. 1				1.00	.18	-.32*	-----
Liking for Partner 2					1.00	.15	-.04
Being Liked by Partner 2						1.00	-.46*
Peer Rating--Conv. 2							1.00

\*  $p \leq .05$

Liking by the partner has not been previously used as an index of social skill. The analysis presented above, a preliminary test of the usefulness of partner rating, suggests its usefulness as a social skill measure. Partner rating is not further utilized as a social skill measure in this investigation, as this was its first test in that capacity.

#### Relationship of global social skill measures to conversation behavior

The relationship between global measures of social skill and what people actually do is the central concern of this paper. Hypotheses 2 and 3 posited two particular social skill-related behavioral syndromes: low activity level and overconcern with self. Before testing these hypotheses individually, the main body of data was examined for an overall relationship between measures of social skill and observed social behavior.

Overall relationship. Canonical correlation procedures were used to relate two groups of variables: global measures of social skill and the behaviors recorded. Canonical correlation is a complex multivariate routine which produces the weighted combination of variables maximizing the correlation between the two groups. The canonical  $R^2$  reflects the degree of association between the two groups of variables, while the obtained weights reflect the relative importance of each of the predictor and criterion variables in the overall relationship.

Canonical equations were produced for both of the conversations in Study I and for the first conversation in Study II. The second conversation of Study II involved a manipulation and could not be used. One canonical variate was extracted for each analysis. The statistics reflecting the strength of the canonical relationships are shown in Table 9. Each of these canonical equations demonstrates statistical significance at the  $p \leq .05$  level.

The utility of the canonical correlation technique rests on whether the linear combination of variables constituting the prediction equation make any theoretical sense. Table 10 shows these coefficients, which represent the weights given to the various variables in the equation. There is no apparent consistency of pattern across these replications of the canonical technique. Since cross-validation was chosen as the primary means of evaluating results in this investigation, no attempt is made to interpret the inconsistent patterns seen here.

Canonical correlation techniques provide useful information where there are strong patterns of both inter-relatedness and independence. Where the relationships among variables are moderate and diffused throughout the variable set, canonical equations tend to be unstable. The latter situation characterizes these data. These results confirm the existence of an overall relationship between measured social skill and behavior, but are not useful in specifying the particular nature of this

Table 9

Canonical Correlations between Social Skill  
Measures and Conversation Behaviors

	Eigen- value	<u>R</u> <sup>2</sup>	Chi-square	<u>df</u>	<u>p</u>
Study I Conversation 1	.847	.920	140.43	112	.036
Study I Conversation 2	.917	.958	152.04	112	.007
Study II Conversation 1	.920	.959	155.17	112	.004

Table 10  
Canonical Variate Coefficients

	Study I		Study II
	Conv. 1	Conv. 2	Conv. 1
Stanford Shyness Survey	.397	.103	-.328
Fear of Negative Evaluation	.318	-.181	-.562
UCLA Loneliness Scale	-.112	-.424	.460
Self-rating	-.019	-.426	.508
Comfort	-.428	.103	.195
Peer Rating	-.654	.818	.094
Voice Quality	.060	.101	-.717
Dominance	-.252	.188	.389
Hostility	.381	.257	-.331
Questions	.300	.109	-1.224
Answers	-.239	-.278	-.026
Statements	-.418	-.205	-.789
Affirmations	-.390	.068	.500
Self-referent Pronouns	.142	.400	-.440
Other-referent Pronouns	-.579	.053	.257
Silences	.146	-.381	-.038
Nods	-.058	.142	-1.097
Speech Duration	-1.584	.220	.346
Speaking Turns	1.243	.615	.238
Gaze Length	-1.870	-.295	1.589
Gaze Turns	2.136	-.071	-1.184



relationship. The specific hypotheses on activity level and overconcern with self are therefore neither supported nor denied by the canonical correlations.

In order to test these hypotheses more precisely, the behaviors relevant to each were selected. No one skill measure emerged as a good summary index in the previous analyses, so all were tested for their relationships to the behavioral syndromes hypothesized.

Hypothesis 2: Activity level. Of the behaviors counted by raters, the following were used to test the hypothesis regarding activity level: Speech Duration, Speaking Turns, Questions, Statements, Silences, Nods, and Voice Quality. These behaviors were analyzed as a group for their relationship to each global skill measure, using linear regression techniques.

Three replications were conducted: the two conversations in Study I and Conversation 1 in Study II. Regression equations were constructed using all variables. Then, variables were eliminated if they made contributions to the equations of less than  $p \leq .10$  significance levels. The final equations were examined for the important behaviors remaining in each. If the final equation had an overall significant  $R$  ( $p \leq .05$ ), then the contribution of each variable was evaluated, using its beta weight as an index of importance. Equations were first produced for the two conversations of Study I. If, for a given social skill measure, both regression equations

were nonsignificant, that measure was not replicated on the Study II data.

In Table 11, the results of these regression analyses are summarized. Only one of the six measures of social skill was consistently related to behavior across all three replications. That measure, Peer Rating of social skill, was consistently related to Speech Duration, a measure of the total amount of time a participant spent talking. People who were rated more highly showed more time spent talking.

Several other measures of social skill could be predicted by behavior variables in two of the three replications. Shyness related to Speech Duration in Conversation 1 of Studies I and II: the shyer the person, the less he or she talked. In both conversations of Study I, the number of head nods was lower in people with high social anxiety as measured by the Fear of Negative Evaluation Scale. Post-session self-rating was higher in people emitting a high number of Statements. This relationship appeared in the first conversations of Studies I and II. Two social skill measures, the UCLA Loneliness Scale and post-session comfort rating, had no significant or no consistent relationships with behavior.

Inspection of the correlation matrix in Table 12 allows one to judge the true distinctiveness of the different regression equations. Speech duration is

Table 11

## Activity Level: Predictors of Social Skill

Skill measure	Study	Conv.	<u>R</u>	<u>F</u>	<u>p</u>	Predictors and associated beta weights			
SSS	I	1	.375	5.55	.024	SD	-.375		
	I	2	.529	6.41	.004	ST	-.363		
	II	1	.370	5.39	.026	SD	-.370		
FNE	I	1	.529	4.16	.014	ST	-.439	SD	.416
	I	2	.357	4.98	.032	NOD	-.357		
	II	1				No significant predictors found			
UCL	I	1	.345	2.22	.124				
	I	2	.284	2.98	.090				
	II	1				Not tested			
Self-Rating	I	1	.357	4.97	.032	SMT	-3.57		
	I	2	.440	3.97	.029	SIL	.314	VQ	-.287
	II	1	.623	4.93	.003	QUE	-.429	SMT	-.341
Comfort	I	1	.447	4.11	.026	SIL	.383	ST	.279
	I	2	.348	4.70	.037	SMT	.348		
	II	1	.351	4.77	.036	SMT	-.351		
Peer Rating	I	1	.496	9.08	.001	SIL	-.424	SD	.336
	I	2	.322	3.94	.055	SD	.322		
	II	1	.683	29.75	.000	SD	.683		

Note: SSS=Stanford Shyness Survey; FNE=Fear of Negative Evaluation Scale; UCL=UCLA Loneliness Scale; SD=Speech Duration; ST=Speaking Turns; NOD=Nods; SMT=Statements; SIL=Silences; VQ=Voice Quality; QUE=Questions

Table 12

## Activity Level: Correlation Matrix

	Speech Duration	Speaking Turns	Questions	Statements	Silences	Nods	Voice Quality
Speech Duration	1.00	.23 .19 .05	.27 .13 .02	.50 .32 .28	-.22 -.20 -.02	.09 -.18 .14	.15 .08 .22
Speaking Turns		1.00	.59 .40 .24	.43 .38 .13	-.12 .08 .24	-.25 .03 -.05	.01 .19 -.06
Questions			1.00	.44 .13 -.09	-.36 -.05 .22	-.11 .07 -.19	.15 -.03 -.30
Statements				1.00	-.41 .02 -.17	.12 .20 -.32	.17 .15 -.12
Silences					1.00	-.31 -.08 .10	-.18 -.07 -.14
Nods						1.00	.38 .25 .09
Voice Quality							1.00

Note: For each cell, the topmost correlation coefficient is derived from Study I, Conv. 1;  
the middle coefficient from Study I, Conv.2; the bottom coefficient from Study II, Conv.1.

substantially correlated with Statements. The equation derived which linked post-session self-rating to number of statements, then, reflects the same essential relationship as shown by the two Speech Duration relationships. While both Speech Duration and Statements are measures of verbosity, their strong intercorrelation causes one variable to be suppressed when the other is extracted. In most cases, Speech Duration had the stronger relation to social skill, so that it appeared in the regression result and Statements was suppressed. In the first equation predicting self-rating, however, Statements had the stronger predictivity and Speech Duration was suppressed. The relationship of self-rated social skill to behaviors, then, is essentially the same as the relationships of shyness and peer-rated social skill to behavior. It should be noted that these three summary indices of social skill, while manifesting a similar relationship to behavior, have shown differences among themselves.

The relationship between head nod frequency and social anxiety, on the other hand, appears to be distinctive. As shown in Table 12, Nods does not generally correlate consistently with other behaviors. Its strongest association, marked by two of three correlations .25 or over and in the same direction, was to Voice Quality. Nods is unrelated to Speech Duration. The association between self-reported anxiety and nods is, then, a different aspect of social skill than evidenced in the other regression equations.

Hypothesis 3: Overconcern with self/Direction of attention.

Hypothesis 3 predicted that people low in social skill would focus excessively on themselves, whereas skilled people would

direct their attention toward those with whom they interact. This hypothesis was tested in two ways. First, a series of linear regressions was calculated as in the foregoing test of the activity level hypothesis. The behaviors included here as indicators of attention direction were the following: Gaze Length, Gaze Turns, Self-referent Pronouns ("me", "I"), Other-referent Pronouns ("you"), Questions, Statements and Affirmations.

The results of these linear regressions are shown in Table 13. The behaviors related to attention direction failed to predict the three self-report inventory measures of social skill for either of the conversations in the Study I sample (no behavior variable related to social skill with a probability of less than  $p \leq .10$ ). These three social skill measures were therefore discarded from further consideration of the hypothesized relationship. The regression procedure also failed to produce a marginally significant equation for post-session rating of comfort in Conversation 1 of Study I. The significant relationship found for Conversation 2 failed to be replicated in Study II and will not be discussed further.

The regression results for the skill measures of post-session Self-Rating and Peer Rating are consistent across all three replications. Post-session Self-Rating was predicted by the frequency of Self-referent Pronouns in all three replications and by frequency of Questions in

Table 13

## Attention Direction: Predictors of Social Skill

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Skill measure	Study	Conv.	<u>R</u>	<u>F</u>	<u>p</u>	Predictors and associated beta weights							
SSS	I	1	No significant predictors found										
	I	2	No significant predictors found										
	II	1	Not tested										
FNE	I	1	No significant predictors found										
	I	2	No significant predictors found										
	II	1	Not tested										
UCL	I	1	No significant predictors found										
	I	2	No significant predictors found										
	II	1	Not tested										
Self- Rating	I	1	.659	5.96	.001	ME	-.598	GL	.342	QUE	-.331	AFF	-.305
	I	2	.366	5.25	.028	ME	-.374						
	II	1	.479	4.92	.014	QUE	-.403	ME	-.351				
Comfort	I	1	No significant predictors found										
	I	2	.348	4.70	.037	SMT	.348						
	II	1	.484	10.40	.003	ME	-.483						
Peer Rating	I	1	.376	5.61	.024	YOU	.379						
	I	2	.498	11.22	.002	YOU	.502						
	II	1	.519	6.10	.006	YOU	.574	QUE	-.381				

Note: SSS=Stanford Shyness Survey; FNE=Fear of Negative Evaluation Scale; UCL=UCLA Loneliness Scale; ME=Self-referent Pronouns; GL=Gaze length; QUE=Questions; AFF=Affirmations; SMT=Statements; YOU=Other-referent Pronouns

two of the three replications. Participants who rated themselves poorly were people who used very few self-references (i.e., talked little about themselves) and who asked few questions of the other person. Peer-rated social skill was predicted by use of Other-referent Pronouns. Participants rated low in social skill were those using relatively few second-person pronouns (i.e., talked little about their partners).

Hypothesis 3 predicted that people with low social skill would talk about themselves but not about their partners. The relationship between peer-rated social skill and Other-referent Pronouns supports this hypothesis. The relationship between Questions and Self-Rated social skill was also in the hypothesized direction. Other findings on Self-Rated social skill are contrary to this hypothesis, as people who talked about themselves rated themselves more, rather than less, skilled.

The intercorrelations, shown in Table 14, are helpful in interpreting the regression results. As expected, the verbal indices of self-directed attention (use of Self-referent Pronouns and Statements) correlate positively. Similarly, the other-directed indices, use of Other-referent Pronouns and Questions, also correlate positively. However, of the correlations between indicators of opposite attention direction, only one was clearly negative: that between



Table 14  
Attention Direction: Correlation Matrix

	Gaze Length	Gaze Turns	Me	You	Questions	Statements	Affirmations
Gaze Length	1.00	-.41 -.29 -.62	.10 -.32 -.18	.25 .16 -.16	.34 .21 .03	.15 -.26 -.29	.17 .07 -.17
Gaze Turns		1.00	-.09 .27 .35	.14 -.01 .13	.13 .05 -.06	.17 -.18 .43	-.07 .04 -.07
Me			1.00	.09 .32 .24	-.25 -.25 -.20	.36 .25 .24	.00 .03 -.04
You				1.00	.38 .31 .47	.20 .15 .06	-.10 .04 -.07
Questions					1.00	.44 .13 -.09	.05 .07 -.22
Statements						1.00	.12 -.06 .11
Affirmations							1.00

Note: For each cell, the topmost correlation coefficient is derived from Study I, Conv. 1;  
the middle coefficient from Study I, Conv. 2; the bottom coefficient from Study II, Conv. 1.

Self-referent Pronouns and Questions. The others were either mildly positive or mixed. Since more of a behavior indicating self-directed attention did not necessarily imply less of an other-directed indicator, these behaviors cannot be said to reflect only one dimension of behavior. A second dimension operating here is probably verbal activity level, since the frequency of particular types of verbal behavior depends on the general frequency of verbal behavior.

It has already been demonstrated that behavioral activity level predicts rated social skill. The attention direction results, therefore, owe some of their strength to the role of activity level. Yet, the correlations between Self-referent Pronouns and Other-referent Pronouns are too small to claim that the prediction equations for each are merely different reflections of the same essential relationship. There appears, rather, to be a true contrast between the behaviors affecting self-rating and the behaviors affecting rating by others. People who talked about themselves thought they had done well, but independent judges rated performance highly when people talked about their partners.

Another test of the hypothesis concerning the salience of overconcern with self in social skill deficit was the manipulation of attention. Hypothesizing that shy or unskilled people direct their attention toward themselves, half the participants in Study II were instructed to direct their attention opposite to that indicated by their shyness status. Shy people were redirected to attend to their partners; non-shy people were redirected to attend to themselves.

The manipulated participants were expected to change toward resembling the opposite shyness group more closely.

This experimental manipulation was tested using a two-factor ANOVA. Shyness status (Shy, Non-shy) and Attention manipulation (Manipulated, Nonmanipulated) were the two factors. The analyses of variance were conducted on three behaviors thought to indicate attention direction: Gaze Duration, Questions, and Other-referent Pronouns. The same test was conducted on Peer-rated social skill. In each case, the change in behavior frequency or rating from Conversation 1 to Conversation 2 was employed as the dependent variable in the design. The specific test of Hypothesis 3 was the interaction of shyness status and attention manipulation.

The results of these two-way ANOVAs on the attention-relevant behaviors are displayed in Tables 15 through 17. As can be seen there, none of the interaction  $F$ -ratios was statistically significant (all  $p$ s  $\geq .20$ ). These negative results force the conclusion that either (1) attention was not effectively manipulated or (2) direction of attention was not manifested behaviorally, at least not in the behaviors measured here.

The analysis of variance on Peer rating of social skill appears in Table 18. Again, the effects are not significant. An experimental test of the effect of attention-direction in social skill, then, failed to demonstrate the existence of the effect.

Table 15

Analysis of Variance on the Effect of  
Attention-Direction Manipulation on Amount of Eye Gaze

Source of variation	Sum of squares	<u>df</u>	Mean square	<u>F</u>	<u>p</u>
Main effects	48.225	2	24.113	0.242	.787
Attention manipulation	13.636	1	13.636	0.137	.714
Shyness	35.886	1	35.886	1.360	.553
Two-way interaction	122.727	1	122.727	1.232	.276
Explained	177.575	3	59.192	0.594	.624
Residual	3089.107	31	99.649		
Total	3266.698	34	96.079		

Table 16

Analysis of Variance on the Effect of  
Attention-Direction Manipulation on Number of Questions

Source of variation	Sum of squares	df	Mean square	<u>F</u>	<u>p</u>
Main effects	265.889	2	132.944	1.844	.175
Attention manipulation	152.111	2	152.111	2.110	.156
Shyness	113.778	1	113.778	1.578	.218
Two-way interaction	75.111	1	75.111	1.042	.315
Explained	341.000	3	113.667	1.577	.214
Residual	2306.887	32	72.090		
Total	2647.886	35	75.654		

Table 17

Analysis of Variance on the Effect of  
Attention-Direction Manipulation on Other-referent Pronouns

Source of variation	Sum of squares	df	Mean square	F	p
Main effects	496.944	2	248.472	2.026	.148
Attention manipulation	90.250	1	90.250	0.736	.397
Shyness	406.694	1	406.694	3.316	.078
Two-way interaction	3.361	1	3.361	0.017	.870
Explained	500.305	3	166.768	1.360	.273
Residual	3924.441	32	122.639		
Total	4424.746	35	126.421		

Table 18

Analysis of Variance on the Effect of  
Attention-Direction Manipulation on Peer Rating of Social Skill

Source of variation	Sum of squares	df	Mean square	<u>F</u>	<u>p</u>
Main effects	128.28	2	64.14	2.73	.080
Attention manipulation	38.03	1	38.03	1.62	.212
Shyness	90.25	1	90.25	3.84	.059
Two-way interaction	42.25	1	42.25	1.80	.189
Explained	170.53	3	56.84	2.42	.084
Residual	751.78	32	23.49		
Total	922.30	35	26.35		

The foregoing results provide mixed support for Hypothesis 3. Behavioral indicators of attention direction predicted social skill as rated by peer judges. Significant results contrary to Hypothesis 3 were found when the skill rating used was post-session self-rating of social skill. An experimental manipulation of attention direction had no apparent effect on behavior or rated social skill.

#### Hypothesis 4: Adaptation to partner

Hypothesis 4 predicted that skilled people would conform to others better than unskilled people. In other words, their behavior would come to resemble that of their partners. It is not possible to assess this phenomenon on an individual level using conversation total scores, as adaptation occurs between two people. Which individual is doing the adapting and which is being adapted to is impossible to distinguish.

This hypothesis was tested using Study I dyads classified according to the social skill of the two participants. The dyads were classified using a median split on Peer-rated social skill. Dyads with both partners above the median were designated as skilled; those dyads with both below the median were designated unskilled. Dyads with one skilled and one unskilled partner were designated as mixed. This classification scheme yielded nine skilled dyads, seventeen mixed dyads, and ten unskilled dyads.



Each dyad represents a conversation grouping, of which there were two per person, one for each conversation. Each individual participant was represented twice in this analysis. Because of this unusual dependency in the design, the probability levels yielded in these analyses should be regarded as approximate.

In order to test the behavioral similarity between partners in the three different types of dyads, the absolute value of the difference between partners was used as a dependent variable. A small inter-partner difference in behavior indicated adaptation, a large difference, non-adaptation. Using these difference scores on the observed behaviors, several one-way analyses of variance were conducted.

The results of these ten univariate ANOVAs are shown in Table 19. Only one of these approaches significance: the partner similarity on Speech Duration ( $F = 3.24$ ;  $p = .052$ ). Inspection of the group means shown in Table 20 reveals this effect to be due to a linear tendency for partner discrepancy in speech amount to be lower as the dyads become more skilled. Skilled dyads, in other words, had more balanced speech durations (shared the floor more equitably) than unskilled dyads. This result supports Hypothesis 4, that skilled individuals adapt to their partners. This single significant result may be due to chance, however, and no other sample is available to use for cross-validation.

Table 19

One-way Analyses of Variance on Partner Behavior Differences  
 Compared Among Skilled, Unskilled and Mixed Dyads: Study I

(n = 36)

	SS explained	SS residual	MS explained	MS residual	F	df	P
Questions	46.72	1003.84	23.36	30.42	0.768	2,33	.472
Statements	173.43	2405.46	86.72	72.89	1.190	2,33	.317
Affirmations	99.77	4311.87	49.89	130.66	0.382	2,33	.686
Self-Pronouns	47.91	2880.71	23.95	92.93	0.258	2,31	.774
Other-Pronouns	152.71	1804.03	76.36	58.19	1.312	2,31	.284
Nods	512.55	11226.43	256.27	350.83	0.730	2,32	.490
Speech Duration	271.36	1339.39	135.68	41.86	3.242	2,32	.052
Speaking Turns	948.02	12235.12	474.01	382.35	1.240	2,32	.303
Gaze Duration	118.12	2565.32	159.06	82.75	0.714	2,31	.498
Looking Turns	52.30	12041.82	26.15	388.45	0.067	2,31	.935

Table 20

Means and Standard Deviations of Three Types  
Dyads on Partner Differences in Speech Duration

Dyad type	Mean	SD	N
Unskilled	14.89	7.00	9
Mixed skill	11.94	7.32	17
Skilled	7.22	3.31	9

### Hypothesis 5: Ongoing behavior

Hypothesis 5 predicted that the pattern of ongoing behavior would be distinguishable according to the social skill of the behaving person. To investigate patterns of behavior, six conversations were selected for a molecular analysis of speech and gaze. Conversations were selected which (1) had high quality behavior stream recordings (i.e., clear timing, no off-camera events, exactly matching tapes, etc.), and (2) contained one participant with an extreme social skill score. These records were analyzed as examples of the patterns of speech and gaze in high- and low-skill people. In order to understand possible partner effects, two of the selected conversations were the first and second conversations of one participant.

The social skill scores of these selected participants, converted to standardized scores for comparability, are shown in Table 21. Among these participants, there were two having low self-reported skill who were also rated as unskilled by the peer judges: numbers 113 and 38. Participant 237 had average self-reports, but was rated low in social skill. These three were treated as an unskilled group. There were four participants who were high in skill: numbers 7, 184, 92, and 176. The behavior patterns of these four are regarded as a skilled group. The remaining selected participants are considered to be moderate in skill.

Table 21

Z-scores on Social Skill Measures in Selected Participants

Skill level	Participant #	SSS	FNE	UCL	Self-rate	Comfort	Peer Rating
Low	237	- .85	-1.14	- .50	.13	-1.55	-1.75
	113	1.67	- .29	.63	.13	.27	-1.57
	38	1.51	.14	1.50	.13	.27	-1.83
Mode- rate	43	1.84	1.43	-1.25	.13	1.18	- .29
	164	- .04	.47	2.13	1.38	1.18	.14
	169	.58	.29	.00	.13	1.18	.00
	8	- .40	- .71	-1.00	.13	1.18	- .43
High	7	-1.56	-1.43	- .88	-1.13	-1.55	.00
	184	- .66	- .29	.63	.13	.27	-1.57
	92	- .55	.29	- .88	-1.13	.27	.86
	176	-1.56	- .29	- .88	-1.13	- .64	.00

Note: SSS = Stanford Shyness Survey; FNE = Fear of Negative Evaluation Scale; UCL = UCLA Loneliness Scale

The event recordings of ongoing speech and gaze were prepared for statistical analysis in two steps. First, the record for each individual participant was divided into intervals. Second, the records of the interacting partners were placed side by side and new intervals defined according to the joint behavior of the two partners.

In the first step, an interval was defined whenever the speech or gaze behavior stream changed status (i.e., talking or looking onset or offset). Four types of intervals were defined here: talking only, looking only, concurrent talking and looking, and neither talking nor looking (silent gaze aversion). In the second step of coding, these four event types were further broken down according to the behavior status of the partner. For example, while Person A engaged in talking only, her partner could be doing one of four things. When the four types of categories were broken down by four types of partner category, sixteen joint behavior categories resulted.

The interval definition process outlined above is event-based: every time a behavior changed, a new event occurred. This differs from a time-based coding system, in which a new interval is defined as specified time intervals. A time-based system requires a more refined coding system than was used here. It also makes the task of specifying sequences more difficult, since each behavior is allowed to cycle into itself. In an event-based system

like the one used here, a long-lasting event is treated just like a momentary event. Duration of behavior was not captured in these data. (See Bakeman and Dabbs, 1976, for a useful discussion of event-based and time-based behavior stream data.)

The codes generated from the above interval demarcation process were subjected to a computerized sequential analysis of ongoing behavior. This computer program (Bakeman, 1979) first Calculated the probability of a specified behavior event within the string of events (in this case, conversation speech and gaze) for a single subject or dyad. The program then regarded adjacent events and compared the observed probability of the two-event sequence to its expected probability, given the simple probabilities of each event. For example, if one wanted to know about the probability of behavior chain  $A \rightarrow B$  in a given string of events, the observed frequency of the sequence would be compared to the probability of such a joint event  $A \rightarrow B$ , given the baseline probabilities of A and B.

In the present data, the sequential program was used to examine speech-gaze patterns in the beginnings and endings of speaking turns. Unfortunately, the number of events per conversation was not sufficient to provide conclusive evidence regarding these behavior sequences. The computations of frequencies and probabilities generated by these analyses are of interest, however, and are presented below.

The proportions of events represented by the sixteen joint behaviors appear in Table 22. This table shows the four categories of speech-gaze for a given participant, each broken down into the four possible concurrent partner behaviors. The cells represent the proportion of events in which the subject engages in the main heading behavior while the partner engages in the secondary heading behavior. The verbal interpretation of a cell, then, is the proportion of events in which the subject engages in \_\_\_\_\_ while his/her partner simultaneously engages in \_\_\_\_\_. These categories refer to the behavior of the dyad. This dyadic behavior is presented, however, for each individual in the dyad, so that individuals can be compared. In row 1, for example, #43 is the subject and #237 is the partner. In row 2, the same dyadic proportions appear, but arranged to regard #237 as the subject and #43 as the partner.

The deviant scores in Table 22 were designated as low or high if the cell proportion differed by more than one standard deviation from its column mean. Table 23 shows these "lo" and "hi" designations with participants grouped by social skill level. The table is divided into twelve numbered blocks for purposes of reference.

While the number of subjects here is too small for statistical examination of group differences, these deviant joint events provide some clues about the interactive aspects of social skill. Participants of low social skill show high proportions of looking while their partners



Table 22

Proportions of Joint Speaking and Looking Behavior in Six Conversing Dyads

Subj. #	# events	Subject: Silent gaze aversion				Subject: Talking				Subject: Looking				Subject: Talk + Look			
		P A R T N E R				P A R T N E R				P A R T N E R				P A R T N E R			
		SGA	TALK	LOOK	T+L	SGA	TALK	LOOK	T+L	SGA	TALK	LOOK	T+L	SGA	TALK	LOOK	T+L
43	341	10.0	2.6	14.1	6.7	7.0	0.6	21.7	4.9	3.5	0.9	8.5	3.8	3.2	0.6	8.8	2.1
237		10.0	7.0	3.5	3.2	2.6	0.6	0.9	0.6	14.1	21.7	8.5	8.8	6.7	5.9	3.8	2.1
237	355	12.4	11.3	11.6	7.0	3.9	2.8	5.1	3.7	9.0	7.0	5.6	9.0	2.3	2.8	4.5	2.0
7		12.4	3.9	9.0	2.3	11.3	2.8	7.0	2.8	11.6	5.1	5.6	4.5	6.0	3.7	9.0	2.0
113	396	8.3	6.8	4.6	2.8	3.5	1.0	4.6	1.8	6.3	13.1	5.8	13.6	5.3	4.6	10.4	6.6
184		8.3	3.5	6.3	6.3	6.8	1.0	13.1	4.6	4.6	4.6	5.8	10.4	2.8	1.8	13.6	6.6
164	348	0.6	0.3	0.3	0.0	0.6	0.3	1.4	0.3	11.5	14.7	14.7	17.5	6.6	5.5	13.5	12.4
92		0.6	0.6	11.5	6.6	0.3	0.3	14.7	5.5	0.3	1.4	14.7	13.5	0.0	0.3	17.5	12.4
176	307	2.3	2.9	8.5	6.5	1.6	1.3	15.6	7.8	2.3	8.1	8.5	14.0	2.3	1.0	9.8	6.5
169		2.3	1.6	2.3	2.3	2.9	1.3	8.1	1.0	8.5	15.6	8.5	9.8	6.5	7.8	14.0	6.5
8	287	11.5	3.1	12.9	1.4	8.0	1.1	16.7	1.7	7.3	3.1	8.4	4.2	3.8	2.8	10.1	3.8
38		11.5	8.0	7.3	3.8	3.1	1.1	3.1	2.8	12.9	16.7	8.4	10.1	1.4	1.7	4.2	3.8
Mean		7.5	4.3	7.7	4.2	4.3	1.2	9.3	3.2	7.7	9.3	8.6	9.9	4.2	3.2	9.9	5.6
SD		4.9	3.5	4.4	2.4	3.5	0.9	5.9	2.3	4.4	3.5	3.3	3.5	2.3	2.3	4.3	3.9

Table 23

## Deviant Joint Probabilities

		Subject: Silent gaze aversion				Subject: Talking				Subject: Looking				Subject: Talk + Look			
Subject #		P A R T N E R				P A R T N E R				P A R T N E R				P A R T N E R			
		SGA	TALK	LOOK	T+L	SGA	TALK	LOOK	T+L	SGA	TALK	LOOK	T+L	SGA	TALK	LOOK	T+L
Low Skill	237	1				2				3				4			
	237	hi	hi		hi		hi	lo	lo	hi	hi			hi	hi	lo	
	113										hi		hi			lo	
	38		hi					lo		hi	hi			lo		lo	
Mod. Skill	43 <sup>a</sup>	5				6				7				8			
	164	lo	lo	hi	hi	lo	lo	hi	lo	lo	lo	hi	lo	hi	hi		hi
	169	lo		lo	lo			lo	lo	hi	hi	hi	hi	hi	hi		
	8			hi	lo	hi		hi		lo		lo					
High Skill	7 <sup>a</sup>	9				10				11				12			
	184	hi				hi	hi				lo		lo	hi			
	92	lo	lo			lo	lo		hi	lo	lo	hi	hi	lo	lo	hi	hi
	176	lo						hi	hi	lo		hi					

<sup>a</sup> Partners of #237

talked (see block 3, column 2 in Table 23) and of silently looking away while their partners talked (see block 1, column 2). They show low proportions of talking while their partners looked at them (see block 2, column 3), as well as talking and looking together while their partners looked at them (see block 4, column 3). Participants in the other skill groups manifest more balanced or opposite patterns of these joint behavior proportions.

These apparently skill-based differences may be primarily functions of the aforementioned tendency for low-skill people to do little talking (and, therefore, for their partners to talk a great deal). When the cell proportions reflecting subject talking are combined, it emerges that these low skill participants spent, on the average, 37% of their total events speaking. These medium and high-skill participants spent 53% and 50%, respectively, of their events speaking.

Consideration of the row denoting participant 237's two partners (#43 and #7) shows a noteworthy similarity between them. Both partners show low scores in the two cells denoting gaze while the partner speaks. Participant 237 had a low number of speaking and speaking plus looking intervals, and this depressed the frequency of his partners' looking intervals. This is a small demonstration of the interdependency of behaving partners.

These results, while not definitive, replicate the finding that social skill is related to speech quantity. Methodologically, sequential analysis using joint speech/gaze intervals requires behavior samples of much longer duration than those gathered in this investigation. Employing the speech/gaze categories used here, an interval of at least 30 minutes would be necessary to yield useful data on speech/gaze sequences.

#### Inter-partner effects

No specific hypotheses were advanced regarding the influence of behaving partners on one another. The investigation was designed to allow such influence to occur freely: no attempt was made to control one partner or to use a confederate. Since all but one of the hypotheses used individual participants as the unit of analysis, inter-partner influence was not taken into account. The following section takes up this subject.

In order to gain an idea of the role of partner influence on the studied behaviors, each subject behavior was analyzed separately. Partner effects were estimated by using partner behaviors as predictors of subject behavior. Since no hypotheses were made about which partner behaviors would affect a given subject behavior, all partner behaviors were used as predictors. Partner effects were estimated and contrasted with individual effects by first casting partner behaviors and the subject's social skill scores into a

regression equation predicting a given subject behavior. Partner behaviors were dropped from the equation as a group. The test of their importance was the change in the multiple  $R^2$  when this group of predictors was removed. For purposes of comparison, the extent to which social skill scores could predict a given subject behavior was tested in the same way.

The results of these regression analyses are shown in Tables 24a through 24n. Examination of the  $p$  values for Conversations 1 and 2 show that several behaviors were not predictable from either social skill or partner behavior. The behaviors failing to show any regression effects include the three rated qualities of Voice Quality, Dominance, and Hostility; Other-referent Pronouns; and Looking Turns. Another two behaviors, Questions and Answers, had a dependency inherent in their coding definitions, so their significant partner influence is considered trivial.

Two behaviors, Affirmations and Speech Duration, showed an inter-partner influence across both conversations. In addition, Statements, Self-referent Pronouns, Nods, Speaking Turns and Gaze Duration show an inter-partner influence for one of the two conversations tested. Only one behavior, Self-referent Pronouns, showed a relationship with global social skill as well as partner behavior.

It is clear that there are important partner influences in social behavior. In fact, the behavior of the partner may be a more powerful determinant of an individual's behavior

Table 24a

Voice Quality: Relative Contributions  
of Social Skill and Partner Behavior

Source of variation	Conversation 1				Conversation 2			
	Change in $R^2$	<u>F</u>	df	<u>p</u>	Change in $R^2$	<u>F</u>	df	<u>p</u>
Social skill	.142	0.819	6	.572	.170	0.784	6	.600
Partner behavior	.374	0.929	14	.552	.224	0.443	14	.932
Total regression	.568	0.988	20	.519	.460	0.638	20	.828

Table 24b

Dominance: Relative Contributions  
of Social Skill and Partner Behavior

Source of variation	Conversation 1				Conversation 2			
	Change in $R^2$	<u>F</u>	df	<u>p</u>	Change in $R^2$	<u>F</u>	df	<u>p</u>
Social skill	.058	0.438	6	.843	.184	1.009	6	.456
Partner behavior	.290	0.939	14	.544	.197	0.463	14	.921
Total regression	.669	1.519	20	.206	.544	0.893	20	.600

Table 24c

Hostility: Relative Contributions  
of Social Skill and Partner Behavior

Source of variation	Conversation 1				Conversation 2			
	Change in $R^2$	<u>F</u>	df	<u>p</u>	Change in $R^2$	<u>F</u>	df	<u>p</u>
Social skill	.107	0.610	6	.719	.156	1.133	6	.390
Partner behavior	.186	0.454	14	.926	.577	1.799	14	.136
Total regression	.561	0.958	20	.544	.656	1.432	20	.242

Table 24d

Questions: Relative Contributions  
of Social Skill and Partner Behavior

Source of variation	Conversation 1				Conversation 2			
	Change in $R^2$	<u>F</u>	df	<u>p</u>	Change in $R^2$	<u>F</u>	df	<u>p</u>
Social skill	.004	0.262	6	.946	.002	1.195	6	.361
Partner behavior	.868	23.567	14	.000	.879	229.693	14	.000
Total regression	.961	18.246	20	.000	.996	176.061	20	.000

Table 24e

Answers: Relative Contributions  
of Social Skill and Partner Behavior

Source of variation	Conversation 1				Conversation 2			
	Change in $R^2$	<u>F</u>	df	<u>p</u>	Change in $R^2$	<u>F</u>	df	<u>p</u>
Social skill	.014	1.240	6	.343	.003	2.467	6	.073
Partner behavior	.854	31.392	14	.000	.905	290.683	14	.000
Total regression	.971	24.967	20	.000	.997	224.170	20	.000

Table 24f

Statements: Relative Contributions  
of Social Skill and Partner Behavior

Source of variation	Conversation 1				Conversation 2			
	Change in $R^2$	<u>F</u>	df	<u>p</u>	Change in $R^2$	<u>F</u>	df	<u>p</u>
Social skill	.037	0.403	6	.877	.178	2.211	6	.010
Partner behavior	.394	1.842	14	.126	.508	2.710	14	.033
Total regression	.771	2.524	20	.035	.799	2.986	20	.018

Table 24g

Affirmations: Relative Contributions  
of Social Skill and Partner Behavior

Source of variation	Conversation 1				Conversation 2			
	Change in $R^2$	$F$	df	$p$	Change in $R^2$	$F$	df	$p$
Social skill	.212	2.610	6	.062	.057	0.755	6	.615
Partner behavior	.601	3.180	14	.017	.703	3.979	14	.006
Total regression	.798	2.950	20	.018	.811	3.212	20	.013

Table 24h

Self-referent Pronouns: Relative Contributions  
of Social Skill and Partner Behavior

Source of variation	Conversation 1				Conversation 2			
	Change in $R^2$	$F$	df	$p$	Change in $R^2$	$F$	df	$p$
Social skill	.314	3.782	6	.017	.212	2.694	6	.056
Partner behavior	.391	2.024	14	.095	.474	2.578	14	.040
Total regression	.792	2.859	20	.021	.803	3.056	20	.016

Table 24i

Other-referent Pronouns: Relative Contributions  
of Social Skill and Partner Behavior

Source of variation	Conversation 1				Conversation 2			
	Change in $R^2$	$F$	df	$p$	Change in $R^2$	$F$	df	$p$
Social skill	.173	1.091	6	.412	.270	2.264	6	.093
Partner behavior	.429	1.159	14	.389	.395	1.416	14	.256
Total regression	.603	1.141	20	.403	.701	1.762	20	.134



Table 24j

Nods: Relative Contributions  
of Social Skill and Partner Behavior

Source of variation	Conversation 1				Conversation 2			
	Change in $R^2$	$F$	df	$p$	Change in $R^2$	$F$	df	$p$
Social skill	.198	1.676	6	.195	.449	4.628	6	.008
Partner behavior	.482	1.752	14	.147	.314	1.389	14	.267
Total regression	.705	1.793	20	.126	.758	2.345	20	.049

Table 24k

Duration of Speech: Relative Contributions  
of Social Skill and Partner Behavior

Source of variation	Conversation 1				Conversation 2			
	Change in $R^2$	$F$	df	$p$	Change in $R^2$	$F$	df	$p$
Social skill	.034	0.615	6	.716	.061	0.983	6	.470
Partner behavior	.443	3.445	14	.012	.665	4.621	14	.003
Total regression	.862	4.694	20	.002	.846	4.111	20	.004

Table 24l

Speaking Turns: Relative Contributions  
of Social Skill and Partner Behavior

Source of variation	Conversation 1				Conversation 2			
	Change in $R^2$	$F$	df	$p$	Change in $R^2$	$F$	df	$p$
Social skill	.112	1.376	6	.287	.112	0.807	6	.580
Partner behavior	.445	2.348	14	.056	.434	1.340	14	.290
Total regression	.797	2.946	20	.019	.653	1.412	20	.250

Table 24m

Duration of Gaze: Relative Contributions  
of Social Skill and Partner Behavior

Source of variation	Conversation 1				Conversation 2			
	Change in $R^2$	F	df	p	Change in $R^2$	F	df	p
Social skill	.141	1.051	6	.432	.157	1.583	6	.220
Partner behavior	.495	1.582	14	.194	.638	2.750	14	.031
Total regression	.665	1.486	20	.219	.752	2.269	20	.055

Table 24n

Looking Turns: Relative Contributions  
of Social Skill and Partner Behavior

Source of variation	Conversation 1				Conversation 2			
	Change in $R^2$	F	df	p	Change in $R^2$	F	df	p
Social skill	.194	0.935	6	.498	.279	1.570	6	.223
Partner behavior	.363	0.750	14	.702	.351	0.847	14	.620
Total regression	.481	0.696	20	.779	.556	0.940	20	.560

than knowable qualities about that individual. These results point to a strong association in the behaviors of interacting people. Since the findings reflect concurrent events and are correlational, no causation is implied here. The present discussion has used "partner influence" as a theme, but the effect can best be thought of as social conventions and other interpersonal phenomena which entwine the behavior of the people in conversation. It is well known, for example, that people in conversation have little tolerance for either mutual silence or simultaneous speech. If one person talks, the other listens. If both are silent, each is trying to think of what to say. It is thus not surprising that Speech Duration showed an inter-partner dependency. This does not negate previous findings showing this variable to be related to social skill. In the foregoing regression analyses, the association of Speech Duration with social skill was evaluated once its association with partner behaviors had already been taken into account. Since Speech Duration had a strong inter-partner association, its relationship to social skill was evaluated using little remaining variance. The relationships between social skill and behavior still stand. The present findings simply demonstrate another important source of variance.

## DISCUSSION

Like so many studies of the behavioral referents of social skill, the present investigation employed many variables and found a small subset to be important. Both the means by which social skill is evaluated and the behaviors involved were simultaneously investigated here. No one measure of social skill emerged as the best, and findings on the relationship between skill and behavior were therefore somewhat complicated and unclear. While premature simplicity can be achieved by selecting one best social skill measure, a better approach would be to focus future social skills research on the mechanisms by which people are classified according to level of social skill.

The strongest finding in the present study was that skilled people talk more than unskilled people. Since the situation assessed was a somewhat constrained conversation, this result lends strong support to the activity level hypothesis, that skilled people are active relative to unskilled people. Yet, a subsequent result of analysis on dyad behavior showed that dyads characterized by one very active and one very inactive partner tended to contain two unskilled people, rather than one skilled and one unskilled person. This and other results compel examination of inter-partner dependence in this investigation.

There was mixed support for the hypothesis that unskilled people attend excessively to themselves. The findings here were both in support of and contrary to hypothesis, the

direction apparently dependent on the modality of skill measure being employed as a criterion. While some of the questions arising from these mixed findings might have been addressed by analysis of speech and gaze patterns, the conversational sample proved too short for pattern analysis.

#### Global assessment of social skill

It was hypothesized that the various indices of social skill measure different qualities. This hypothesis was tested directly by intercorrelating the various measures. The pattern of intercorrelations among skill measures showed a clear effect due to modality (self-report vs. other-report; general inventory vs. rating of specific incident). The correlations between measures within a modality were more likely to be significant than correlations between measures of different modalities. In particular, self-ratings of social skill tended to correlate more highly with one another than with social skill ratings made by others.

It is well known that the method used to evaluate a phenomenon is a significant influence on the findings generated. The relatively weak correspondence seen here between self-evaluation and other-evaluation may simply exemplify this general effect due to method.

The three self-report inventories employed in this study have all been used by researchers in studies of

social performance. While the intercorrelations among these measures were generally significant, the actual correlation values, ranging from .15 to .42, can only be described as moderate. Furthermore, these values are probably positively biased by their common and simultaneous administration. While all these measures are used to assess overall social skill, they are clearly distinctive from one another. Their differences could be mainly psychometric, as the three employ different scoring schemes. They could also be true differences among the constructs of shyness, social anxiety and loneliness. Future research could address this question by analyzing the content of the items, examining item-by-item overlap between the measures, and by casting each into the same scoring format. The results obtained here demonstrated that, at present, it is premature to discuss these three inventories as if they were equivalent measures of social skill. This is unfortunate, as it reduces the comparability of previous studies using different measures, fragmenting the literature on social skill.

The intercorrelation of social skill measures has provided a direct test of Hypothesis 1, that skill measures are distinctive. More information relevant to this hypothesis can be gleaned from the ways in which the different measures corresponded in the tests of other hypotheses. Reviewing the results testing Hypotheses 2

and 3, two patterns stand out.

In the test of the activity level hypothesis, three of the skill measures manifested essentially the same relationship to behavior. The Stanford Shyness Survey, the post-session self-rating of social skill, and the rating of social skill by peer judges were all related to amount of speech. There is, then, some commonality among these three summary indices of skill, even though each represents a different modality of skill assessment.

The findings on attention direction provide a different perspective on social skill measures. Here, self-rated skill was associated with talking about oneself, whereas other-rated skill was tied to talking about the other person. The intercorrelations among global measures had shown that self-rating and other-rating were different, but these findings may say something about the nature of that difference. It may be, for example, that someone self-rates according to how much he impresses himself (via self-talk), where judges are more attuned to his attentiveness to others.

There is evidence here that varying social skill measures function differently. There is also evidence of commonality between them. The question to be addressed is not, perhaps, whether they are similar or different (as Hypothesis 1 attempted to posit), but the nature of

those similarities and differences. Findings here provide some basis for formulating hypotheses regarding these specific interrelationships among measures.

One reason for employing so many measures of social skill in this study was to provide some empirical basis for choosing among the various assessment methods. There are enough differences between self-report and other-report methods to recommend use of both modalities. Of the three self-report inventories, the Stanford Shyness Survey, by virtue of its association with overt behavior and with the other-rated skill measure, appears to be the best choice. The advantage of an inventory form of self-rating measure is that it can be administered prior to the behavioral observation, allowing respondents to be classified as high or low skill before being observed. If a researcher did not need such a priori classification, a simple post-session self-rating of social skill is a good alternative to the longer, more general inventory for a self-rated social skill measure.

In this study, only one kind of other-rated measure was used. Peer judges rather than "expert" or trained judges were used to rate the participants' social skill. The success of this strategy is indicated by the significant correspondence between the ratings of these peer judges and the extent to which a participant was liked by his or her partner. While one could argue that



being liked by others is not the sole outcome of successful social performance, it is certainly primary for many people. Within a college sample in particular, the ability to generate liking is a defensible validity criterion for social skill measures. Partner rating of liking, used here as a validity criterion, deserves to be tested further as an index of social skill in its own right. Meanwhile, peer rating is recommended as a useful and valid, though expensive, method of obtaining an other-rated measure of social skill.

#### Activity level

The relationship of activity level to social skill was confirmed in this study. The effect was seen chiefly in measures of verbal activity. Speech duration was the strongest behavioral variable in the constellation of activity-relevant behaviors. These results replicate earlier studies (Glasgow & Arkowitz, 1975; Pilkonis, 1977b) demonstrating a strong link between amount of speech and social skill. The only other index of verbal activity which emerged as important was the number of statements (excluding answers to questions) made by a participant. The redundancy between number of statements and overall time spent speaking was so substantial that the importance of the statements variable was eclipsed in the multivariate methodology.

The speech duration index was shown in several findings to be highly influenced by the partner. It was shown that participants who were paired with females had higher amounts of speech than those who spoke to males. If women, through their behavior or their stimulus value, elicit high amounts of speech, then partner gender should be controlled in future studies.

In other evidence that partner behavior affects speech duration, speech duration was highly predictable from the complex of partner behaviors. In a more specific finding, dyads containing two skilled people had more even speech durations than dyads of low skill participants. In order to make sense of these results, individual-based tests and dyad-based tests must both be considered.

Since both silence and simultaneous speech are rare events in conversation (Jaffe & Feldstein, 1970), the amount one person talks bears an almost arithmetic relationship to the amount of speech by the other person. This is seen empirically in the present data, where the correlation between the speech durations of partners averaged  $-.74$ . Someone whose partner talks little will naturally tend to increase his or her speech. Since high amounts of speech are associated with high skill ratings, the assignment of a low-speech partner could inflate a person's skill rating. Yet, such lopsided conversations tended to occur in dyads where both participants were

rated relatively unskilled. This seems to be a ceiling on the linear relationship between speech amount and social skill. It is possible that, among people with adequate speech amounts, skill at getting the other person to talk is important. The precise mechanism at work here will only be ascertained using statistical methods which can account for both individual and dyad behavior.

Kraemer and Jacklin (1979), using the example of sex difference research, have outlined one such technique which is applicable to simple factorial designs with a single dependent variable. Their technique involves estimating the dependency between partners prior to testing for group effects. This technique could not be applied to the data in the present study because of the number of variables and the absence of a clear and valid way to create low- and high-skill groups prior to testing. Since speech amount was found here to be related to both individual and dyad behavior, it would be an excellent candidate as a dependent variable in a factorial design using Kraemer and Jacklin's method. An observer-rated social skill index would be needed for assignment to skill groups, so in vivo pretesting would be necessary to generate the factorial structure.

There has been much diversity among researchers in selecting an operational definition of quantity of speech.

The present study employed four different indices: time spent speaking, number of speech episodes, frequencies of various types of utterances, and the frequency of silences in the dyad. Some measures used by other researchers were not employed here. For example, no word-based measure of speech amount was used. Arkowitz et al. (1975) used a simulated social situation in which counting words was easier and made more intuitive sense than in the present study. Word counting for a conversation task of the length employed here would be very difficult. If a word-based measure were desired, one could count words for randomly sampled utterances and then count utterances to yield an approximate words per response or total words index. The role of word number in social skill has been neither confirmed nor denied in the present study and may be worthy of further investigation. Whether a word-based or a time-based measure of speech amount is chosen will, however, remain largely dependent on which best fits the task at hand and equipment available.

In the present study, few nonverbal behaviors were found to be important in social skill. Only the social anxiety measure related to nonverbal activity: less anxious people nodded their heads more frequently than did people identifying themselves as socially anxious. If more indices of nonverbal behavior had been rated, the findings may have contained a more balanced proportion

of verbal and nonverbal predictors of social skill. Another possibility is that nonverbal behavior exerts its interperson influence through communicating specific meaning rather than through its sheer amount.

#### Overconcern with self

It was hypothesized that unskilled people would be shown to demonstrate excessive self-attention and reduced attention to others, a constellation labelled here as overconcern with self. This hypothesis was tested both observationally and experimentally (by manipulating attention direction).

When attention direction behaviors were related to the three self-report inventories, no relationships were found. People evaluating themselves as shy, socially anxious, or lonely did not appear to be excessively self-oriented. This is a surprising result for the shyness measure, since Zimbardo, the developer of the instrument, lays heavy emphasis on overconcern with self in his theorizing on shyness.

When ratings of the specific observed situation were related to attention variables, relationships were found which both supported and contradicted the hypothesis. Whether social skill was being judged by the participant himself or by independent raters made a decisive difference. When independent judges did the rating, those participants who referred often to their partners were judged as skillful,

consistent with the hypothesis. On the other hand, people who rated themselves as skillful were found to have a high frequency of both self-references (contrary to the hypothesis) and questions (consistent with the hypothesis).

As discussed earlier, these results provide valuable information regarding different modalities used to rate global social skill. The findings also compel us to consider that there may be several dimensions of social skill. One dimension may be the ability to cause others to feel good. A second dimension may be the ability to create a positive impression of oneself. In the present research, the partner-directed behaviors would relate to the first dimension; the self-directed behaviors to the second dimension.

The attentional effect hypothesized here stressed only one of these theoretical dimensions of skill. Further, the operationalization used here of two dimensions tended to pose them as antithetical to one another. Other-directed skill could be orthogonal to self-focused skill (that is, skill at the first could be uncorrelated with skill at the second).

Previous theoretical and empirical work has pointed to the importance of other-directed eye gaze as an index of attention to partner and as an important behavior in social skill. Yet, no gaze variables reached significance in the present study. Three explanations for this absence

of a gaze-social skill relationship present themselves. First, previous work on the importance of gaze may have been based excessively on supposition. Second, the configuration of gaze patterns, and not the overall amount or frequency of gaze, may be important in social skill. It is unfortunate that this could not be successfully investigated here by sequential methods. Third, the methodology used here may have been insufficiently precise in recording the amount and frequency of gaze. Data on inter-rater reliability, not gathered here, would increase confidence in the accuracy of this gaze recording, but would not eliminate the possibility that raters were both guessing in similar fashion.

Virtually the only way to circumvent the methodology problem in recording ongoing behaviors is to circumvent the human recorder: automate the recording. This is accomplished easily with speech recording. Jaffe and Feldstein (1970), for example, used individual microphones to activate a device which punched holes in a continuously-moving paper tape. The automation of gaze recording, however, is a major obstacle to this kind of research. Instruments like the puillometer precisely detect gaze direction. Such devices surround their human subjects in machinery, however, making "natural" social interaction impossible. This is a formidable problem whose solution may have to await the development of new technology.

The experimental test of attention direction in social skill failed to produce results. The directions to the "manipulated" participants produced no discernable change in the attention-relevant behaviors of gaze, questions, and amount of talk about the partner. It thus appears that the directions were not sufficiently potent. The directions used replicated those used by Hatvany, Souza e Silva, and Zimbardo (Note 4). In that research, significant group differences were found using the content of a video-taped speech as an outcome measure. Shy people who were specifically instructed to attend to the speech overcame their previous deficits at speech recall.

The present experiment differed from the Hatvany et al. study in two respects. First, the dependent variable was actual social behavior, either measured directly or through judges' ratings. Second, the change from self-attention to other-attention was more difficult here than in the Hatvany et al. study, where the "other" was not a live person. In this study, social behavior had to take place concurrently with attention to the other person. Said another way, participants in this study had to deal with a person who talked back, asked questions, and otherwise put them "on the spot." The single instruction was probably not powerful enough to override the self-consciousness occasioned by the presence of a live partner.



Given the apparent need for a more powerful influence on direction of attention, future investigation of this hypothesized factor in social skill may require a different method of study. One possibility might be to actually conduct intensive multiple-session training on attention. For example, unskilled people could be coached via a bug-in-the-ear device while engaging in social interactions. Time-series analysis of interactions could be used to detect an effect due to the attention direction coaching.

#### Adaptation to others

The hypothesis that skilled people adapt more closely to others than do unskilled people was only supported by results on one behavior: duration of speech. Time spent speaking was shared fairly equally in skilled, less equally in mixed, and unequally in unskilled dyads. This result should be interpreted with caution: the significance level was slightly over the conventional cut-off for interpretation and no suitable cross-validation sample was available.

Assuming the effect is real, it could reflect either adaptation to the other or reciprocity in speech. Without a series of data points, it is impossible to distinguish adaptation from reciprocity. An alternative way to study adaptation to partner would be to divide the conversations into three or more segments. If behaviors were tallied per segment, then partner correspondence could be plotted over time. This would allow the adaptation process to

be viewed more clearly and perhaps allow investigators to differentiate the adaptor from the adaptee.

#### Patterns of behavior

Sequences of behavior could not be studied as planned because the behavior samples were too short to afford meaningful analysis. Analysis of behavior sequences in interacting pairs requires a long conversation sample for the speech and gaze behaviors of interest here. A large number of data points are required when the number of behavior codes is large or when the sequences of interest are complex. Both of these conditions were present in this study and utterance-end gaze, a behavior of considerable theoretical import, could not be studied.

The data gathered here did, however, allow a view of joint behaviors and, therefore, afforded some very tentative conclusions. The results corroborated the association between skill and amount of speech. These data also indicated a strong behavioral dependency between interacting people.

#### Major factors affecting the social skill-behavior findings

There are five major factors which have potentially obscured findings in this study. Three of these are aspects of the investigation process: reliability, recruitment, and demand characteristics of the observational situation. Another two factors are aspects of natural

social behavior: normative intra-person dependencies among behavior classes and the inter-dependence of interacting people.

Reliability. The inter-rater reliability of the frequency measures used ranged from .72 to .97. Variables with lower reliabilities had diminished power in the data analyses, since they owed a good portion of their variance to rater behavior. In this study, the power of the variables Dominance, Statements, Affirmations and Silences was hampered because of borderline reliabilities. It is possible, then, that these would have emerged more strongly as behavioral aspects of social skill had they been coded more reliably. The general speech and gaze variables were not tested for inter-rater reliability and their power may have also been depleted by inaccuracy in recording. It is noteworthy, though, that the most important social skill-related behavior, Speech Duration, came from this unassessed group of variables.

Recruitment. There was a difference in self-reported loneliness between psychology class members who agreed to participate in the conversations and those who did not participate. This difference may have been due to chance sampling or may reflect a self-selection effect. If the latter is the case, some of those with problem loneliness stayed out of the study. Since the nature of the conversation study was clearly explained on the telephone, it

is likely that such differential self-selection represents a social avoidance phenomenon. Social avoidance (a hypothetical aspect of social skill deficit) probably took place outside the observational bounds of the study. The loneliness measure, showing virtually no relationship to behavior in this study, may be an instrument sensitive to social avoidance.

Several strategies could be employed in future research to capture the avoidance effect. Careful records of participation refusal and failure to show up for the session could further confirm a self-selection effect. In order to actually capture the behavior of difficult-to-recruit people for observation, an experimenter could use unobtrusive methods like participant-observation, albeit at some sacrifice of experimental control. Examination of the behavior of socially avoidant people is a challenging task requiring a good deal of inventiveness.

Demand characteristics. The physical situation in which this study took place may have exerted powerful cues eliciting normal social behavior. People were seated quite close together, nearly facing one another. Participants knew they were going to stay there for ten minutes. Short of flight (requesting to withdraw), there was little choice but to talk to the other person. There may thus have been an environmental press to interact more actively than might normally occur. In fact, the

original plan to unobtrusively videotape participants before they thought the "experiment" had begun had to be abandoned because there was so much spontaneous interaction in the laboratory room.

Arkowitz and his colleagues have found repeatedly that practice dating is an effective treatment for the social skills deficit manifested by minimal dating behavior (Arkowitz, 1977). One explanation for this effect is that people become more skillful with practice in situations to which they do not regularly expose themselves. The practice dating treatment has not, however, been associated with increases in judged skill. A second interpretation of the improvement in dating behavior is that, once in the situation, people behave close to normally. A similar phenomenon in the present study may explain why so few social skills deficits were identified.

Intra-person behavior dependencies. Some behaviors are mutually exclusive. In such cases, an increase in one behavior causes a decrease in the other. Mutually exclusive behaviors are easy to analyze and understand, as their effect on one another is simple. Other behavior categories have a much more complex relationship with one another. An example from this study will serve to highlight the analytical problems caused by a complex inter-behavior dependency. Speech and gaze are not mutually exclusive; one can talk and look at someone simultaneously. Neither

are these behaviors exclusively co-occurring: one looks while talking as well as while not talking. Speech and gaze are dependent, however: people look while listening much more than while talking (Kendon, 1967). The amount of other-directed gaze, then, is normatively negatively dependent on the amount of speech. Both a high amount of speech and a high amount of gaze were hypothesized to be manifestations of high social skill. Detection of both effects was difficult, in part, because the two behaviors incompletely suppress one another. The aforementioned absence of gaze findings in this study may be due to its link to speech.

The dependency between speech and gaze is used as an example because of its relevance to the present research and because the nature of the dependency is well known. There could be many such intra-person behavior dependencies yet to be demonstrated. Social skills researchers can be alert to such dependencies by staying in touch with the literature on the molecular study of normal social behavior (Duncan & Fiske, 1977; Jaffe & Feldstein, 1970). Such dependencies can obscure important effects and may require special analytical techniques.

Interpartner dependency. The data in this study clearly show the behavioral interdependency of people engaged socially with one another. Since both members of the dyad were allowed to interact freely, the inter-

partner dependency could occur much like it does in everyday life.

Overall, a person's behavior was more highly related to his/her partner's behavior than to his/her own social skills scores. This interpersonal dependency in social behavior is so strong that social skill-behavior relationships became difficult to discern. The fact that relatively few social skill-behavior relationships were found in this and other studies is undoubtedly due, in large part, to this dependency between interacting people.

The extent of the inter-partner dependency in the present investigation reveals the fundamental error in individual-based thinking about social behavior. Each individual brings his or her own behavioral repertoire to the social situation. Once in that situation, however, the behavior of two interacting people can best be described as reciprocally causative. Rather than trying, perhaps in vain, to remove partner influence from subjects' behavior, researchers could address themselves to the interaction itself. To study an individual characteristic like social skill in the context of a complex interactive system is difficult and confusing. One development in future research might involve foregoing the individualistic frame altogether, studying successful and unsuccessful dyads.

### Implications for social skills training

The applicability of this research to social skills training is limited by several factors. First of all, the current findings were derived from an existing group with no known social problems. It is not known how the social skill levels of the low-skill designates in this sample would compare to those in a sample of college students seeking help for their social problems. Furthermore, the role of many behaviors in social skill deficit may have been overlooked because of aforementioned demand characteristics, interpartner dependency, and so on. Still, the present study stimulates some thought about the enterprise of social skills training.

There are two aspects to social skills training: (1) behaviors to be changed, and (2) the process by which different behavior is produced. Many studies of social skills training have focused on the second aspect, how behaviors are learned. Twentyman and McFall (1975) have broken down the training into its components and evaluated which combination of learning methods best leads to behavior change.

The small number of effects demonstrated in the present study suggests that a similar method might be tried on the behaviors which are taught in social skills training. Amount of speech was strongly associated with social skill. It could be, then, that social skills training programs



could achieve their ends by teaching people to increase their speech. The increments in outcome added when additional behaviors are taught could be assessed as in the Twentyman and McFall study.

Much remains to be learned about the behavioral components of social skill. Researchers of social skills training could add valuable information about social skill as a construct by critically evaluating the teaching of behaviors whose relation to social skill has not yet been empirically demonstrated.

## LITERATURE REVIEW

The social behavior of human beings has always been regarded as an important aspect of human psychology. Yet, this familiar aspect of life has rarely been directly studied. The very familiarity of the subject area has perhaps contributed to its neglect. Recently, two research trends have emerged whose aims are to understand human social interaction more fully. The first is the study of nonverbal communication. Interest in the direct study of human social interaction has also come from the advent of social skills training as a clinical intervention.

Social skills researchers initially thought that there were obvious behaviors indicative of social skill. Empirical work has failed to confirm that behaviors decided upon a priori by the researchers were indeed indicative of social skill as measured by other means. Some studies have found only a small minority of the a priori behaviors differentially in socially skilled and unskilled people (Arkowitz, Lichtenstein, McGovern, & Hines, 1975; Glasgow & Arkowitz, 1975; Mandel & Shrauger, Note 1). Others have failed to confirm the significance of any of the tested behaviors (Borkovec, Fleischmann & Caputo, 1973; Borkovec, Stone, O'Brien & Kaloupek, 1974). Global judgments of social skill have differentiated criterion groups better than specific behaviors (Arkowitz et al., 1975; Mandel & Shrauger, Note 1).

Slightly more success in enumerating the specific topography of social skill has been met in studies using assertiveness, a restricted definition of social skill. Eisler, Miller and Hersen (1973) found that half of the behaviors initially coded as indices

of assertiveness did, in fact, covary with judgments of overall assertiveness. This result is hardly surprising, as the construct of assertiveness is specific as to what assertive behaviors look like (i.e., clearly audible speech, eye contact, refusing unreasonable requests, etc.). The broader concept of social skill cannot, at this point, be so specific.

The aim of the present review is to develop an understanding of the behaviors comprising social skill. The problem appears deceptively simple. We know that people differ among themselves in their skillfulness in social interaction. The most straightforward approach would be to identify socially skilled and unskilled people and then to look at what they do differently. The two tasks involved here are actually complicated. The first task in social skills research is the development of devices by which people can be identified as skilled or unskilled. The second task is to examine in detail the characteristics of these people. The present paper reviews these two tasks in turn. Part I discusses global classification methods. Part II reviews the current research findings on what specific behaviors constitute social skill.

#### Part I: Global Classification

Social skill can be defined as the ability to function effectively in social interactions. Socially skilled people are comfortable with others and behave in a manner facilitating mutually satisfying interpersonal exchange. The above definition includes two aspects of social skill: the subjective (i.e., feelings of comfort) and the objective (i.e., overt behavior and its effects on other people).

Researchers in social skill have usually employed only one of these aspects in the classification of their research participants.

### Subjective Aspects of Social Skill

A person's subjective feeling state in social situations is one aspect of his or her social skill. Various constructs have been employed which describe subjective social distress: social anxiety, shyness, and loneliness.<sup>1</sup> There are differences in emphasis among these three constructs: the anxiety construct has a fear/arousal emphasis, shyness connotes hesitancy and self-consciousness, and loneliness is a feeling of apartness from others. There is probably, however, a high redundancy among these three constructs, but most studies have employed only one of the constructs and thus failed to assess the degree of overlap. Two studies, however, have found social anxiety and shyness to be highly associated (Mandel & Shrauger, Note 1; Pilkonis, 1977b). Another strong commonality is that people who report any of the subjective states of social anxiety, shyness, or loneliness also report that they are socially unskilled (Jones, Note 7; Martinez & Edelstein, Note 8; Zimbardo, 1977).

Because subjective distress is a private event, it must be assessed by self-report methods. These instruments are paper and pencil questionnaires which ask the subject about his/her social interactions. Typically, questions about the subject's frequency of

- 
1. Some researchers have treated social anxiety and social skill as separate constructs (Conger, Wallander, Ward & Marrioto, Note 9). In the present review, however, social anxiety is discussed as a subconcept of social skill deficit. The covert and overt aspects of social anxiety are thus discussed in separate sections along with other corresponding social skill subconcepts. No effort is made to retain the integrity of the social anxiety construct.

social interactions (and feelings about the frequency), his/her social behavior, and his/her feelings while in social situations are asked. Frequently used instruments are Watson and Friend's (1969) Social Avoidance and Distress Scale and Fear of Negative Evaluation Scale, The UCLA Loneliness Scale (Russell, Peplau, & Ferguson, 1977), and the Stanford Shyness Survey (Zimbardo, 1977). The specific properties of each of these instruments are not discussed here, as several comprehensive reviews documenting their psychometric properties are available elsewhere (Arkowitz, 1977; Hersen & Bellack, 1976).

There is not a one-to-one relationship between self-reported social difficulty and more objective global measures of social skill. Borkovec et al. (1973) found no relationship between self-rated anxiety and overt anxiety signs (trembling knees and so on). O'Banion and Arkowitz (1977) found that people who reported themselves to be highly socially anxious received ratings of low social skill by their partners in conversation. Self-reported shy people were seen by observers as being more anxious, less friendly, less assertive, and less relaxed than their non-shy counterparts. Several studies, however, have shown that socially anxious and lonely people evaluate their own social performances as poor, but that independent judges do not necessarily see these people as socially incompetent (Clark & Arkowitz, 1975; Curran, Wallander & Fischetti, Note 3; Jones, Note 7). The independence of subjective social distress and objectively judged social skill has also been demonstrated by several treatment studies which reported that clients improved on subjectively felt anxiety, but not on objectively evaluated social skills (Arkowitz, Hinton, Perl, & Himadi, 1980; Royce & Arkowitz, 1978).

Two studies have examined the relationship between dating frequency and self-reported social anxiety, showing contradictory findings.

O'Banion and Arkowitz (1977) found no differences in dating frequency between high- and low-anxious groups. Martinez and Edelstein (Note 8), on the other hand, found that high- and low-frequency daters differed on self-reported social anxiety. In support of the latter finding, the two treatment studies cited earlier (Arkowitz et al., 1980; Royce & Arkowitz, 1978) found a co-occurrence of social activity increase and anxiety decrease with their treatment program.

There is not a clear pattern to the results just cited. One can only conclude that sometimes subjectively felt discomfort leads to observable disruption in social behavior and sometimes it does not--hardly an informative conclusion. One reason for these contradictory findings may be that two possible processes are operating. Subjective social distress may be either an accurate response to one's poor social skill or it may indicate a tendency to underestimate one's social skill. Curran, Wallander, and Fischetti (Note 3) found two such groups in their study. Most social skills studies, however, cannot detect these two groups because they employ simple summed scores. Results may thus depend on whether a given study sample included more poor performers or more underestimators.

A second methodological problem which may contribute to the poor correspondence between self-reported social difficulty and observable skill deficit is the situational nature of social difficulty. People have trouble in a wide variety of different situations, and a problem situation for one person may be an easy one for someone else (Bryant & Trower, 1974; Zimbardo, 1977). Whether or not

someone reporting social difficulty is judged as being behaviorally incompetent thus depends on whether the objective assessment situation happens to be one which that person finds difficult.

Another possibility is that subjective shyness, anxiety, or loneliness affects overt social behavior, but not in a way which affects global ratings by observers. Instead of retaining an implicit requirement that subjective report of difficulty correspond with objectively-judged difficulty, we should adopt an open-ended stance. We might simply ask how shy, anxious, or lonely people act in social situations. Subjective difficulty may prove to be associated with a discrete behavior pattern having incomplete overlap with observable global social skill deficit.

#### Objective Aspects of Social Skill

Social skill can also be defined and measured by objective methods. A second person can observe and rate the subject person's social behavior. The observer may be a long-standing friend of the subject, or a specially-employed rater who has no direct contact with the subject. The most commonly used objective method for global social skills classification is to set up a social situation in a place where videotaping or observation is possible. The interaction can be an interview, a role-played situation (or series of situations) or an unobtrusively staged situation. These procedures differ among themselves as to the specificity of the situation, the perceived artificiality of the procedure, and the participants' knowledge of being observed. For example, the Situation Test (Rehm & Marston, 1968) presents a series of ten situations by audiotape. The

participant listens to the description given by tape and then responds as if he or she were actually in that situation. In this test, the situations are specific, the procedure is perceived as clearly artificial, and the subject is aware of being observed. A contrasting procedure has been used by Mandel and Shrauger (note 1), Melnick (1973) and Pilkonis (1977b). Participants were unobtrusively observed in a waiting room where a second person, a confederate of the experimenter, was present. In this assessment task, the situation is somewhat nonspecific and minimally artificial, with observation outside the participants' awareness.

In all these assessment procedures, observers rate the participants on their overall levels of social skill. The observers may be "experts" like mental health professionals, social skills researchers or lay people trained in detection of social skills. They may also be untrained lay people who are peers of the subjects being rated. Until more is known about the properties of social skill, reliance on hypothetical expertise in this area is groundless. No studies comparing the accuracy of trained and untrained judges have been conducted. In the face of this dearth of empirical data, judges should be chosen who are roughly representative of the social judgments of real consequence to the subjects. Thus, mental health professionals should be employed to judge the social skills of hospitalized psychiatric patients. In most cases, however, the employment of peer judges approximates real world social evaluation processes (Kazdin, 1977), and is therefore the preferable procedure.



These staged social situations are often used as a means of both assessing global social skills and discovering the behavioral composition of social skill. The degree to which these artificial situations mimic real life situations has therefore been a matter of some concern. Unfortunately, the correspondence between different types of role-play (Twentyman & McFall, 1975), role-play and interview (Bellack, Hersen, & Turner, 1978) and role-play and naturalistic observation (Bellack, Hersen & Lamparski, 1979; Bellack, Hersen & Turner, 1979) has been consistently low. It therefore seems desirable to construct assessment situations which are consistent with everyday social interaction and to employ several such situations in the assessment of social skill. The inclusion of several assessment situations is particularly critical, as some types of social skills deficits may only appear in selected situations (Hersen & Bellack, 1976).

As presented above, the global judgment procedure for assessing social skills is relatively simple. Observers watch someone in social interaction and then decide on the adequacy of his or her performance. A complex elaboration of this procedure has been proposed by Goldfriend and D'Zurilla (1969) as a prelude to social skills training. These authors proposed a multi-stage process involving construction of a list of problem situations based on interviews with members of the target population. A different group of people generate possible responses to those problem situations, which are judged on their adequacy by yet another group. The end result of this process is an assessment device reflecting the

judgment of several groups within a particular locale. The assence of the procedure, though, is the informal judgment of "others". A major difference between this procedure and the simpler one presented above is that this procedure involves judgment of the adequacy of written verbal responses, whereas the former procedure judges actual verbal and nonverbal behavior. Use of Goldfried and D'Zurilla's system requires a major expenditure of effort which must be repeated for each target population. Its impracticality has impeded widespread adoption. (It has been used in two studies, to the credit of those investigators; Glass, Gottman & Shmurak, 1976; Goldsmith & McFall, 1975.) Its greatest usefulness may be as a means of constructing self-report instruments which correlate well with observed behavior.

A third, perhaps more natural, way of obtaining observers' judgments is to simply record the behavior of people interacting with the person being assessed. Libet and Lewinsohn (1973) recorded the social behavior of group interactants. If other group members responded positively to most of the subject's behaviors, then that person was classified as socially skilled. This system is based on observable behavior, but avoids specification of the topography of socially skilled or unskilled behavior. It is the only assessment approach which has used a person's effect on others to assess his/her social skill.

Direct observation of behavior is increasingly seen as a desirable assessment modality. The disadvantage of these techniques is that they are time- and effort-consuming, necessitate special laboratory sessions, and require a coterie of raters and/or co-interactants.

An alternative to the observers' judgment approach is to obtain social judgments which occur naturally in everyday life. There are several indices of how socially successful someone is. Interaction frequency (with the same or the opposite sex), peer rating, and popularity have been used in social skills research. The advantage of using naturally-occurring social indices is that the social behavior being judged is free of the demands of a laboratory setting, and ranges over a variety of situations. Unfortunately, the act of tapping naturally-occurring social judgments almost always has been by questionnaire.

Another problem with naturally-occurring social indicators is that, like all natural phenomenon, they are confounded. Dating frequency, for example, depends on many factors besides social skill; most notably, physical attractiveness (Arkowitz, 1977). It is perhaps for this reason that natural social skills indices have not achieved widespread use outside the research of Arkowitz and his colleagues. Yet, their theoretical heterogeneity is offset by the validity inherent in naturally-occurring phenomena. The development of unobtrusive data collection methods would significantly add to the appeal of social indicators as means of making global assessments of social skill.

In summary, there are three means by which a person's overall social skill level can be assessed. The first way is to ask the person himself about his social functioning. The second is to ask others about his social functioning after they have witnessed a sample of social behavior. A third way is to use someone's

natural social behavior as a indicator of social skill. In the first two instances, social skill assessment is an impressionistic judgment. Human judgment is, of course, unscientific, but until more is known about the specific behaviors composing social skill, it is the only alternative. The relationship between interaction frequency and competence in interpersonal exchange needs more documentation before interaction frequency can be accepted as a valid index of social skill. These three global measurement techniques may have non-redundant relationships with particular social behaviors. For example, we could find that self-ascribed shy people only deviate from normal in gaze, that people low in observer-rated social skill show poor speech quality, and that people with abnormally low social activity levels shown lack of initiative in conversation. While it is unlikely that such a distinct pattern will emerge, the relationship of each global assessment technique to particular social behaviors should be assessed separately.

## Part II: Specific Behaviors

In Part I, we discussed ways to form a summary index of a person's social skill. In Part II, we shall discuss social skill in molecular terms. Inevitably, the specific behaviors involved in social competence are those which have proven to be associated with some global index of social skill. Knowledge about the specific behaviors comprising social skill is thus gained through the use of imperfect global measures, but such is the state of our present research sophistication.

Both covert (intra-person) and overt (observable) behaviors are examined in the following sections. While internal processes are often assumed to be the causes of overt behaviors, no causal role is designated here. Rather, specific attributes, whether covert or overt, are simply examined for their relation to global indices of social skill.

### Covert Elements of Social Skill

The covert elements thought to be associated with social skill largely stem from informal theory about the causes and maintaining forces of social skill deficit, but only empirical findings regarding these processes will be emphasized here. There are three kinds of covert processes examined: (1) arousal, (2) cognitive processes like expectancies and attributions, and (3) person-embedded characteristics like abilities and personality attributes.

Arousal. There are very few studies which have measured physiological arousal and attempted to relate it to social skill. All have measured heart rate. Schwartz and Gottman (1976) measured heart rate patterns in people classed as high-or low-assertive. Non-assertive people showed elevated heart rates at the beginning of a role-playing task, but this decreased to the level of the assertive group as the task proceeded. Twentyman and McFall (1975) found that shy and confident men had equivalent resting heart rates. The heart rates of both groups increased during the interaction tasks (especially live interaction), but the heart rates of the shy men increased to significantly higher levels. A third study (Martinez

& Edelstein, Note 8) failed to detect differences in heart rate between groups of high- and low-frequency daters.

The precise relationship between physiological arousal and social skill is as yet unclear. The evidence cited above indicates that the pattern of physiological responding is more likely to covary with social skill than indices of average arousal (overall pulse rates).

Patterson (1976) proposed a theoretical of the relationship between arousal and interpersonal intimacy. He noted that a number of studies have shown physiological arousal in response to eye contact (c.f., Luborsky, Blinder, & Mackworth, 1963; Nichols & Champness, 1971). Since eye gaze has been thought to be a nonverbal sign of interpersonal approach (Argyle, 1969), Patterson theorized that everyone becomes aroused when approached by another person. Some people label their arousal positively and therefore reciprocate the social approach. Other people perceive their arousal as a negative state and respond by withdrawing from the interpersonal approach (i.e., decreasing their own social approach behaviors). Since lack of reciprocation and withdrawal are behaviors implicated in social skill deficit, Patterson's pattern may describe socially skilled and unskilled groups. We would predict that socially skilled and unskilled people would both show increased arousal at the beginning of a social interaction. Socially unskilled people would then either show behavioral signs of withdrawal (i.e., decreasing eye gaze, leaving the situation) or show continued increases in physiological arousal. Socially skilled people, on the other hand, would reciprocate

interpersonal approach and show modulation of their arousal. Use of this theory would require further research to concurrently examine physiological arousal and overt behavior.

### Cognitive processes

Negative evaluation by others. The cognitive process which has been most associated with social skill deficit is an overconcern with being negatively evaluated by other people. There are three forms of overconcern: expectancy that one will be negatively evaluated, fear of negative evaluation, and sensitivity to negative evaluation.

Expectations for a given situation exert a powerful influence over behavior (Mischel, 1973). Expectancy of success may exert even a more powerful influence than past success in that situation (Mischel, Ebbeson & Zeiss, 1976). Smith and Sarason (1975) have demonstrated that self-reported socially anxious people consider themselves more likely to be negatively evaluated by others than do people low in social anxiety. Expectancy of negative consequences was the most powerful factor in intention to refuse an unreasonable request (Fiedler & Beach, 1978), and assertive people expect more positive responses from others than do nonassertive people (Eisler, Frderikson & Peterson, 1978). Further, a treatment study has shown that people who are given positive expectations of the consequences of assertion change more than others in an assertion training program (Loo, 1971).

There is ample evidence from studies employing self-report methods to suggest that expectancy of negative evaluation will exert a negative influence on a person's social behavior. There is as yet little evidence from direct observation of behavior that this

effect occurs. There is some evidence to suggest that this internal state manifests itself behaviorally in pattern of eye gaze.

Exline and Winters (1965) showed that people made to feel negatively evaluated by an interviewer showed decreases in gaze, and expectation of negative evaluation may produce the same gaze aversion.

Socially unskilled people may also be particularly fearful of negative evaluation. This notion is so common that one of the most frequently used self-report instruments is the Fear of Negative Evaluation Scale (Watson & Friend, 1969). Indeed, several investigators have reported that such fears are often mentioned spontaneously by individuals experiencing social difficulty (Goldsmith & McFall, 1975; Martinson & Zerface, 1970). Furthermore, Richardson and Tasto (1975), developing a new self-report technique for measuring social anxiety, found that fear of disapproval and criticism emerged in a factor analysis as the most important factor.

An interesting series of experiments on the role of negative evaluation fears and friendship patterns of socially anxious people has been conducted by Smith and his associates. In one study, Smith (1972) found that people high in social anxiety were especially extreme in their association of similarity and attraction, were reinforced by statements agreeing with their own views (normal people did not show a reinforcement effect), and were more strongly influenced by disagreement than by agreement. In addition, Smith and Campbell (1973) found that socially anxious people avoided friendships where they liked more than they were liked in return and showed an unusual preference for friendships where they liked the other less



than the other person liked them. These findings, taken together, present a picture of the socially anxious person as someone particularly motivated to avoid disapproval. This research, however, relates two unobservable factors, self-reported anxiety and hypothetical motives. Research linking the relationship between excessive fear of negative evaluation (or disapproval) and observable social behavior has not been conducted. Furthermore, care should be taken in discussing excessive fear of negative evaluation as engenderative of social deficit in light of a recent finding that this fear is more characteristic of normal people than of psychiatric patients (Pilkonis, Feldman, Himmelhoch & Cornes, Note 10).

Expectation and fear of negative evaluation both relate to anticipation of future social contacts. Sensitivity of negative evaluation which has already occurred has been another approach to this topic. O'Banion and Arkowitz (1977) reported socially anxious people to have more accurate memories for negative than for positive personal feedback. This finding is consistent with Clark and Arkowitz's (1975) hypothesis that socially anxious people selectively attend to negative information about themselves. Smith and Sarason (1975) found that socially anxious people saw a given negative evaluation as more unfavorable and reported feeling worse about it than did people low in social anxiety. Again, these studies related sensitivity to negative evaluation and self-reported anxiety; neither directly observable. The only attempt to detect the observable behavioral consequences of sensitivity to rejection failed to yield a significant effect (Mehrebian, 1970).

Sensitivity to negative evaluation may also be manifested in gaze. Argyle and Dean (1965) suggested that mutual gaze (or eye contact) precipitates a fear of seeing the rejection of others, so that people who are particularly sensitive to negative evaluation may show avoidance of mutual gaze. The finding that other-directed gaze increases when the subject cannot be seen by the other (Argyle, Ingham, Alkema & McCallin, 1973) suggests that sensitivity to being observed and evaluated decreases other-directed gaze. Study of gaze patterns may thus provide evidence about both expectation of negative evaluation and fear/sensitivity concerning negative evaluation. Incorporation of gaze into this research would expand the work on cognitive attributes related to negative evaluation out of its current extensive association with the social anxiety construct and with self-report methodology.

Self-evaluation. A second group of cognitive attributes thought to comprise social skill deficit are those related to the ways in which a person regards herself. Specifically, socially unskilled people have been thought to make excessively negative evaluations of themselves, make negative self-statements, and be excessively preoccupied with themselves.

The tendency for socially unskilled people to evaluate themselves negatively is related to expectation and fear of a similar evaluation by others. Several studies have indicated that socially anxious people many times underestimate their own performances (Clark & Arkowitz, 1975; Curran et al., Note 3). Another study involving lonely college students showed that they rated their performances

in a conversation worse than their partners did, and rated themselves significantly more negatively than did non-lonely people (Jones, Note 7).

Self-evaluation is a complex phenomenon. Rosenthal, Hung and Kelley (Note 11) found that evaluation of one's own behavior is based in part on knowledge of the norms used for evaluative labeling. Clark and Arkowitz (1975) speculated that socially anxious people have excessively stringent standards for evaluating their own behavior. Another study found that global self-perception functioned independently of self-perception in specified situations (K. Clark, 1975). Kanfer (1971) has noted that self-reward is functionally independent of self-criticism, indicating that a given person may self-evaluate only in positive situations or only in negative situations. Further research on the role of self-evaluations in social skill deficit should (1) learn the evaluative criteria used by people of differing social skill level, (2) separate global self-evaluation from self-evaluation in specific situations, and (3) determine not only the positiveness/negativeness of self-evaluations, but also whether and in what circumstances these evaluations are spontaneously generated.

A preponderance of negative "self-statements" is also thought to characterize people with poor social skills. Schwartz and Gottman (1976) showed that unassertive people made fewer positive and more negative self-statements than assertive people.

In a rare experimental study, self-statement behavior was directly manipulated (Mandal & Shrauger, Note 1). The investigators compared the conversation behavior of college students induced to make negative self-statements to the behavior of other people who

identified themselves as shy. There were several similarities in the behavior of these two groups: both took a long time to initiate conversation, had low levels of facial expressiveness, and smiled infrequently. Additionally, both groups were judged by observers as manifesting low levels of overall interpersonal skill. The overlap between the behaviors associated with shyness and with covert self-statement was not complete, however. Shy people, but not negative self-statement people, showed a lack of gesture. Negative self-statement people, but not shy people, showed small amounts of other-directed gaze. The parallels between the two groups, while not complete, were striking. This study strongly supports the idea that a tendency to make negative self-statements contributes to unskilled social performance. Furthermore, Blass, Bottman, and Shmurak (1976) found that training in replacing negative self-statements with positive ones was superior to other forms of social skills training. The role of negative covert monologue in social skill deficit appears, then, to be a significant one.

The cognitive variables discussed above all involve fears and concerns about the self. People with poor social skills seem to show more of these concerns than usual. Perhaps all of these cognitive attributes can be subsumed under the single characteristic of overconcern with the self. Indeed, there is empirical evidence that excessive attention to the self interferes with the execution of behaviors necessary to successful performance, and that excessive self-attention characterizes people who identify themselves as shy.

Excessive attention to the self interferes with performance by preventing adequate attention to the task at hand. Wine (1971) has reviewed the test anxiety literature, claiming that self-directed attentional focus, and not arousal, is the crucial underlying phenomenon. Other research has shown that people experimentally manipulated to self-attend has an increased perception of their own ongoing emotions (Scheier & Carver, 1977), but a decreased accuracy of perception of the other person (Lundy, 1956). Dispositional self-attenders were unusually sensitive and reacted more negatively than others to rejection by a group (Fenigstein, 1979).

Zimbardo (1977) characterized shy people as showing excessive self-concern, and several studies by Zimbardo and his colleagues have supported this contention. Souza e Silva (Note 5) exposed self-identified shy people to persuasive communication. In spontaneous comments, non-shy people mentioned the speaker and the speech content as reasons for their reactions. Shy people, on the other hand, mentioned their own discomfort and anticipation of their own performances.

In another series of experiments, Hatvany, Souza e Silva and Zimbardo (Note 4) evaluated memory for a speech as affected by dispositional shyness and attentional focus. Shy people showed poor recall of the speech when they felt they were subjects of evaluation. This recall deficit did not appear when the shy people saw themselves as evaluators. (This result is consistent with Leibling and Shaver's 1973 finding that self-attention is only

maladaptive in an evaluative situation.) When Hatvany et al. manipulated focus of attention, the shyness dispositional attribute was overridden: shy people instructed to focus attention on the speech showed even better recall than normals. Likewise, when normal people were instructed to focus their attention on their own emotional responses, their recall of the speech dropped to the levels normally observed in shy people. It appears, then, that the excessive self-attention of the shy person is a powerful behavioral precursor to poor social performance. While this relationship has only been demonstrated for evaluative situations, many social situations are commonly seen as evaluative by shy people (Zimbardo, 1977). It remains, however, for self-attention to be investigated in natural situations and for multiple social behaviors to be assessed.

Both the kind of self-attention (i.e., negative) and the amount of self-attention have been analyzed as cognitive aspects of social skill deficit. Excessive negative self-evaluation may be an artifact of an overall excess of self-attention, and future research should differentiate these two cognitive properties.

#### Person-embedded characteristics

Dispositional, trait-like attributes related to social skill are examined below. The following sections discuss the knowledge, abilities, and personality attributes which have been suggested as pertinent to social skill level.

Knowledge of appropriate behavior. A person's social performance is related to how he/she perceives the situation and his/her ability

to select the appropriate response from a potential range of responses (Mischel, 1973). Unfortunately, there is little research on the relationship between knowledge of appropriate behavior and socially skilled/unskilled behavior. Martinson and Zerface (1970) reported informally that their sample of non-dating college men lacked information about what a woman expected from a date. Schwartz and Gottman (1976), however, found that unassertive people knew competent responses to problematic situations, but had trouble executing these responses.

Research in this area has been hampered by the fact that the exact behaviors comprising socially skilled behavior are largely unknown. When no one knows precisely what behaviors are desirable, it can hardly be argued that such ignorance is specific to social skill deficit. At this point in our research, knowledge of appropriate behavior can be most fruitfully tested by evaluating ability to recognize socially skilled behavior in others. Poor recognition of social skill could play a causal role in social skill deficit, in that someone who does not know skilled behavior when he sees it would be unable to model the skilled behavior of others. A major avenue of social learning is thus obstructed.

Decoding skill. Argyle and Kendon (1967) have suggested that social interaction involves the constant monitoring of the other person's behavior. The ability to accurately perceive other people's reactions may be a precondition to the execution of socially skilled behaviors. Indeed, Trower, Bryant and Argyle (1978) incorporate decoding training into their social skills training program.

Decoding has been extensively studied by researchers of nonverbal communication. Efforts to find individual differences in decoding ability related to personality variables have met with little success (Davitz, 1964; Ekman & Oster, 1979; Mehrebian, 1972). Only two studies have found significant person correlates of decoding skill. Rosenthal, Hall, Archer, DiMattis and Rogers (1978) found good decoders to be better adjusted, more interpersonally democratic and encouraging, more extraverted, more popular, and more interpersonally sensitive according to the judgments of their peers. While none of these characteristics is completely synonymous with social skill, the picture is definitely one of a socially skilled person. In a contrary finding, Cunningham (1977) found good decoders to be unusually neurotic and socially withdrawn.

Some of the inconsistencies here may be related to the means by which decoding skill has been evaluated. Assessment tools typically involve presentations of people exhibiting predetermined emotions. These presentations are usually fragmentary: extremely short in duration, lacking in auditory or visual channels, or lacking in some components of one channel (i.e., content-filtered speech, inclusion of only one body part). There is some question as to whether such tasks are analogous to the interpersonal monitoring being modeled (Ekman & Oster, 1979). Argyle (1969) has further noted that these tasks force participants to make judgments of expressed emotions, when it may be more important to first learn whether any emotions should be attributed to a stimulus. Decoding skill may involve determination



of whether emotions are being expressed as well as discriminating one emotion from another. It is striking, however, that the study which found personality correlates of decoding skill used peer ratings as personality measures (Rosenthal et al., 1978). This measurement technique is a direct, though general, way of assessing a person's impact on others, and approximates social skill assessment much more closely than do standard personality instruments.

The crucial variable in the relationship between person-perception ability and social skill may not be decoding skill per se, but whether or not one attends to the other person's responses. As was suggested earlier, excessively self-focused attention, thought to characterize socially unskilled people, interferes with the monitoring of the behavior of others. Another hypothesis is that the unusually strong emotional responses experienced in social situations by some people interfere with their ability to monitor other people adequately. Schiffenbauer (1974) has shown that one's own emotions exert a strong effect on one's judgments of the emotions shown in others. This may be one way in which arousal interferes with effective social behavior.

There is little research on the decoding abilities of people experiencing real-life social problems. Boland (1973) found that non-dating college men could specify few cues in a woman's behavior which indicating that she was pleased with a date. This finding was not, however, replicated in Greenwald's (1978) study of college women. Increased incorporation of decoding skill may well be worthwhile to social skills research, but investigators should assess both the skill and the attentional focus of their subjects.

Affiliative personality. A person's social adeptness can be seen as a manifestation of an underlying personality characteristic. Someone having a strong drive to affiliate with others may be particularly socially skilled. While the concept of drive is perhaps unnecessary here, there may be dispositional variables which govern some aspects of social behavior.

People who express high affiliative desires exhibit more prosocial behavior and are more affected by the positiveness of the other person than their nonaffiliative counterparts (Mehrebian, 1970, 1971). Affiliativeness apparently affects interpersonal looking behavior, a behavior related to social skill (Exline & Winters, 1965). The personality trait of extraversion-introversion has also been posited as a partial determiner of social skill. Extraversion is moderately negatively correlated with shyness (Pilkonis, 1977a). Extraverts also engage in much eye contact and have longer glances than introverts (Argyle, 1969, p. 322).

Consistent with the idea that dispositional characteristics govern social skill level, several studies have shown that people with social problems are particularly negative towards others. Lonely college students who engaged in short conversations were not rated differentially by others, but rated both themselves and their partners negatively (Jones, Note 7). Shy people who were given a case summary of a mentally ill patient, in comparison to normals: were less willing to work with the patient as a paraprofessional, were more likely to recommend hospitalization, rated the patient as more

passive, abnormal and mentally ill, and spontaneously used fewer sympathetic statements, more dehumanizing statements, and more categorical labels (Maslach & Solomon, Note 12).

While social skill appears to covary with some personal attributes, it is a mistake to claim that it is caused by these attributes. It may be that people who have experienced social failure in the past have come to express non-affiliative activity preferences and developed a negative set toward other people. Desire may follow experience. For example, the number of dates desired by college students has been found to be positively related to their present dating frequency (Klaus, Hersen & Bellack, 1977). The experience of dating infrequently could lower one's desire to date.

A variety of covert elements hypothesized to affect social skill have now been examined. We will proceed to look at the specific overt behaviors which make up the behavioral constellation of social skill.

#### Overt Performance Elements of Social Skill

The performance aspects of social behavior are those which are overt and observable. Several classes of performance variables are reviewed below: approach to others, speech, nonverbal behavior, and reciprocity with others' behaviors.

##### Approach

In order for someone to be successful at social interaction, he must behave in such a way as to make some contact with other people. Many times one need merely "let things happen naturally" in order to have some social contact. Several studies, though, detected a

small minority of people who actively avoided almost all situations involving interpersonal contact (Bryant & Trower, 1974; Pilkonis, 1977a). This behavior pattern was deemed indicative of extreme social difficulty in both studies. Avoidance patterns are also characteristic of persons with moderate levels of social deficit. Pilkonis (1977a) found that shy people listed avoidance of social situations as one of the four most important aspects of their shyness. Twentyman and McFall (1975) found that shy men chose to avoid more of the short vignette situations on a role-play test than did their non-shy counterparts.

Avoiding social situations is not the only way to bring about a low frequency of social contact: active approach is often required. Approach may involve arranging social contact (i.e., asking for a date or going alone to a social function) or simply initiating social contact when in the proximity of another person (i.e., speaking to someone in a semi-public setting). Items concerning the arranging of social contact are commonly included on self-report questionnaires designed to assess social skill, but there is almost no direct observational data on this kind of behavior. Twentyman and McFall (1975) found shy men to be less willing than confident men to make a telephone call to an unknown woman. An information indication of the importance of seeking out social contact is the inclusion of such considerations in social skills training programs (Gambrill, Note 13; Zimbardo, 1977). Arkowitz, Levine, Grosscup, O'Neal, Youngren, Royce, and Largay (Note 14) noted that this is especially important in programs for people who are not college students.

The ability to actively seek out social contact is more important to men than to women. In spite of the trend toward equivalence of sex roles, men still usually function as the initiators in opposite-sex contacts. Arkowitz, Hinton, Perl and Himadi (1980) found in their practice dating program that, in 90 per cent of the cases, males made the telephone calls to arrange the practice dates. The sex difference appeared even though the instructions did not specify which partner was responsible for initiating the contact. In their survey of the dating habits of college students, Klaus et al. (1977) found that it was men and not women who reported particular problems with initiating contacts.

Initiating social interaction while in the presence of other people is another aspect of social approach. Problems in starting conversation in social settings have been spontaneously reported by non-dating college men (Martinson & Zerface, 1970) and socially unskilled psychiatric patients (Goldsmith & McFall, 1975). A factor analysis of a self-report instrument (Bellack, Hersen & Lamparski, 1979) yielded a first factor for males which involved initiation of interaction and accounted for 35 per cent of the variance. (No similar factor emerged for females.) Pilkonis (1977a) found that dispositionally shy people listed "failure to respond" as the most important aspect of their shyness. The self-report data, then, clearly indicate that people regard difficulty in response initiation in a potentially social situation to be an important aspect of their social behavior.

Response initiation also appears to be a factor involved in determining observers' evaluation of social skill. Zimbardo (1977, p. 50) asked dormitory residents to judge their living companions as shy or not shy. An important cue contributing to a "shy" evaluation was that the person did not initiate conversations. Shy people were also seen as interacting with a consistent group of people who were also shy. Shy men took a longer time to initiate conversation in an unobtrusively assessed waiting room situation (Mandel & Shrauger, Note 1; Pilkonis, 1977b).

In summary, then, approach appears to be an elementary and important component in social skill. People with social difficulty show a pattern of avoiding and/or failing to seek out social contact and failing to initiate social interaction in potentially social situations. This avoidance/absence of approach is a very serious aspect of social skill deficit. Bryant and Trower (1974) found that all problematic situations improved except the ones which were avoided, consistent with the experimental and clinical evidence on the persistence of avoidance behavior. Further, such absence of initiative serves to decrease the extent of a person's social experience and thus the learning of appropriate social responses.

Arkowitz and his colleagues (Arkowitz, Christensen & Royce, 1975; Christensen, Arkowitz & Anderson, 1975; Kramer,

1975; Royce & Arkowitz, 1978) have conducted several replications of an experimental procedure involving arranged social contacts. After practice in social interaction, participants in these studies showed increases in frequency of social contact and increased comfort in social situations. They were rated as socially improved by their peers. The effectiveness of the procedure was linearly related to the number of practice interactions (Thomander, 1975). (These studies are reviewed in Arkowitz et al., 1980). That simple practice in social interaction leads to such improvements testifies to the serious implications of a behavior pattern characterized by social avoidance and lack of approach.

### Speech

The element of social performance most commonly associated with the everyday idea of social skill is probably speech. Indeed, Conger et al. (Note 9) found that verbal cues were the ones most frequently used by untrained college students in evaluating the social performances of their peers. This section will examine speech quantity, quality, and content with respect to social skill.

Quantity. Speech can be quantified in several ways. Total speaking time, number of utterances, length of utterance (in time or number of words), latency to respond, and number and length of silences are all indices of speech quantity which have been employed in social interaction studies.

Overall activity level has been found to be an excellent predictor of global judgment of social skill (Gillingham, Griffiths & Care, 1977; Shrout, Note 6). Weiss (1968) also reported that people high in behavioral output were rated highly by their peers on active behaviors like being "fun at a party". In a conversation situation, the universe of possible behaviors consists largely of verbal behaviors, and several studies have found an association between quantity of speech and social skill.

Minkin, Braukman, Minkin, Timkers, Timkers, Fixsen, Phillips and Wolf (1976), after informally deciding upon "time talking" as a component of social skill, computed its correlation with global judgments of social skill. Two separate studies produced correlations of .43 and .65. Glasgow and Arkowitz (1975) recorded the behaviors of people in mixed-sex conversations. They found that total time talking was one of two behavioral indices which successfully predicted partner's rating of social skill. Bellack, Hersen, and Turner (1978) rated psychiatric patients' responses to a series of brief audiotape-presented problem situations. They found that the duration of response was positively related to judges' rating of response quality and effectiveness. The correlations were significant, however, only for the scenes calling for negative responses. In a similar study, Eisler, Miller and Hersen (1973) found response



duration and latency to respond to be associated with judged "overall assertiveness".

Other studies have employed a contrasted groups strategy for the study of the components of social skill. While these studies have employed heterogenous criteria for group assignment, speech quantity has usually been found to differ between groups. Two studies have contrasted high frequency daters to low frequency daters. Arkowitz, Lichtenstein, McGovern and Hines (1975) found that high frequency daters had more words per response to a taped situation test and fewer silences in a conversation than did low frequency daters. The groups did not differ, however, in total amount of time talking in a conversation. Glasgow and Arkowitz (1975) found that women (but not men) who were high frequency daters talked more in a conversation than did women who dated infrequently. There were no differences between these groups on silences or initiation of speech.

Other studies have used self-report questionnaires as means of differentiating groups. Pilkonis (1977b) found that self-reported shy people had fewer utterances, talked a smaller percentage of the time, had longer latencies to respond, allowed more silences to occur and broke fewer silences than normals in an unobtrusively-observed social situation. Shy people did not differ from non-shy people,

though, on the lengths of their utterances. The total time talking index was the second most important predictor of shyness in a discriminant function analysis. Self-reported lonely people also showed long response latencies (Jones, Note 7). In a study of psychiatric patients, Gillinham et al. (1977) found that patients with interpersonal problems spoke less and failed to maintain the flow of conversation in interviews than did other patients. Trower, Bryant and Argyle (1978) found socially inadequate patients to have particularly short utterances and to allow more silences in conversation than did other patients.

This positive relationship between speech quantity and social skill failed to appear in two studies. Borkovec, Fleischman and Caputo (1973) used a measure of self-reported social anxiety to compose contrasting groups. These groups did not differ in their rate of speech (i.e., words per minute) in a conversation. The authors speculated that the task was so anxiety-provoking that a ceiling effect wiped out the between-group differences. In another study, Fischetti, Curran and Wessburg (1977) composed groups of socially competent and incompetent men on the basis of both self-report and observers' judgments of social skill. They instructed these people to watch a videotape of a woman talking about her life and to depress a key when they thought they would verbally

respond to her if they were actually conversing. There was no difference between the competent and incompetent groups in their frequency of hypothetical verbal responding. It is questionable, though, whether a person's expressed intention to respond is equivalent to an actual verbal response in face-to-face interaction.

Speech quantity is clearly an important component of social skill. There is some question, though, as to what indices of speech quantity are the most important. Much of the inter-study heterogeneity stems from the fact that different investigators have simply coded different criteria. There are, however, some bona fide contradictions. For example, Pilkonis (1977b) found unskilled people to talk for a small total amount of time, but to have utterances of normal length, where Arkowitz et al. (1975) found the opposite pattern. There is firm evidence from the general literature on social interaction that different speech indices have different functions (Duncan & Fiske, 1977). Future studies should therefore code a wide variety of quantity indices so that the current inconsistencies can be resolved.

While tentatively concluding that speech quantity is a component of social skill, several qualifications must be considered. First, the timing of speech may be more important than its absolute quantity (Curran, 1977; Fischetti et al., 1977). Second, there is obviously not

a linear relationship between global social skill and speech quantity: someone can talk too much. Zimbardo (1977) has quoted several who reported feeling a great degree of social anxiety but who responded by being overly active. There is probably a U-shaped function here, where either high or low extremes denote social skill deficit. The existing empirical data probably show only the part of this curve depicting small quantity of speech because it is by far the more common problem.

Quality. Trower et al. (1978) have developed a rating scale which includes the assessment of speech quality. Six aspects of quality are included: volume, tone, pitch, clarity, pace and disturbances (pp. 146-148). While this scale is fairly sophisticated, the empirical data on the relationship of these qualities of speech to social skill is scanty.

Trower et al. (1978, p. 50) found that socially unskilled psychiatric patients differed markedly from other patients in the volume, tone and clarity of their speech (pitch, pace and disturbances not rated). Ballack, Hersen and Turner (1978) reported a significant relationship between degree of intonation and judged quality and effectiveness of response. Eisler, Miller and Hersen (1973) found unassertive psychiatric patients to have softer speech with less apparent affect than that of assertive patients.

Soft speech was frequently mentioned by college students as an indicator of shyness in their peers (Zimbardo, 1970, p. 50). Conger et al. (Note 9) also found that speech delivery (encompassing fluency, rate, voice quality and mannerisms) was the second most frequently used specific cue to social performance.

Fluency has been the only aspect of speech quality which has been employed in contrasted group studies of non-psychiatric samples. This is probably because speech disturbance has been used as an anxiety index in other research (Mahl, 1967). These studies have not, however, found fluency/disfluency to be related to self-reported or judged social skill (Borkovec et al., 1973; Borkovec et al., 1974). In fact, Bellack, Hersen and Lamparski (1979) found speech disruption to be correlated with the positively viewed behaviors of self-disclosure, smile and verbalization, although this result is probably an artifact of speech quantity. Speech disturbance does not, however, appear to be an indicator of social skill deficit.

While speech quality appears to be a component of social skill, it has not usually been assessed in the social skill literature. The assessment of speech quality does not readily admit instrumentation, and thus entails the subjective judgment of an observer. Many investigators have preferred to code only behaviors which can be easily quantified. Speech quality should nonetheless be incorporated

into social skills studies. If it emerges as a valid aspect of social skill, then measurement techniques can be developed to explore the matter in precise detail.

Content. Most of us, when we fantasize ourselves acting in a socially skilled manner, construct many variations on what we could say, should have said, or will say next time. We place great emphasis on our own speech content. Peer judgment of social skill is also heavily based on conversation content (Conger et al, Note 9). Content has not, however, been an attribute commonly assessed as a possible element of social skill. One of the major reasons for this apparent paradox is that the appropriateness of specific content is heavily dependent on the situation, so that meaningful trans-situation codes of speech content are difficult to develop. Even in a single situation, many different topics of conversation are appropriate and successful. Any effort to associate speech content with social skill must therefore either strictly specify the situation of interest, or seek aspects of speech content which might prove to be trans-situational.

The first of these approaches has been taken in the assessment of assertiveness. Researchers in this area have developed series of hypothetical situations which call for response having specific content (i.e., an unreasonable request which clearly calls for some form of

polite refusal). Using such an instrument, several studies have found compliance and requests for new behavior to be related to observers' judgments of overall assertiveness (Bellack, Hersen & Turner, 1978; Eisler, Miller & Hersen, 1973). A thorough review of assertiveness studies is not attempted, as the interest in the present review is in social responses appropriate to a broad range of situations.

Efforts to delineate content-related conversation habits of relatively constant appropriateness across situations have begun quite recently, and the research findings here are sparse. Conger et al. (Note 9), in content-analyzing the free responses of people judging their peers, derived a classification system for "conversation characteristics." This schema includes conversation structure, conversation topic, and personal conversation style, and current findings are discussed below using this framework.

Conger et al. (Note 9) found conversation structure to be by far the most frequently used category of its hierarchical level to be used as a cue by which to judge social performance. Fluency, Keeping the conversation going and asking questions, was the most important aspect of structure. This finding is consistent with Zimbardo's (1977, p. 50) result that ability to keep the conversation going is used as an indicator of shyness. The specific

behavior of question-asking has been found to be positively correlated with global social skill (Minkin et al., 1976). Socially unskilled psychiatric patients and lonely college students have also been found to ask an unusually small number of questions in conversations (Jones, Note 7; Trower et al., 1978, p. 50). Another aspect of conversation structure, topic change, was less important than fluency in the Conger et al. study, but has been independently found to characterize lonely college students (Jones, Note 7). Topic content, relatively important in the Conger et al. study, has been reported to differentiate socially skilled from unskilled psychiatric patients (Trower et al., 1978, p. 50).

Personal conversational style ranked second among the conversation categories and third overall as a useful cue for judging social skill in the Conger et al. study. This class was made up of heterogeneous behaviors: use of reinforcement, self-disclosure, use of humor, self-centrism, and politeness. Independent findings on these aspects of behavior (excepting humor and politeness, which have not been investigated) are discussed below.

The frequent use of short positive verbal responses like "yes", "uh-huh", and "that's interesting" appears to be positively associated with social competence. Rate of verbal reinforcers has been found to be related to global



rating of social skill (Minkin et al., 1976), especially in the eyes of female raters (Shrout, Note 6). This behavior did not, however, appear differentially in high- and low-frequency daters (Arkowitz, Lichtenstein et al., 1975).

Self-centrism in the Conger et al. schema refers to talking about oneself and showing little interest in the other person. In that study, it was the most important of the personal style behaviors. Lonely people and socially unskilled psychiatric patients talk about themselves more than their socially skilled counterparts (Jones, Note 7; Trower et al., 1978, p. 50).

People with social problems have been commonly thought to experience particular difficulty with intimacy. Indeed, self-disclosure was cited as a personal problem by non-daters (Martinson & Zerface, 1970). Degree of self-disclosure and intimacy of topic choice have not, however, been found to covary with global social skill (Conger et al., Note 9; Fischetti et al., 1977; Glasgow & Arkowitz, 1975). These negative findings may stem from the fact that what one person considers an intimate topic is not considered by another to be intimate (c.f., Zimbardo, 1977), so that sensitivity to intimacy cannot be tested via group designs. It may also be the case that people who are otherwise unskilled socially do not initiate increases in the intimacy of the topic, but do model the level of intimacy displayed by others, a pattern which would not

be detected by commonly used assessment techniques. So, while topic intimacy has not been shown to be related to social skill, demonstration of its possible importance awaits the development of more sophisticated research strategies.

In summary, the sparse evidence available on speech content indicates that socially unskilled people choose dull topics, change the topic frequently, talk excessively about themselves, ask few questions of others, and give few verbal reinforcers. This behavioral constellation can perhaps be described as excessive concern about the self, a theme also found in the covert elements of social skill deficit.

#### Nonverbal behavior

The verbal aspects of behavior can be easily specified, but recent research on nonverbal behavior shows it to be very influential in social interaction. For example, Argyle, Salter, Nicholson, Williams, and Burgess (1970) found that nonverbal cues were more effective than verbal cues in communicating inferior or superior attitudes. A comprehensive review of the vast research on nonverbal behavior is not attempted here (see Duncan, 1969; Ekman & Oster, 1979; Kendon, Harris & Key, 1975; and Mehrebian, 1972 for reviews). Attention is restricted to four classes of nonverbal behavior which have been connected to social skill: facial expression, gaze, gesture, and posture.

Facial expression. The face is thought to be the chief means by which humans express emotions. The substantial research program carried out by Ekman, Friesen, and their associates (Ekman, Friesen & Ellsworth, 1972) has been largely devoted to the face as the communicator of emotion. Facial expression also, however, communicates a person's liking for another (Argyle, 1969, p. 140). The smile is the most discriminable liking signal, and it is the only facial expression whose part in social skill has been explored.

The findings regarding the relationship of smiling to global social competence have been mixed. Blank expression and absence of smiling characterizes socially unskilled psychiatric patients (Trower et al., 1978, p. 49). A large number of smiles has been found to be positively correlated with judgments of overall assertiveness in psychiatric patients (Bellack, Hersen & Turner, 1978). Of the studies using college student participants, one failed to find an association between smiling and dating frequency (Arkowitz et al, 1975), and two others found, contrary to expectation, that shy women smiled more than normal women (Mandel & Shrauger, Note 1; Pilkonis, 1977b). A similar sex difference was found by Shrout (Note 6), who discovered that smiling only led to positive evaluation if the smiler was male.

A possible explanation for the contradictions in these findings is that only medium smiling frequency might be seen as socially skilled. Both extremely high and low levels would then indicate poor social skills. Abnormally high levels of smiling are also seen in people attempting to cover anxiety (Mehrebian, 1971; Schulz & Barefoot, 1974), people who have high needs for approval (Rosenfeld, 1966) and ingratiators (Jones, 1964; Lefebvre, 1975). Overuse of the smile may be interpreted in one of these ways and thus be negatively valued. Psychiatric patients as a group probably have a low median smile frequency, so that within this group, increased smiling is in an overall medium range and implies greater social skill. College women tend to smile a great deal (Mehrebian, 1972), so that increases in an already high frequency reflects an interpersonal skill problem.

The role of smiling in the social skill behavior constellation is complex. Further research should include descriptive statistics on the subgroup being studied (such as the range and median smiling frequency). Separate analyses should be done for each sex. Attention should also be paid to the context in which smiling occurs, so that the several functions of the smile can be separated. For example, smiling can indicate either a happy emotional state or be a liking signal. Argyle

(1969, p. 140) has suggested that it is judged as liking only when it is accompanied by gaze and by certain body orientations.

Gaze. The most frequently studied nonverbal behavior related to social skill has been interpersonal gaze. The gaze literature is presented here in detail because of its aforementioned possible use as a behavioral indicant of covert processes.

Gaze during social interaction appears to have several functions. Looking at another person serves to gather information from that person, synchronize the speaking turns, signal liking, and signal threat (Argyle, Laljee & Cook, 1969; Ellsworth, 1975; Kendon, 1967). The information-gathering function of gaze is particularly important here because a defect in social monitoring has been thought to be one aspect of social skill deficit. Kendon (1967) demonstrated that speakers look at their partners at phrase boundaries and as the ends of their utterances approach. Kendon suggested that such looks are partly information-gathering in function. Utterance-end gaze may then be a behavioral indicator of a person's sensitivity to others (Argyle, 1969, p. 329).

Utterance-end gaze also signals that the speaker is about to finish and that the other person can claim the speaking turn (Kendon, 1967). Argyle, Ingham et al. (1973), finding that people continued to look toward

the other conversant even when the latter was concealed behind a one-way mirror, speculated that this persisting gaze functioned chiefly as a turn surrender signal. Unfortunately, the authors did not describe the exact pattern of this gaze, although they noted that gaze dropped from 50 per cent to 23 percent when the partner was concealed. Abnormal gaze patterns disrupt the smooth exchange of speaking turns. A speaker who did not look up toward the intended end of her utterance would fail to signal intent to surrender the turn and thus cause abnormally long silences--an effect demonstrated in Kendon's (1967) study. A listener who did not look at the speaker would not receive the speaker's signal to give up the floor and would then be late in beginning his own speech. The preceding evidence that socially unskilled people are slower to begin their speaking turns may perhaps be related to a failure to observe the speaker's signals.

Gaze also signals liking: people look more at others they like than at others they dislike (Exline, 1972; Exline & Winters, 1965). However, gaze has another, opposite meaning: threat, hostility, or aggression (Ellsworth, 1975). How, then, are these two meanings of gaze differentiated? First, the behavioral context of the gaze is distinct for aggressive gaze (Ellsworth, 1975). Further, Argyle and Cook (1976) have suggested

that as amount of gazes goes from zero to normal, communication of liking increases, but as gaze approaches being continuous, the gazing person is increasingly seen as threatening. The pattern of gaze may also be important, as people who give long glances are liked more than people who give short, frequent glances (Argyle & Cook, 1976). Social skills research may find that gaze patterns indicating threat are found in socially unskilled individuals.

There is some direct evidence on the relationship of gaze to social skill. People who habitually averted their gaze were seen by peer judges as being nervous and lacking in self-confidence (Cook & Smith, 1975). Socially unskilled psychiatric patients showed unusually low amounts of interpersonal gaze (Gillingham et al., 1977; Trower et al., 1978, p. 49). College students identifying themselves as shy also spent a small proportion of time looking at their conversation partners (Mandel & Shrauger, Note 1; Pilkonis, 1977b). No differences in amount of gaze appeared between groups high and low in assertiveness (Eisler et al., 1973) or dating frequency (Arkowitz, Lichtenstein et al., 1975; Glasgow & Arkowitz, 1975). All of these studies examined only total amount of gaze. Since specific gaze functions may well be of particular relevance to social interaction, further research should attend to the pattern of gaze. The different gaze functions can thus be separately examined for their relationship to

social skill.

Gesture. There are two general classes of gesture which function in different ways. One class, variously called illustrator (Ekman & Friesen, 1974), gesticulation (Rosenfeld, 1966), or simply gesture (Duncan & Fiske, 1977), is used intentionally to illustrate a verbal point. The second class of gesture, called self-manipulation (Rosenfeld, 1966) or self-adaptor (Duncan & Fiske, 1977), is generally subintentional and serves no illustrative function. These movements are seen by others as "nervous habits". Gestures of the first type enhance communication and would therefore be expected to be infrequent in the behavior of socially unskilled people. Mandel & Shrauger (Note 1) found that gesture frequency was indeed low in shy people, although Pilkonis (1977b) found no shy/nonshy differences. Head nods, like smiles, appeared more frequently in shy than in nonshy women (Pilkonis, 1977b). Head nod frequency was not found to differ between high- and low-frequency daters (Arkowitz et al., 1975).

While self-manipulative gestures have been regarded as anxiety signs (Waxer, 1977), the frequency of self-manipulation has not been found to differ between groups high and low on self-reported anxiety or shyness (Borkovec, Fleischman & Caputo, 1973; Borkovec, Stone et al., 1974; Pilkonis, 1977b; Waxer, 1977).



Posture. Body position has rarely been investigated as a possible aspect of social skill, even though it is a frequently studied behavior in the general nonverbal literature. Body position was a frequently used cue among the nonverbal behaviors in Conger et al.'s (Note 9) study of peer judgments of social skill. Trower et al. (1978, p. 49) found that socially inadequate psychiatric patients were judged to have closed, inflexible postures. No theoretical link between posture and social functioning has been proposed. The study of posture will therefore probably continue to be minimal.

Nonverbal behaviors have been investigated less often than verbal behaviors for their possible relation to social skill. When they have been examined, they have sometimes proven to be less potent components of social skill than verbal behaviors (Conger et al., Note 9; Eisler et al., 1973; Pilkonis, 1977b). It is much too early, however, to conclude that nonverbal behaviors are only minimally related to social skill. Nonverbal behavior is subtle, and its study requires greater attention to detail than social skills researchers have thus far been willing to pay. The function of nonverbal behaviors is sometimes specific to a certain intra-class index (Duncan & Fiske, 1977), so that analyzing only the total amount index of a behavior class misses the

point. Further, the co-occurrence of several nonverbal behaviors may have a meaning which is not discernable from the study of each behavior separately. Clearly, the comprehensive study of the role of nonverbal behavior in social skill will be a painstaking process.

#### Reciprocity of behavior

As point out previously, social interaction involves constant monitoring of the other person's reactions and subsequent adjustment in one's own behavior (Argyle & Kendon, 1976). The socially skilled person may be someone who is adept at adjusting his or her behavior to the responses of the co-conversant. The timing and sequencing of behavior between individuals may also be important to social skill (Curran, 1977). The simultaneous study of both interactants may thus be necessary in order to fully understand social skill. Only two simple aspects of the interplay of social responses have been investigated: the timing of speech and the relationship between amounts of a behavior class exhibited by two interactants.

Timing. In the stream of another person's behavior, there are appropriate and inappropriate points at which one can emit a given response. None of us, for example, likes being interrupted at the hiatus of an important point. Socially competent people may be those whose

social responses occur only at appropriate points in the behavior sequences of the people with whom they are interacting.

Fischetti, Curran and Wessburg (1977) investigated this idea by showing a videotape of a monologue to people of known social competence. Participants pressed a key when they thought they would ordinarily respond to the person on tape. Socially skilled people chose intervals for their responses which were chosen frequently. The intervals chosen by socially incompetent people were unpopular, idiosyncratic ones. Weiss (1968) has also reported that unpopular people responded to unique aspects of another's speech.

Choosing appropriate points to respond may be related to several aspects of social skill deficit which have been discussed earlier. Self-focused attention could precipitate an overt verbal response at the end of one's own thought sequence, rather than at the end of the other person's speech sequence. Inattention to the person's nonverbal behavior could interfere with the perception of cues indicating appropriate points to begin speaking. The relation between response timing and social skill should employ face-to-face interaction tasks in the future.

Dependency between interactants. It is axiomatic that a person's behavior is influenced by the behavior

of his or her co-interactants. The exact nature of this influence, however, is far from being known. Argyle and Dean (1965) proposed that there is an optimum level of intimacy in a two-person interaction, and that when one person increases his/her intimacy level, the other person maintains the optimum intimacy level of the pair by decreasing the intimacy of his/her behavior. Tests of this theory have shown that people more frequently move toward matching the behaviors of their partners (Argyle, 1969; Patterson, 1976; Schulz & Barefoot, 1974). Patterson (1976) has theorized that there are individual differences in response to interpersonal approach, and these depend on covert labelling processes. As discussed earlier, reciprocation could be one characteristic of socially skilled people. Partial corroboration of this view can be found in work by Mehrebian (1970, 1971), who found that "affiliative" people responded positively to a positively-behaving co-interactant and negatively to a negative co-interactant. "Nonaffiliative" people did not show this matching-to-partner behavioral variability. Further research could replicate this finding with socially skilled and unskilled people.

The interplay of social behavior has not been well studied because it requires painstaking coding of behavior, generating voluminous and complex data. Normal statis-

tical techniques are not designed to handle this type of data. As more researchers begin to take on this task, however, analytic techniques are being developed which detect sequences of behavior, both within the behavior stream of one person and between two people in interaction (Bakeman & Dabbs, 1976; Bottman, Markham & Notarius, 1977). The current literature on the social skill-related behaviors of one person could be used to decide what specific behaviors to analyze while examining the interplay of social behavior between people.

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## Appendix A

### The Stanford Shyness Survey

- \_\_\_\_\_ 1. Do you consider yourself to be a shy person? 1 = yes 2 = no
- \_\_\_\_\_ 2. If yes, have you always been shy (were you shy previously and still are)? 1 = yes 2 = no
- \_\_\_\_\_ 3. If no to question 1, was there ever a prior time in your life when you were shy? 1 = yes 2 = no
- If no, then you are finished with this survey. Thanks  
If yes to any of the above, please continue.
- \_\_\_\_\_ 4. How shy are you when you feel shy?
- 1 = extremely shy
  - 2 = very shy
  - 3 = quite shy
  - 4 = moderately shy
  - 5 = somewhat shy
  - 6 = only slightly shy
- \_\_\_\_\_ 5. How often do you experience (have you experienced) these feelings of shyness?
- 1 = every day
  - 2 = almost every day
  - 3 = often, nearly every other day
  - 4 = one or two times a week
  - 5 = occasionally, less than once a week
  - 6 = rarely, once a month or less
- \_\_\_\_\_ 6. Compared to your peers (of similar age, sex, and background), how shy are you?
- 1 = much more shy
  - 2 = more shy
  - 3 = about as shy
  - 4 = less shy
  - 5 = much less shy
- \_\_\_\_\_ 7. How desirable is it for you to be shy?
- 1 = very undesirable
  - 2 = undesirable
  - 3 = desirable
  - 4 = very desirable
- \_\_\_\_\_ 8. Is (or was) your shyness ever a personal problem for you?
- 1 = yes, often
  - 2 = yes, sometimes
  - 3 = yes, occasionally
  - 4 = rarely
  - 5 = never

- \_\_\_\_\_ 9. When you are feeling shy can you conceal it and have others believe you are not feeling shy?
- 1 = yes, always  
2 = sometimes I can, sometimes not  
3 = no, I usually can't hide it
- \_\_\_\_\_ 10. Do you consider yourself more of an introvert or an extrovert?
- 1 = strongly introverted  
2 = moderately introverted  
3 = slightly introverted  
4 = neither  
5 = slightly extroverted  
6 = moderately extroverted  
7 = strongly extroverted
11. If you now experience, or have ever experienced feelings of shyness, please indicate which of the following situations, activities, and types of people make you feel shy. (Place a check mark next to all of the appropriate choices).  
Situations and activities that make me feel shy:
- |       |       |   |
|-------|-------|---|
| _____ | _____ | social situations in general  |
| _____ | _____ | large groups  |
| _____ | _____ | small, task-oriented groups (e.g., seminars at school, work groups on the job)  |
| _____ | _____ | small, social groups (e.g., parties, dances)  |
| _____ | _____ | one-to-one interactions with a person of the same sex   |
| _____ | _____ | one-to-one interactions with a person of the opposite sex   |
| _____ | _____ | situations where I am vulnerable (e.g., when asking for help)   |
| _____ | _____ | situations where I am of lower status than others (e.g., when speaking to superiors, authorities)   |
| _____ | _____ | situations requiring assertiveness (e.g., when complaining about faulty service in a restaurant or the poor quality of a product)         |
| _____ | _____ | situations where I am the focus of attention, before a large group (e.g., when giving a speech)   |
| _____ | _____ | situations where I am the focus of attention before a small group (e.g., when being introduced, when being asked directly for my opinion) |
| _____ | _____ | situations where I am being evaluated or compared with others (e.g., when being interviewed, when being criticized)                       |
| _____ | _____ | new interpersonal situations in general   |
| _____ | _____ | where sexual intimacy is possible   |
12. Now, please go back and indicate next to each item you checked whether your shyness has been elicited in the past month by this situation or activity:
- 0 = not in the past month, but prior  
1 = yes, very strongly  
2 = yes, strongly so  
3 = moderately so  
4 = only mildly  
5 = not at all

## Appendix B

### The Watson-Friend Fear of Negative Evaluation Scale

T

F

- \_\_\_\_\_ 1. I rarely worry about seeming foolish to others.
- \_\_\_\_\_ 2. I worry about what people will think of me when I know it doesn't make any difference.
- \_\_\_\_\_ 3. I become tense and jittery if I know someone is sizing me up.
- \_\_\_\_\_ 4. I am unconcerned even if I know people are getting an unfavorable impression of me.
- \_\_\_\_\_ 5. I feel very upset when I commit some kind of error.
- \_\_\_\_\_ 6. The opinions that important people have of me cause me little concern.
- \_\_\_\_\_ 7. I am often afraid that I may look ridiculous or make a fool of myself.
- \_\_\_\_\_ 8. I react very little when other people disapprove of me.
- \_\_\_\_\_ 9. I am frequently afraid of other people noticing my shortcomings.
- \_\_\_\_\_ 10. The disapproval of others would have little effect on me.
- \_\_\_\_\_ 11. If someone is evaluating me I tend to expect the worst.
- \_\_\_\_\_ 12. I rarely worry about what kind of impression I'm making on someone.
- \_\_\_\_\_ 13. I am afraid that others will not approve of me.
- \_\_\_\_\_ 14. I am afraid that people will find fault with me.
- \_\_\_\_\_ 15. Other people's opinions of me do not bother me.
- \_\_\_\_\_ 16. I am not necessarily upset if I do not please someone.

- \_\_\_\_\_ 17. When I am talking to someone, I worry about what they may be thinking about me.
- \_\_\_\_\_ 18. I feel that you can't help making social errors sometimes, so why worry about it.
- \_\_\_\_\_ 19. I am usually worried about what kind of impression I make.
- \_\_\_\_\_ 20. I worry a lot about what my superiors think of me.
- \_\_\_\_\_ 21. If I know someone is judging me, it has little effect on me.
- \_\_\_\_\_ 22. I worry that others will think I am not worthwhile.
- \_\_\_\_\_ 23. I worry very little about what others may think of me.
- \_\_\_\_\_ 24. Sometimes I think I am too concerned with what other people think of me.
- \_\_\_\_\_ 25. I often worry that I will say or do the wrong things.
- \_\_\_\_\_ 26. I am often indifferent to the opinions others have of me.
- \_\_\_\_\_ 27. I am usually confident that others will have a favorable impression of me.
- \_\_\_\_\_ 28. I often worry that people who are important won't think very much of me.
- \_\_\_\_\_ 29. I brood about the opinions my friends have about me.
- \_\_\_\_\_ 30. I become tense and jittery if I know I am misjudged by my superiors.

## Appendix C

### The UCLA Loneliness Scale

	<u>NEVER</u>	<u>RARELY</u>	<u>SOMETIMES</u>	<u>OFTEN</u>
1. I feel in tune with the people around me.	1	2	3	4
2. I lack companionship.	1	2	3	4
3. There is no one I can turn to.	1	2	3	4
4. I do not feel alone.	1	2	3	4
5. I feel part of a group of friends.	1	2	3	4
6. I have a lot in common with people around me.	1	2	3	4
7. I am no longer close to anyone.	1	2	3	4
8. My interests and ideas are not shared by those around me.	1	2	3	4
9. I am an outgoing person.	1	2	3	4
10. There are people I feel close to.	1	2	3	4
11. I feel left out.	1	2	3	4
12. My social relationships are superficial.	1	2	3	4
13. No one really knows me well.	1	2	3	4
14. I feel isolated from others.	1	2	3	4
15. I can find companionship when I want it.	1	2	3	4
16. There are people who really understand me.	1	2	3	4
17. I am unhappy being so withdrawn.	1	2	3	4
18. People are around me but not with me.	1	2	3	4
19. There are people I can talk to.	1	2	3	4
20. There are people I can turn to.	1	2	3	4



## Appendix D

### Post-session questionnaire

1. In general, how socially skilled would you say you are?

1	2	3	4	5
Very				Not at all

2. How well did you like your first conversational partner?

1	2	3	4	5
Very much				Not very much

3. Your second partner?

1	2	3	4	5
Very much				Not very much

4. How comfortable were you during this experiment?

1	2	3	4	5
Quite comfortable				Not at all comfortable

## Appendix E

### Instructions for Raters

## Rating Categories

### Global ratings

These four ratings reflect your judgment of the qualities exhibited by the conversants. There is a tendency for people to over-use the middle of scales like these, so make an effort to make non-medium ratings here.

### Utterance types

**Questions:** A question is a fairly complete sentence which ends with a rise in pitch. It is intended to produce a piece of information from the other person. Examples: "Where are you from?"; "What do you think of that?". Do not class as questions utterances which are comments: "Are you serious?"; "Really?". These should be classified as Affirmations. Do not count statements with short interrogative expressions at the end like "eh?", "isn't it?". "Excuse me" does not get classified as anything. Sometimes a subject will make a statement and slide into a question. In these instances, count both the statement (either a response to a question or voluntary) and the question.

**Answers:** When counting one person's questions, you can also count the other subject's answers to questions. An answer can be short like "yeah" or long like "My family moved to Winnipeg from RedDeer when I was 3." In longer response, stop counting the response after a complete thought is expressed. In the above example, if the subject went on to say that her father opened a grocery store here, that would count as a voluntary statement. Short responses to questions are sometimes similar in form to short verbal Affirmations, but they should only be counted as answers to questions. Head nods and other gestures should not be counted as answers to questions: an answer must be verbal to count.

**Statements:** There are two kinds of voluntary statement. The first kind is that mentioned above, where a subject begins an utterance by answering his partner's question and then goes on to elaborate and volunteer information. The breaking point between these two components of an utterance will be difficult to discern, and you may devise whatever rules between you which help you to do this. The other kind of voluntary statement is that which begins an utterance. In general, you should count only one voluntary statement per utterance. In order to count two, there must be a short exchange, like when the partner inserts "yeah", or there must be a discernable pause in the utterance of the subject.

## Appendix G

### Total Score Derivation for the Stanford Shyness Survey

### Total Score Derivation for the Stanford Shyness Survey

The Stanford Shyness Survey includes several types of questions, some of which fall into natural groups. The first three questions are classificatory, and a certain pattern of responses (indicating lack of shyness in the past and present) terminates the questionnaire. Following are five questions on intensity of shyness which require multiple-choice response. Next come two additional multiple-choice questions on ability of hide one's shyness and self-assessment of introversion-extraversion. The final section of the SSS is a 14-item list of situations. Respondents indicate which are problem situations and the degree of shyness in the situations so identified.

The first three questions were used to classify respondents into four shyness categories: never shy, previously shy, newly shy, and always shy. The multiple-choice questions were scored straightforwardly, except that the direction of scoring was reversed where necessary so that a high score indicated high shyness or problem. In the situation section, all situations marked as problematic received at least a "1". This number was increased according to how problematic that situation was.

The means and standard deviations of the subsections of the SSS are presented in Table 25. The items are grouped

Table 25

Means and Standard Deviations of Grouped Questions  
on the Stanford Shyness Survey

	Potential Range	Mean	SD	n
Shyness Category (3 items)	1-4	2.77	1.08	201
Intensity of Shyness (5 items)	5-60	16.81	6.31	201
Ability to Hide Shyness (1 item)	1-3	1.98	0.44	199
Introversion/Extroversion (1 item)	1-7	3.59	1.28	194
Situational Shyness (14 items)	0-84	17.25	13.97	201

as described above. The number of cases is less than the total 204 because of skipped questionnaire items. The two major sections, Intensity of Shyness and Situational Shyness, have means at the lower end of their potential ranges, indicating a "normal" sample.

Two kinds of data were used to decide on an equation for combining the subsections of the SSS to form a total score. First, the intercorrelations among the subsections, presented in Table 26, were examined. The introversion question was quite consistent with the intensity of shyness group; the ability of hide question less so. The group of situation questions was weakly related to the first part of the questionnaire. It was decided, however, to retain this group in the total score because number and intensity of problem situations was of theoretical importance. The hide question was dropped from consideration because of its very low correlation with situations and because its content was theoretically different from the rest of the measure.

A second type of data used to derive a total SSS score was the dispersion of subsection scores among the four categories of shyness. The means and standard deviations for Intensity of Shyness, Introversion and Situational Shyness are shown within each Shyness Category (Table 27). The scores for the never shy respondents were



Table 26

Correlations Among Subsections of the Stanford Shyness Survey

	Shyness Category	Intensity of Shyness	Ability to Hide Shyness	Introversion- Extroversion	Situational Shyness
Shyness Category	1.00	.68	.34	.59	.32
Intensity of Shyness		1.00	.53	.69	.33
Ability to Hide Shyness			1.00	.42	.10
Introversion- Extroversion				1.00	.23
Situational Shyness					1.00

Table 27

Amount of Shyness Broken Down by Shyness Category:  
Means and Standard Deviations

	Always Shy		Newly Shy		Previously Shy		Never Shy	
	M	SD	M	SD	M	SD	M	SD
Intensity of Shyness	20.63	3.41	19.43	3.90	16.20	2.93	0.00	0.00
Introversion	4.74	1.28	4.50	1.75	3.14	1.52	0.00	0.00
Situational Shyness	22.64	12.92	20.56	10.00	12.89	9.52	0.00	0.00

always zero, as the questionnaire terminated for people  
 X so classifying themselves. As can be seen in Table 27,  
 the differences in means over the other shyness cateforeis,  
 while consistent, are small. It was felt that the  
 extreme importance of Shyness Category was not reflected  
 in these differences. It was considered especially impor-  
 tant to distinguish presently shy from formerly shy people.  
 For this reason, Shyness Category was used as a multiplier  
 in the equation to derive a total score for the SSS. The  
 following formula was applied to the subsection raw scores  
 to derive a total score:

$$\text{SSS} = \text{Shyness Category} \times (\text{Intensity of Shyness} + \\ \text{Introversion} + \text{Situational Shyness})$$

This total SSS score correlates .86 with Shyness Category,  
 .64 with Shyness Intensity, .51 with Introversion, and  
 .46 with Situational Shyness.