

## ABSTRACT

Title of Thesis:               SOCIAL SKILLS DEFICIT VERSUS PERFORMANCE  
   INHIBITION IN SOCIALLY ANXIOUS INDIVIDUALS

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This study attempted to address the performance inhibition hypothesis by assessing nonverbal social performance in socially anxious individuals during a task where verbal content was standardized, thereby decreasing the overall performance requirements, thus theoretically decreasing their social distress. Fifty-nine subjects were identified as high or low socially anxious and participated in two behavioral role-play tasks. Both role-plays included a standard heterosocial conversation task; however during the second task subjects were provided their verbal content through a bug-in-the-ear wireless transmitter. Results showed no significant within or between-group differences on measures of nonverbal social skill. However, a global rating of social skill revealed a significant group difference. These results do not support the performance inhibition hypothesis and support the notion that isolated behaviors aren't enough to distinguish socially anxious and non-socially anxious individuals from one another.

Rather, it's the unique combination of all elements of social skill that allows for this differentiation.

SOCIAL SKILLS DEFICIT VERSUS PERFORMANCE INHIBITION IN SOCIALLY  
ANXIOUS INDIVIDUALS

by

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## INTRODUCTION

### Definition of Social Phobia

Social phobia is currently defined in the DSM-IV as a “marked and persistent fear of one of more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others” (American Psychiatric Association, 1994). Those with social phobia fear acting in a way that will cause them embarrassment or humiliation. As a result, these situations are usually avoided or endured with intense anxiety and/or distress. Situations commonly eliciting anxiety in social phobics include public speaking, speaking with unfamiliar people, participation in meetings, and being assertive (American Psychiatric Association, 1994).

Although social phobia was first discussed as a clinical syndrome by Marks (1970) it was not until the publication of the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychiatric Association, 1980) that social phobia was recognized as a distinct diagnostic disorder in the United States, and another seven years before subtypes were introduced (DSM-III-R; American Psychiatric Association, 1987). Before the addition of social phobia into the diagnostic nomenclature the syndrome was commonly operationalized for research purposes through terms such as “shyness”, “social anxiety”, or “dating anxiety” (Rapee, 1995). In the original DSM-III description, social phobia was conceptualized as a specific phobia. It had four potential manifestations such as public speaking/performing and using public restrooms, and noted that most people diagnosed with social phobia will only be fearful in one of these discrete situations (APA, 1980, p.227). Avoidant personality disorder (APD) also was included in

this edition and acted as an exclusionary diagnosis for people with multiple social fears. The DSM-III-R provided a new conceptualization of social phobia by introducing the creation of the generalized subtype, as well as a more circumscribed disorder (American Psychiatric Association, 1987, p. 243). In addition, this version of the DSM also allowed for a comorbid APD diagnosis. Finally, in the most recent version of the DSM (DSM-IV; American Psychiatric Association, 1994), the term social anxiety disorder was listed alongside social phobia and the previously termed “avoidant disorder of childhood or adolescence” was subsumed under the social phobia umbrella.

### Differences in Social Phobia Subtypes

Although the DSM-IV does not specifically delineate the different subtypes of social phobia, differences between the subtypes have been noted in both clinical and research literature. Patients diagnosed with specific social phobia are characterized as having one circumscribed social fear. Although public-speaking is the most common, it is possible to have fears in other domains such as assertiveness, maintaining conversations and eating in public. Patients diagnosed with generalized social phobia usually have a constellation of anxiety-eliciting social situations and are thought to be more severely impaired than those with the specific subtype. Recent epidemiological research has supported these categorizations with a large-scale national survey finding approximately one-third of those individuals diagnosed with social phobia as having a circumscribed fear of public speaking, and the remaining two-thirds having multiple social fears (Kessler, Stein, & Berglund, 1998). Research has shown generalized social phobics report more social avoidance (Herbert, Hope, & Bellack, 1992), increased fears

of negative evaluation (Holt, Heimberg, & Bruch, 1992; Tran & Chambless, 1995), greater introversion and neuroticism (Stemberger, Turner, Beidel, & Calhoun, 1995), and more overall social anxiety (Turner, Beidel, & Townsley, 1992) as compared to specific social phobics. In addition, individuals diagnosed with generalized social phobia have an earlier age of onset, are less educated, less likely to be married, more likely to exhibit suicidal behavior, and are more likely to have problems in their daily functioning as a result of their anxiety (Herbert et al., 1992; Mannuzza, Schneier, & Chapman, 1995; Schneier, Johnson, Hornig, Liebowitz, & Weisman, 1994, Turner et al., 1992). In addition to distinctions in the clinical presentation of the social phobia subtypes, differences in comorbid psychopathology have been evidenced as well. Those diagnosed with generalized social phobia are more likely than specific social phobics to receive a comorbid DSM diagnosis, especially of mood and other anxiety disorders (Holt et al., 1992; Mannuzza et al., 1995). Physiological differences have also been noted, with specific social phobics exhibiting a much greater pattern of reactivity, similar to the one expected from a conditioned emotional response (CER) (Boone et al., 1999; Heimberg, Dodge, Hope, & Becker, 1989; Levin et al., 1993). The results of the literature clearly suggest that those with generalized social phobia suffer from increased severity and functional impairment as a result of their disorder as compared to the specific subtype.

Generalized social phobia also is highly comorbid with APD with individuals almost never receiving a diagnosis of APD without generalized social phobia. Furthermore, a review of thirteen empirical studies reporting on the overlap found comorbidity ranging from 22%-89% (Reich, 2001). This has led some researchers to postulate whether they are in fact two distinct disorders (Herbert et al., 1992; Johnson &

Lydiard, 1995; Reich, 2001). However, despite the diagnostic overlap, research does seem to suggest a quantitative and some qualitative distinction between the two disorders with those individual's meeting criteria for APD being more severely affected by their social fears and anxiety (Boone et al., 1999; Herbert et al., 1992; Turner et al., 1992; Turner, Beidel, Dancu & Keys, 1986).

### Epidemiology

Across epidemiologic community samples, rates of social phobia are higher in females than in males; however this elevation is less pronounced as it is within other anxiety disorders. Age of onset typically occurs in early to late adolescence (Ost, 1987), although other studies have found onset to be as early as 8 (Beidel, 1988). Social phobia appears to be inversely related to education and income, and rates are higher in younger people and those who are single (Furmark, 2002; Kessler, McGonagle, & Zhao, 1994; Schneier et al., 1992). Furthermore, social phobia has been found to be highly comorbid, especially with other anxiety and affective disorders, and with alcohol abuse (Kessler et al, 1994; Lampe, Slade, Issakidid, & Andrews, 2003; Merikangas, Avenevoli, Acharyya, Zhang, & Angst, 2002; Schneier et al, 1992), with the onset of social phobia generally preceding these other diagnoses.

Lifetime prevalence estimates of social phobia vary considerably across studies. The National Comorbidity Survey (NCS), a nationwide probability sample of 8098 respondents, yielded a lifetime prevalence rate of 13.3% (11.1% male; 15.5% female) (Kessler et al, 1994). In this survey only major depression and alcohol dependence

occurred more frequently, highlighting the real public health issue that exists with social phobia.

The Epidemiologic Catchment Area Study (ECA) interviewed over 18,000 respondents in five communities (New Haven, Conn; St Louis, Mo; Baltimore, Md; Durham, NC; and Los Angeles, Ca) and found a lifetime prevalence estimate of 2.7% (2.3% male; 3.2% female) (Eaton, Dryman, & Weissman, 1991). These rates are much lower than those obtained in the National Comorbidity Survey (NCS) and discrepancies between the two are likely due to methodological factors. The NCS diagnoses were based on DSM-III-R criteria which uses a broader definition of social phobia than the DSM-III used in the ECA, and allows for comorbidity with APD. In addition, the ECA assessed participants using the Diagnostic Interview Schedule (DIS) while the NCS used the Composite International Diagnostic Inventory (CIDI). While the structure of the CIDI is based on the DIS, the CIDI screener questions were more comprehensive and reflected changes made in the DSM-III-R.

In general, prevalence estimates from international epidemiologic samples appear to be comparable to those obtained in the United States (Furmark, 2002). Community surveys using similar methods as those employed in the ECA found rates to be as high as 8% in Munich (Wittchen, Essau, Vonzerssen, Krieg, & Zaudig 1992) and as low as .5% in Seoul (Lee et al., 1990). However, studies that employed the less stringent criteria found in DSM-III-R and DSM-IV found higher rates varying from 16% in Basel (Wacker, Mulleijans, Klein, & Battegay, 1992) to 4.1% in Paris (Lepine & Lellouch, 1995). It is not clear whether the significant differences in rates across various countries

reflect true cultural differences or are the result of fluctuations in methodological or assessment strategies.

With respect to psychopathology, researchers agree that social phobia is characterized by anxiety and ineffectual behavioral performance (e.g. Turner, Beidel, Dancu, & Keys, 1986). What is less clear is whether those with social phobia are actually deficient in social skills. This issue is reviewed below.

### Defining Social Skills

Before providing a detailed analysis of the social skills literature, it is important to examine what constitutes social skill. Despite the frequency of usage and application of the term, no true consensus on the definition of social skill exists. As one researcher once remarked “everyone seems to know what good and poor social skills are...[but]...no one can define them adequately” (Curran, 1979, p321). One of the original definitions proposed by Libet and Lewinsohn (1973) define social skills as, “the complex ability to maximize the rate of positive reinforcement and to minimize the strength of punishment from others” (p. 311). However, this definition is rather abstract and ambiguous in that it does not pinpoint specific behaviors that constitute skill. Furthermore, behaviors such as attention-seeking and deceit may work to maximize reinforcement, but would not necessarily be characterized as skilled or appropriate. Additional definitions of social skill are more specific and include lists of elements thought to be essential for effective social communication (see McFall, 1982 for an overview). In the research literature, social skills usually are defined through an intrapersonal or interpersonal perspective (Stravynski & Amdao, 2001). In the intrapersonal view, social skills represent trait-like

dispositions where behavior is consistent across situations. On the other hand, the interpersonal perspective of social skill utilizes a more situational model, and maintains that social skills consist of specific learned behaviors across a given situation. Despite differences in the conceptualization of social skills across theories, it is generally agreed that social skills represent a group of behaviors that allow an individual to effectively engage and succeed in a social encounter (Meier & Hope, 1998).

### Social Skills Deficits in Social Phobics

Social phobia frequently is characterized by excessive avoidance of social situations, with those situations that are entered often met with severe anxiety and/or distress. One explanation for this wide-range social reticence is that social phobics lack the requisite skills necessary to engage in effective social communication (Curran, 1979). Several studies have demonstrated that social phobics perceive themselves as less socially skilled than non-anxious people (Lucock & Salkovskis, 1988; Rappe & Lim, 1992; Stopa & Clark, 1993). However, studies that have attempted to examine these skill deficits have found mixed results.

Many earlier studies assessing skills in socially anxious individuals used dating frequency as an operational definition of social anxiety. For example, Twentyman and McFall (1975) examined a group of shy and confident male subjects (as defined by dating frequency) on several social skill indices and found that shy subjects were rated as more anxious and less globally skilled, and reported fewer and shorter heterosocial interactions compared to the confident subjects. In addition, a study by Arkowitz, Lichenstein, McGovern, and Hines (1975) examined 20 male high-frequency daters with 15 male low-

frequency daters on a social performance task. Results indicated that high-frequency daters had shorter response latencies and longer response lengths than low-frequency daters. Moreover, high-frequency daters were rated as more globally skilled and having fewer silences as compared to the low-frequency daters. Finally, Wessberg and colleagues (1979) characterized males as low, medium, and high frequency daters and compared them across four heterosocial interactions. High frequency daters were rated as significantly less anxious and more globally skilled than the low frequency daters. The cumulative results suggest that low frequency daters are less socially skilled and display greater anxiety during social interactions than high frequency daters. However, due the nonclinical nature of the samples is important to be cautious when generalizing these results to a socially phobic population.

Several studies investigating social skills in socially anxious individuals have found deficits in overall skill ratings, but have failed to account for these differences through specific dimensions of skill. Beidel, Turner, and Dancu (1985) compared 26 socially anxious (SA) and 26 non-socially anxious (NSA) individuals on indices of anxiety and skill during a behavioral task. Results yielded significant differences on global measure of social skills, but found no significant differences on measures of specific skills. In addition, Dow, Biglan, and Glaser (1995) compared the social skills of socially anxious and normal control women on a series of behavioral tasks. Results showed that the anxious subjects were rated as less skillful by peers, confederates, and observers. However, the only significant differences found on a specific social skill dimension were that the anxious women gave fewer compliments and made fewer positive statements. Furthermore, a study by Fydrich, Chambless, Perry, Buergener, and



Beazley (1998) compared the performance of 34 social phobics with 28 controls during a 3-minute unstructured social interaction. Social phobics performed more poorly than controls on global measures of anxiety, but the researchers were not able to identify specific social skills deficits. The results of these studies have lead some to suggest that social skill deficits in social phobics can be best described as a unitary phenomenon rather than a series of discrete skill deficits. However, others in the field contend that this discrepancy may be better explained by difficulties in the identification and measurement of the behaviors that comprise social skill.

Despite the results of studies suggesting that social phobics only evidence a global skill deficit, several studies have found group differences on specific social skill dimensions. An early study by Halford and Foddy (1982) rated a group of socially anxious subjects on a variety of social skill indices and found them to be less skilled and verbally assertive than controls. In addition, Hofmann, Gerlach, Wender, and Roth (1997) compared a group of social phobics with public speaking anxiety to normal controls on a speech task. There were no significant between group differences on gaze, but social phobics had significantly less fluid speech (e.g. longer and frequent pausing) compared to controls. One study conducted by Baker and Edelman (2002) examined differences during a behavioral task among social phobics, clinically anxious, and normal control participants in adequacy and duration of several social skill dimensions. Results showed that social phobics exhibited significantly less eye contact than the normal control group and used more gestures than both the clinically anxious and control groups. In addition, on measures of overall adequacy for gestures, speech fluency and overall

performance the social phobia group was rated more poorly than both comparison groups.

Not all studies investigating the level of social skills in socially anxious individuals and controls have found significant differences. For example, an early study conducted by Glasgow and Arkowitz (1975) compared a group of male high frequency daters to a group of male low frequency daters in a heterosocial interaction with a confederate. There were no significant group differences on the seven behavioral variables assessed. In addition, Clark and Arkowitz (1975) failed to find differences in ratings of social skill performance during a heterosocial interaction in a group of socially anxious college students as compared to controls. However, again it is important to note that the individuals included in these studies were not selected from a clinical population and are likely to be less severe cases than those with diagnosed social phobia. In 1992, Rapee and Lim found that when asked to rate their own performance on an impromptu speech task social phobics consistently rated their own performances worse than controls. However, observers did not find significant differences in levels of social skill between the two groups. Finally, Strahan and Conger (1998) examined a group of high and low socially anxious men during a simulated job interview. Results yielded no significant differences between the two groups in their global performance during the interview task or on their ability to gauge their performance.

In addition to comparing social phobics to controls, a series of studies have been conducted comparing social skills across the social phobia subtypes and the highly comorbid avoidant personality disorder (APD). A study conducted by Turner et al. (1986) compared a small group of social phobics with those diagnosed with APD on a

series of structured social interactions including role-plays and an impromptu speech. Skill ratings were made for the two groups across the interactions and the APD group performed significantly worse during the behavioral task than the social phobia group in terms of eye contact and global skill. Herbert et al. (1992) examined 9 generalized social phobics with 12 generalized plus APD subjects on a series of role-play tasks. Results yielded no significant differences between the two groups. However, those groups were later reclassified according to a more stringent definition of generalized social phobia and the new group of generalized social phobics were rated as overall less socially skilled than the nongeneralized group, though no specific skill differences were found. Turner et al. (1992) divided 89 social phobics into generalized (n=61) and specific (27) subtypes and compared them on series of behavioral tasks. Results indicated no significant differences across the two groups on any of the behavioral dimensions assessed. In 1995, Tran and Chambless examined the effects of social phobia subtypes and comorbid avoidant personality disorder (APD) on a series of behavioral tasks. The generalized plus APD group was found to be less socially skilled than the specific social phobia group. Finally, Boone et al. (1999) compared behavioral responses of 41 circumscribed public speaking phobics, and generalized social phobics with and without avoidant personality disorder (APD). Results showed that overall there were no significant between group differences on measures of social skill with the exception of lower voice volume in the generalized social phobia with APD group. Results of these studies suggest that although distinct differences have been found in the clinical presentation and severity of the various subtypes, group differences in social skills are unclear.

The collective results of the above studies suggest that the relationship between social skills and social phobics remains inconclusive. Although many studies have found differences in overall skill ratings between socially anxious individuals and non-anxious controls, there has been less success in isolating specific skill deficits. In addition, there have been a fair number of studies that have failed to find any group differences along a variety of social skill indices. Research comparing social skills across the various subtypes has also failed to find consistent differences on specific skill dimensions.

### The Performance Inhibition Hypothesis

The conflicting results in the social skills deficit literature have left the door open for alternate interpretations to explain the nature of poor social performance in socially phobic individuals. One such competing hypothesis posed by Rapee (1995) relies on an investigation of the intersecting relationship between anxiety and skill. He suggests that social phobics may possess adequate social skills, but are unable to implement them due to interfering effects of anxiety surrounding the social interaction. Therefore, socially anxious individuals have the same social repertoire as a non-socially anxious person, but are unable to showcase these skills during a social interaction as a result of the overwhelming anxiety they feel during the task.

Currently the most popular method for evaluating social skills is the role-play task, which is based on the assumption that this task yields a representative display of knowledge and use of social skills in a naturalistic setting. However, inherent in this basic premise lays a potential methodological flaw. Because the role-plays are attempting to imitate real-life social encounters, they require the socially phobic

individual to interact with others. The expectation of performance and possible evaluation associated with this interaction may induce a great deal of anxiety in the individual, thereby inhibiting social behavior. Therefore, although role-plays may give an accurate estimation of how a social phobic may act in a given social situation, it is not necessary a true reflection of their social competence due to the interfering effects of anxiety associated with the task. It may be erroneous to automatically conclude that an individual does not possess the skills necessary for effective social communication simply because they do not exhibit these behaviors during a social interaction. Effective social communication requires not just the knowledge of appropriate social behavior, but also a willingness and capacity to demonstrate this knowledge (Hill, 1989, Hopko, McNeil, Zvolensky, & Eiffert, 2001). This potential confound of using the terms skill deficit and performance deficit as synonyms has helped contribute to the uncertainty surrounding the social skills literature (Heimberg & Juster, 1995).

Although studies evaluating the validity of the performance inhibition hypothesis have been scarce, some research has shown indirect support. A study by Hill (1989) examined results of a survey completed by 40 shy and 40 non-shy subjects looking at appropriateness, characteristic, and capability ratings across a variety of social behaviors and situations. Results indicated that both groups demonstrated equal knowledge of appropriate social behavior, however, the shy subjects were less likely to respond with these behaviors during a social situation, or believe they had the ability to do so effectively. Moreover, Pilkonis (1977) investigated the often purported idea that shy people feel greater anxiety during ambiguous tasks where they are uncertain how to behave. He compared the performance of shy and non-shy subjects across two tasks.

The first task involved an unstructured interaction between the subject and a confederate in the waiting room, and the other an impromptu speech made from already prepared materials. Results indicated that the shy individuals performed worse on the waiting room task than the non-shy participants, but there were no significant group differences on the speech task. Finally, Thompson and Rapee (2002) observed a group of socially anxious females in brief unstructured and structured interactions with a male confederate. Results showed the anxious subjects performed slightly worse in both situations compared to controls. However, the magnitude of the difference was far greater in the unstructured task. The collective results of these studies provide evidence that social phobics may possess social abilities not reflected in their performance. However limitations such as differences in interpretation of survey questions, task differences (eg. speech vs interaction), and degree of task structure are evident in the above studies, therefore caution is warranted before making sweeping generalizations. One study that attempted to address some of these limitations was conducted by Shackman (2002). Here, a group of high and low socially anxious subjects were rated on several verbal skill indices in one of two assessment situations. The first involved a traditional behavioral role play task while the other was a written assessment where subjects were given a series of vignettes and had to write down how they would respond if in that situation. Results showed the highly anxious subjects performed worse than the low anxious group across both tasks, and there were no significant within group differences based on the type of test received. Teasing apart the issue of performance deficit versus skill deficit can have direct implications on the way that social phobia is conceptualized, diagnoses, and ultimately treated.

### Behavioral Assessment of Social Phobia

The behavioral assessment of social skills can involve a variety of assessment approaches which commonly includes behavioral observation. Although this assessment strategy offers useful information, it is also subject to a variety of limitations. The most successful method of assessing for social phobia includes the integration of multiple assessment strategies.

#### Behavioral observations

Perhaps the most widely used and effective means of social skill assessment is behavioral observation. Although interviews and self-report measures can provide valuable insight into the social functioning of an individual, it is through direct observation that the most informative and realistic measure of a persons actual behavior and skill occurs. Behavioral observation can take place in a natural or a contrived setting. In a naturalistic setting, observations of the subject are made in vivo and allow the observer to assess social behavior in a real situational context surrounded by natural reinforcers and consequences. Although conceptually this means of assessment offers the highest degree of validity, it is not always the most ethical or pragmatic option (Bellack, Hersen, & Turner, 1979). Issues regarding informed consent, confidentiality, and the time and economic constraints of research limit its utility in social skills research.

As an alternative to naturalistic observation, analogue assessment strategies are often used. In these controlled observations the critical components of the natural environment are replicated in the laboratory with the expectation that behavior in this

setting will accurately reflect real-life social functioning. In role-play situations the individual engages in a staged interaction with a confederate. Typically a scene is described to the person followed by a prompt from the confederate. The individual is instructed to respond to the prompt and proceed with the interaction.

Role-plays can utilize a variety of different stimulus formats. The single prompt role-play requires the confederate to deliver a single prompt followed by a single response from the subject (Meier & Hope, 1998). In these cases the prompt may be delivered in person or via audio/videotape. Conversely, the extended role-play involves multiple verbal exchanges between the subject and the confederate, and more closely resemble a real-life social interaction (Meier & Hope, 1998). Both methods of assessment have their own strengths and limitations. Using the single-prompt method allows for the presentation of a number of different social situations, which provides the opportunity to assess a range of response capabilities and elements of social skill, as well as the situational specificity of certain behaviors. However, single-prompt tasks may lack a certain amount of generalizability to the real world. It is not often that a social encounter will only require one or two responses. Therefore, extended role plays may more closely resemble an in vivo situation and have greater external validity (Glass & Arnkoff, 1989).

Role-play tasks can be either standardized or idiographically designed. The advantage of using one of the standardized role-plays is that it has already been created and offers a broad range of situations. Furthermore, this type of task allows for comparisons across a range of individuals and normative groups. One of the most commonly used standardized role-play assessments is the Behavioral Assertiveness Test-



Revised (BAT-R; Eisler, Hersen, Miller, & Blanchard, 1975). The BAT-R includes 32 situations which include positive and negative assertions, differing levels of familiarity with the confederate, and gender of the confederate. The subject is presented with a brief description of the scene and a prompt is given by the confederate. The subject is instructed to act as they would if the situation was really happening. A second popular standardized role-play assessment is the Simulated Social Interaction Test (SSIT; Curran, 1982). The SSIT provides descriptions of eight situations which include criticism, anger, heterosocial interaction, receiving a compliment, receiving attention, expressions of warmth, conflict, and loss. These scenarios are read by the experimenter and the confederate gives a prompt to which the subject responds.

However, research suggests that idiographically developed scenes may have increased external validity (Chiauzzi, Heimberg, Becker, & Gansler, 1985; Torgrud & Holborn, 1992). For example, Chiauzzi et al. (1985) examined the social skills of 30 chronically depressed patients using a series of role-play tasks. Some of the scenes involved standard situations typically found in social skills research, while the other scenes were taken directly from the patient's personal experience. The results showed that the personalized role-play tasks resulted in more discomfort and lower skill ratings than in the standard scenes. In these role-plays the clinician is able to create a role-play that is more reflective of the individual's concerns and can more readily elicit the target behaviors.

### Validity of Role-Play Tasks

Analogue role-play tasks are commonly used in social skill research based on the assumption that these tasks yield behavior that is representative of how the individual would act in a real-life situation. However, results of studies testing the external validity of behavioral role-plays have been equivocal.

For example, a study conducted by Bellack, Hersen, and Lamparski (1979) had undergraduate students participate in a series of role-plays and subsequently observed the students during a waiting room interaction where they were unaware they were being evaluated. Results found moderate correlations between the role-play and waiting room behavior in females, but only minimal correlations in males. However, one main limitation of the study was the difference in formats across the two tasks, which may limit the comparability of the results. A study by Bellack, Hersen, and Turner (1979) attempted to compensate for this limitation by comparing the social skills of 28 inpatients across identical role-play and naturalistic situations. Analysis of behavior across the two situations suggested that with the exception of certain nonverbal indices, behavior on the role-play tasks were not related to behavior in the in-vivo situations. Finally, a study by Gorecki, Dickson, Anderson, and Jones (1981) looked at assertive behavior across contrived in-vivo situations and role-play tasks. Sixteen high assertive and 16 low assertive undergraduates were assigned to either a contrived in-vivo situation or an identical role-play task. Independent observers rated the subjects on a variety of skill indices and found that subjects acted more skillfully in the role-play interactions compared to the in-vivo.

Although several studies have not found support for the validity of role-plays in the assessment of social skill, other studies have found evidence to support their continued use. A study by Wessberg and colleagues (1979) compared a group of male high, low, and medium frequency daters in four heterosocial interactions. Two situations were role-plays and two were waiting room interactions where the subjects were unaware they were being observed. Although subjects were rated as more skilled during role-play interactions compared to the waiting room, and rated the waiting room scenario as more approximate to “real-life”, rank order of subjects on measures of skill and anxiety across the two conditions was consistent. Therefore, despite differences in levels of skill across the two situations, a subject’s position in relation to other subjects was consistent, lending support for the use of role-plays in the assessment of heterosocial anxiety and skill. A study by St. Lawrence, Kirksey, and Moore (1983) divided female college students into high and low assertiveness groups and assigned them to either role-play or naturalistic conditions where they participated in an assertive situation. Those subjects in the role-play condition were aware that the situation was contrived while the naturalistic group was unformed. Both the high and low assertive groups differed significantly in their self-report and performance, and no differences were found between the role-play and naturalistic conditions. Furthermore, Merluzzi and Biever (1987) compared both structured and unstructured role-plays with a naturalistic waiting-room interaction and found no differences in judge’s molar ratings of social skill across the different types of interaction. Similar to the Wessberg study, subjects viewed the role-play tasks as being less like real-life, and judged their own behavior as less representative of their everyday interactions as compared with the waiting room task. However, it is important to point

out that observers did not find this distinction in terms of skill level. Finally, Kern (1991) examined the validity of an idiographic role-play methodology which required subjects to role-play specific assertive interactions that had recently occurred in real-life. Results found significant relationships between the role-play procedures, a surreptitious telephone assessment, and self-reported assertiveness.

To summarize, studies evaluating the external validity of role-play tasks have yielded inconclusive results. Although there is evidence to suggest that role-play procedures yield comparable estimates of social skill when compared to naturalistic behavior, several studies have indicated that subjects perform better in role-play tasks. However, other studies have demonstrated that although role-play situations may overestimate a subject's social functioning, their rank order in relation to other subjects remains consistent, and supports the value of role-plays in examining patterns of behavior across groups. There are several possible explanations that may account for an individual's more skilled performance during role-play tasks. One such hypothesis is that role-play scenarios differ from reality in terms of perceived negative consequences (Bellack, Hersen, & Turner, 1979). While in a real-world situation an individual runs the actual risk of getting rejected when asking out a girl or getting fired when being assertive at work, these consequences do not exist in a role-play task. Because of this lack of potential negative consequences an individual may be more likely to act with impunity during a role-play interaction than in comparison to real-life. Additional issues such as the subject's inability to imagine the scene, and the increased arousal that occurs from being put on the spot during role-playing all highlight the need to make the scenes as approximate to in-vivo situations as possible (Bellack, Hersen, & Turner, 1970).

However, in the absence of a more effective and pragmatic option most authors conclude that the use of role-plays offers an adequate method to assess social skills.

### Types of ratings

A vital component in assessing social skills is quantifying a subject's performance through molar, molecular, or midi-level rating scales. Molar ratings focus on global levels of skill. They can be used as either a general rating of overall skill, or can refer to global skill on a specific behavioral domain (e.g. assertiveness, appropriateness). Ratings can be made using broadly defined criteria or can be based solely on the rater's perception. Inter-rater reliability for molar ratings has been found to be quite high amongst both trained and untrained observers (Wessberg et al., 1979; Hope & Heimberg, 1988; Hope, Heimberg & Bruch, 1995). For example, a study by Hope and Heimberg (1988) used six minimally trained raters to evaluate subjects in a social role-play task. Raters were not given any criteria relating to skill or performance, but were instructed to use their own judgments of skill if this were a naturally occurring social interaction. Intraclass correlations were calculated ( $r=.88$ ) and suggested adequate inter-rater consensus. In addition to their reliability and simplicity, molar rating systems have been effective in differentiating skill levels of social phobics and comparisons groups (Beidel, Turner, & Dancu, 1985; Fydrich, et al., 1998; Wessberg, et al., 1979). However, it has been argued that the generality that makes molar ratings so reliable and easy is also its main limitation. Global ratings are often too general and ambiguous to make any valuable interpretations. They offer no specification as to an individual's strength and weakness, information that is vital for social skill research and effective treatment

planning (Bellack, 1983). Additionally, there is evidence to suggest that molar ratings of social skill tend to be based primarily on verbal content and gaze (Bellack, 1983; Conger & Farrell, 1981) while other potentially important components of social skill such as paralinguistics and other nonverbal behaviors tended to be ignored.

Molecular or micro-level behaviors refer to specific verbal, nonverbal, and paralinguistic behavioral dimensions (eg. content, volume, eye contact). It is assumed that these various behaviors are the basic building blocks necessary for effective communication, and the summation of these part leads to the construct of skill (Bellack, 1983). Because there is such a vast assortment of social skill indices to choose from, factors such as context and purpose need to be evaluated before behaviors are selected. Although it can be more difficult to achieve than in molar ratings, a high degree of inter-rater reliability can be established through training (Bellack, Hersen, & Turner, 1979; Curran & Mariotto, 1980). One of the main limitations in molecular ratings is the degree of specificity often required for the behavioral ratings. Ratings such as frequency counts or durations often fail to correlate meaningfully across situations and groups, and are not practical for therapeutic application (Bellack, 1983). Furthermore, nuances in the operational definition of these behaviors yields significant differences. For example, in a study by Waxer (1977), the construct of gaze was divided into frequency and duration of eye contact. Results found that frequency of eye contact did not differ between high and low anxious while duration of eye contact did. In addition, in some cases the rigidity of the molecular rating system can lead to deceptive results. For example, a person who makes no eye contact at all is just as unskilled as one who stares, with the most appropriate level of eye contact being in the middle of the spectrum. Some of these

limitations may explain why molecular level ratings have not been overly effective in isolating specific skill deficits in social skills research (e.g. Beidel et al., 1985; Fydrich et al., 1998). Lastly, mixed results have been found when comparing micro-level ratings found in role-plays versus naturalistic settings (McNamara & Blumer, 1982) questioning the ecological validity of the rating system.

Finally, midi-level ratings offer a compromise and utilize the subjective judgments of molar ratings combined with the targeting of specific behaviors seen in molecular ratings (Boice & Monti, 1982). Midi-level measurements are typically made by rating specific types of behavior on a likert scale based on how anxious the individual appeared during the task, or how socially appropriate the behavior of interest appeared. Midi-level measurement offers the informative clinical specificity that is lacking in molar rating scales, and provides the clinical relevance often missing in molecular approaches. Several studies using midi-level rating systems have found excellent inter-rater reliability and validity (Farrell, Rabinowitz, Wallander, & Curran, 1985; Fydrich et al., 1998, Monti et al., 1984). For example, Fydrich et al. (1998) developed the Social Performance Rating Scale (SPRS) and had four raters code behaviors from a 3-minute videotaped role-play. Inter-rater reliability was high for the various behavioral indices (kappas range from .75-.95) and internal consistency was adequate ( $\alpha=.72$ ). Furthermore, the SPRS demonstrated good convergent validity between the SPRS and the SPAI ( $r= -.65$ ) and SRS ( $r= -.55$ ), and evidence for divergent and criterion validity was found.

### Treatment: Social Skills Training

Social skills training has been used in the treatment of social phobia as either a component of behavior therapy or as a stand alone treatment modality.

One of the first studies was conducted by Marzillier, Lambert, and Kellet (1976) and compared systematic desensitization (SD) with social skills training (SST) and wait list controls in 21 psychiatric patients with social deficits. Both groups showed improvement in social life as measured by increased social activities and contact, with the social skills training group maintaining this result at the six-month follow-up. However, neither group differed significantly from the control group in terms of anxiety reduction, improvements in social skills, or clinical adjustment. A second study conducted by Trower, Yardley, Bryant, and Shaw (1978) compared 20 socially phobic outpatients with 20 socially unskilled psychiatric outpatients using either systematic desensitization or social skills training. Results showed that unskilled patients responded better to SST than to SD, and reported less difficulty in social situations and improved behavioral deficits. The socially phobic patients responded equally well to both treatments with both groups maintaining gains at 6-month follow up. However, this study did not include a control group for comparison which limits the conclusions that can be made from these results.

Van Dam-Baggen and Kraaimaat (2000) compared clinic samples of 24 patients treated with social skills training to 24 patients receiving group cognitive behavioral therapy (without any behavioral component). Both treatment modalities were effective in reducing anxiety and increasing social skills. However, those subjects participating in the social skills training reported a greater increase in social skills than those in the CBT group. Furthermore, at 3-month follow-up those in the SST group reported anxiety and



skill scores within the levels of a normal reference group while those in the CBT group only improved to that of a non-socially anxious patient with an anxiety disorder.

Another study examining the efficacy of social skills training compared SST with SST plus rational emotive therapy (RET) (Stravynski, Marks, & Yule, 1982). Results indicated that both groups reported significant improvement on measures of depression and social anxiety. However, no group differences emerged between either treatment condition at post treatment or six-month follow-up which indicates that SST is not augmented by RET. Through additional follow-up analyses, it was also later reported that improvements in the target behaviors may have been the result of exposure to anxiety-provoking situations during the course of the SST rather than an actual improvement in skill deficits.

Some suggest that the effectiveness of social skills training in social phobia treatment is limited to individuals with actual skill deficits rather than those with high levels of anxiety in social settings. However, the results of the literature suggest that it may not be necessary to match the specifics of a given treatment to the patient. Mersch, Emmelkamp, Bogels, and van der Sleen (1989) assigned 62 socially phobic patients as behavioral reactors or cognitive reactors and assigned them to an 8-week treatment of social skills training (SST) or rational emotive therapy (RET). The authors expected that those designated as behavioral reactors would benefit more from SST while cognitive reactors would favor RET. While results show that both groups made gains, they also showed no benefit in matching treatment to individual response patterns. In addition, results from a long-term follow-up indicated that effectiveness was independent of response pattern.

Other studies have examined the role of subtypes on the treatment outcome of social phobia (Brown, Heimberg, & Juster, 1995; Feske, Perry, Chambless, Renneberg, & Goldstein, 1996; Hope, Heimberg, & Bruch, 1995). Wlazlo, Schroeder-Hartwig, Hand, Kaiser, and Munchau (1990) compared individual and group in vivo exposure to Personal Effectiveness Training, a well documented form of social skills training at a 2 ½ year follow up. Results indicated that all three treatment modalities yielded significant improvements in self-reported social skills, social anxiety, avoidance, interference of symptoms in daily life, and other neurotic complaints. However, patients were retrospectively classified as having primary social phobia or primary social skills deficits, and analyses of these groups found that those with a diagnosis of social phobia fared similarly across all treatment levels, and showed slightly higher gains than those with skill deficits. In addition, those within the skill deficits subgroup had the best outcome using group exposure, suggesting that not only do skill deficits patients need to acquire social skills, but also must test the generalizability of these skills via in vivo exposure. Finally, a study by van Dam-Baggen and Kraaimaat (2000) looked at treatment response differences between two subtypes of generalized social phobics to a broad-spectrum group social skills training. Post hoc, participants who engaged in a low number of social behaviors were assigned to the “reticent” group while those who reporting a high frequency of social interactions were placed in the “nonreticent” group. Results were consistent with previous research and found that the benefit of the SST did not differ between subtypes. This finding has potentially important treatment implications because it shows social skills training to be beneficial for a heterogeneous population of people with generalized social phobia.

Lastly, Fallon, Lloyd, and Harpin (1981) examined the differential effects of adding propranolol to social skills training. Sixteen subjects were randomly assigned to a SST plus propranolol or SST plus placebo condition. Both post treatment and six-month follow-up showed significant improvements for both groups on measures of anxiety and self image. However, there were no significant between group differences which suggest that propranolol did not have an additive effect to SST.

The overall findings examining the efficacy of social skills training seems promising. However, methodological weaknesses limit the generalizability of these findings. The majority of studies done on this topic did not include a control group and therefore it is premature to conclude whether the benefits of SST are due to the increased social skill acquisition or that the group functions as an exposure situation allowing habituation to occur.

### Statement of Problem

Social phobia is a debilitating disorder characterized by severe anxiety and social reticence. The clinical phenomenology of the disorder lends itself to the assumption that this population lacks the requisite social skills necessary for effective social communication. Common treatment strategies such as social skills training are rooted in the belief of a skill deficit and seek to ameliorate these deficiencies by teaching these individuals basic social behaviors. However, years of conflicting research comparing social skills in social phobics and controls have yielded inconclusive results regarding the validity of this presumption, and has lead some to postulate that perhaps these individuals do not lack adequate social skills, but instead suffer from an inhibition of these skills due

to the overwhelming anxiety caused over having to perform in an evaluative social situation. Although role plays are the standard method of assessing social skills in an individual it is unclear if performance on these tasks is an accurate measurement of a person's social ability. Because role play tasks are inherently social in nature, it is possible these tasks may not yield a true measure of a person's social competence due to the interfering effects of anxiety surrounding the task. Therefore, although role plays may be a good indicator of how well an anxious person performs in a social situation, it may not be as accurate an assessment of their knowledge of these skills. Effective social performance is not solely a function of possessing the appropriate behavioral repertoire, but is influenced by additional mediating variables such as anxiety and motivation.

A previous study (Shackman, 2003) attempting to test the merit of this performance inhibition hypothesis examined the verbal content component of social skills in a group of socially anxious individuals by using a task that did not require performance in front of others. This study did not detect significant differences between the socially anxious subjects and controls in verbal content, although global ratings of skill still differentiated the two groups.

Shackman (2003) concluded that effective communication involves not just verbal content; method of delivery and nonverbal behaviors mostly likely play a large role in successful social interaction. Therefore, this study assessed nonverbal social performance in socially anxious individuals when the evaluative aspects of the interaction were minimized through standardized content. One of the common features of social phobia is the fear that one will not know what to say or will inadvertently say something embarrassing during a social exchange. Therefore, absolving the individual from having

to generate their own content during the interaction should alleviate a significant amount of stress and anxiety associated with the task. Subjects were identified as high or low socially anxious and participated in two behavioral role-plays. The first task was an unstructured heterosocial role-play with a confederate. The second task proceeded identical to the first, however in this scene the verbal content was provided to the subject via a bug in the ear wireless transmitter. Observers rated the individuals across the two tasks on a series of nonverbal skill dimensions. By comparing the responses across the two tasks we were able to determine if socially anxious individuals can demonstrate effective nonverbal social skills when the pressure to produce appropriate verbal content is absent. In addition, a self-report measure of subjective anxiety was collected as a manipulation check. Results of this study have direct implications in the ways in which social phobia is conceptualized, diagnosed and ultimately treated

### Hypotheses

1. Socially anxious subjects will report greater anxiety (as measured by SUDS rating) during the unstructured role play task than during the structured role play task.
2. Socially anxious subjects will report greater anxiety (as measured by SUDS rating) than controls in both tasks (between group differences)
3. Socially anxious subjects will exhibit greater nonverbal social skill deficits (e.g. gaze, smiling, gesturing, posture) during the unstructured role play task than during the structured role play task

4. Socially anxious subjects will exhibit greater nonverbal social skill deficits than controls in both tasks.
5. Socially anxious subjects will exhibit a negative correlation between ratings of nonverbal social skills and level of anxiety (as measured by SUDS ratings) in the unstructured task.

## METHODS

### Subjects

The sample consisted of students recruited from the Introductory Psychology subject pool at the University of Maryland. At the start of each semester all students are required to complete a mass testing packet that included the Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, Dancu, & Stanley, 1989). This questionnaire identified a pool of 182 socially anxious (SA) and 137 non-socially anxious (NSA) individuals. Students with a difference score of 60 or greater were classified as SA and those with scores lower than 35 were determined to be NSA. These cut-off scores have been used in previous social anxiety research and were selected because of their low rates of false positives and negatives (Turner, Beidel, et al., 1989). Students who were deemed eligible based on their SPAI scores were contacted via email by the primary investigator to inform the student about the study and ask for their participation.

A total of 29 SA and 30 NSA subjects participated in the study. The SA and NSA groups were examined for equivalency across a range of relevant demographic variables. A one-way ANOVA found no significant group differences for age,  $F(1,57)=0.29$ ,  $p>.05$  or years of college completed,  $F(1,57)=.004$ ,  $p>.05$  (see Table 1). As expected, there was a significant difference on SPAI difference scores ( $F(1,57)=250.542$ ,  $p<.05$ ), with the SA group exhibiting greater levels of social distress compared to the NSA group. Finally, a series of Chi-Square tests revealed no significant group differences for gender ( $\chi^2(1, N=59)=.416$ ,  $p>.05$ ), marital status ( $\chi^2(1, N=59)=.983$ ,  $p>.05$ ) or ethnicity ( $\chi^2(5, N=59)=3.032$ ,  $p>.05$ ; see Table 1).

All subjects completed the Composite International Diagnostic Interview, Automated Version (CIDI-Auto; World Health Organization, 1993) which is a self-administered computerized diagnostic instrument used to assess the presence of current DSM-IV Axis I disorders. NSA subjects who met criteria for any DSM-IV diagnosis with the exception of specific phobia were excluded from the study (n=3). NSA subjects with specific phobia were retained in this sample because there is no evidence to suggest that this diagnosis influences the individual's social performance. In addition, SA subjects who met criteria for any DSM-IV diagnosis other than social phobia, generalized anxiety disorder (GAD), and specific phobia were excluded from the study (n=4). Subjects diagnosed with GAD and specific phobia were retained in the sample because these disorders are highly comorbid with social phobia and should not exert any undue influence on the social skills and/or performance of this group. Rates of CIDI-diagnoses are also presented in Table 1.

Table 1:

Demographic Information: Descriptive Statistics

Demographic Variable	SA (n=29)	NSA (n=30)	p-value
Age	M=20.55 SD=5.22	M=20.80 SD=6.01	NS
Years of College Completed	M=1.37 SD=1.26	M=1.40 SD=1.24	NS
Gender Male Female	n=15 n=14	n=13 n=17	NS
Marital Status Single Married	n=29 n=0	n=29 n=1	NS
Ethnicity Caucasian	n=15	n=20	



African-Amer.	n=4	n=2	NS
Latino	n=1	n=2	
Asian	n=7	n=5	
Arab	n=1	n=0	
Other	n=1	n=1	
SPAI Difference Score	M=79.92 SD=17.81	M=21.84 SD=9.15	p=.000
CIDI-Diagnosis			n/a
Social Phobia	n=2	n/a	
GAD	n=4	n/a	
Specific Phobia	n=1	n=4	

### Screening Measure

#### Social Phobia and Anxiety Inventory (SPAI)

As noted above, subjects were screened for participation using the Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, et al, 1989). The SPAI is a 45-item self-report questionnaire used to assess somatic symptoms, cognitions, and behavior across a variety of possible anxiety-provoking situations. The inventory utilizes a 7-point likert-scale format to assess for severity of symptoms and functional impairment, and also includes a 13-question subscale of Agoraphobia ratings to control for clinical overlap between the two disorders. The total score from the Agoraphobia scale is subtracted from the Social Phobia scale to derive the SPAI difference score.

The SPAI has good internal consistency ( $\alpha=.96$ ) and test-retest reliability ( $r=.86$ ; Turner, Beidel, et al., 1989). It discriminates between those with social phobia and normal controls, those with other anxiety disorders, and has the ability to differentiate between the different levels of severity of social anxiety disorder (Beidel, Turner, Stanley, & Dancu, 1989; Turner, Stanley, Beidel, & Bond, 1989; Turner, Beidel, Long, Turner, & Townsley, 1993). Moreover, analyses used to determine construct validity have consistently found the SPAI to be similar to other measures which tap the

same construct (Herbert, 1991; Peters, 2000; Ries, Boone, Turk, Carter, & Heimberg, 1998, Turner, Stanley, et al., 1989). Likewise, results indicate that that SPAI demonstrates adequate concurrent validity with respect to self-monitoring, somatic responding, and avoidance behaviors (Beidel, Bordon, et al., 1989).

### General Procedure

All subjects signed an informed consent before participating in the study (Appendix A). In addition, they completed a brief demographic questionnaire (Appendix B) and the CIDI-Auto to assess for potential exclusionary diagnoses and obtain basic demographic data. Upon completion of these measures, all subjects participated in the behavioral assessment. Following the behavioral assessment subjects were debriefed and given the opportunity to ask questions to the student investigator. Any subject meeting criteria for a DSM-IV diagnosis was contacted directly by the investigator and offered referrals for mental health treatment, if such a referral was appropriate

### Diagnostic Measure

#### Composite International Diagnostic Interview, Auto (CIDI-Auto)

The Composite International Diagnostic Interview-Auto (CIDI-Auto) is a fully structured and self-administered computerized diagnostic instrument which assesses for ICD-10/DSM-IV Axis I diagnosis over the current year (World Health Organization, 1993). The structure of the CIDI-Auto is identical to that of the original CIDI, a fully structured clinician administered diagnostic instrument, with kappas ranging from .65 (social phobia) to .83 (panic disorder) (Peters, Clark, & Carroll, 1998). The CIDI-Auto

consists of 276 symptom questions; a series of probes and skip-outs determine which of these questions are asked. The computerized version offers the benefits of standardization of diagnosis, elimination of clinician bias, and offers a high degree of reliability, consistency, and validity (Andrews, Peters, Guzman, & Bird, 1995; Erdman, Klein, & Griest, 1985; Wittchen, 1994, World Health Organization, 1993) with kappas ranging from .67 (somatization disorder) to .99 (agoraphobia; Wittchen et al., 1991). Furthermore, Janca, Robins, Bucholz, Early, and Shayka (1992) compared concordance rates for the CIDI with a clinician's checklist and found kappas ranging from .76 (anxiety and phobic disorder) to .84 (depressive disorders).

### Behavioral Assessment Tasks

#### Role-play Scenes

The purpose of this investigation was to test the performance inhibition hypothesis by assessing nonverbal social performance during a task where the evaluative aspects of the interaction were minimized through standardized verbal content. The behavioral task consisted of two three minute role-play scenes (see Appendix C) that were created for their ability to showcase general conversational skills and provide an opportunity to assess the subject's basic nonverbal social skills. Both role-plays involved heterosocial interactions which have been shown to be more anxiety-provoking in socially anxious individuals than same-sex interactions (Twentyman & McFall, 1975). Both scenes involved meeting someone for the first time, either at a lunch or in the neighborhood. Similar role-play scenarios have been used extensively in social skills research (eg. Fydrich et al., 1998; Turner et al., 1986). The scenes were randomized to

determine which scene was structured or unstructured for a given subject. However, although scene content was randomized across the two role-plays (structured or unstructured), order of the tasks remained consistent. In order to minimize practice effects, the unstructured task was always administered first. Although randomization of the task nature was considered, we felt that participating in the structured task first could indirectly provide an example of socially appropriate verbal content, thereby influencing the verbal content during the unstructured task.

For each subject an opposite sex research assistant (RA) was the confederate during the two role-plays, while a trained RA or the primary investigator conducted the behavioral assessment (Appendix D). All RAs were trained by the investigator on the behavioral assessment procedure. After the scene was read aloud by the investigator, the subject was asked to interact with the confederate as they would if the situation were really happening. The role-play lasted for three minutes. Following the unstructured interaction, the subject recorded their SUDS level on a monitoring sheet. Immediately following the unstructured task, the subject was prepared for the structured task. The subject was fitted with a bug-in-the-ear wireless transmitter that allowed the leader to communicate privately to the subject during the interaction. The subject was informed that they would participate in a second role-play, but that in this interaction their verbal content would be provided via the transmitter device. They were instructed to relay this content as naturally as possible during the task. After several practice trials to allow the subject to feel comfortable using the transmitter, the structured task began. Whichever scene was not used during the unstructured task was used during the structured task. Methodologically, the role-play proceeded identical to the unstructured task. The leader

read the scene and instructed the subject to behave as though the situation were really happening. At the end of three-minutes the scene was terminated, and the subject was asked to circle the SUDS rating which corresponded best to how anxious they felt participating in the interaction.

### Social skills rating

Nonverbal social skills were assessed using a midi-level molecular measurement system (Appendix E). Ratings were made by research assistants who were trained to a criterion of .80 by the investigator. Because the focus of the study is solely on nonverbal behaviors, variables pertaining to verbal or paralinguistic skills were not rated. Subjects were rated on five nonverbal behaviors (orientation, facial expression, gaze, posture, and gesture) shown to correlate with global ratings of social skill and anxiety in a clinic sample (Monti et al., 1984). Raters observed each behavior and rated performance on a 4-point likert scale with anchor scores of 0 representing very poor skill and 3 representing very high skill level for each variable. As a validity check on the overall ability of the scenes to differentiate between the two groups on the traditional variable of global skill, a rating of overall social skill was included (Appendix E). Similar rating systems have been used extensively in previous studies assessing social skills (e.g. Beidel et al., 1985; Turner et al., 1986).

Because this study investigated non-verbal social skills, raters coded the tapes with the volume turned off to minimize bias through exposure to verbal content and paralinguistics. To further minimize bias, all raters were blind to the subject's group designation. The overall skill rating for the unstructured conversation task was

conducted following completion of the other ratings. Twenty-five percent of the tapes were rated by a second rater to provide an estimate of inter-rater reliability ( $r=.735$ ).

### Subjective Anxiety Rating

Subjective ratings of anxiety both before and during the behavioral tasks were reported by the subject using a 9-point subjective units of distress (SUDS) rating scale (Appendix F). An anchor point of 1 indicates that the subject feels calm and relaxed and 9 suggests extreme anxiety (adapted from Wolpe, 1973).

## RESULTS

Following an examination of relevant manipulation checks, analyses addressing the study's main hypothesis will be presented. Additional analyses that were less central to the specific aims of the study are presented in Appendix G.

### Comparison of Anxiety Measures

The two groups were compared on baseline anxiety ratings to determine differences in subjective anxiety prior to the commencement of the task. Results from a one-way ANOVA indicate that the SA subjects were significantly more anxious during baseline compared to the NSA group ( $F(1,57)=7.648, p<.05$ ). To determine differences in self-ratings of anxiety during the two tasks, a 2 group (socially anxious, non-socially anxious) x 2 task (unstructured, structured) repeated measures ANOVA was conducted. Table 3 shows a main effect for group ( $F(1,56)=14.733, p<.05$ ), however there was no main effect for task ( $F(1,56)= 1.594, p>.05$ ) and no group x interaction ( $F(1,56)=.1.185, p>.05$ ), suggesting that regardless of the task, SA subjects reported a greater level of subjective anxiety. However, contrary to expectations SA subjects did not report greater anxiety levels during the unstructured role play task than during the structured role-play task.

Table 2:

### Means and Standard Deviations for Baseline SUDS Ratings

Variable	Task	SA N=29	NSA N=30	P
Mean SUDS level	Baseline	3.13 (1.61)	2.13 (1.13)	.008

Table 3:

Means and Standard Deviations for SUDS Ratings

Variable	Task	SA N=29	NSA N=30	P
Mean SUDS Level	Unstructured	3.89 (1.97)	2.26 (1.17)	G=0.00 T= NS G x T=NS
	Structured	3.93 (1.73)	2.73 (1.46)	

\* G= Group, T=Task, G x T = Group X Task Interaction

Comparison of Social Skills Measures

Social Skills Manipulation Check

Prior to determining whether there were group differences in nonverbal behaviors, an analysis of overall skill during the unstructured conversational task was conducted. Results from a one-way ANOVA revealed a significant between-group difference in overall skill level ( $F(1,57)=4.802, p<.05$ ) with the NSA subjects rated as more skilled compared to the SA subjects (see Table 4). This difference is consistent with findings from previous social anxiety research and suggests that the group of SA individuals used in this sample is somewhat representative of the socially anxious population used in other social skill studies.

Table 4:

Means and Standard Deviations for Global Rating of Social Skill during the Unstructured Conversation Task

Variable	SA (n=29)	NSA (n=30)	P
Global Skill Rating	M= 2.65 SD= .97	M= 3.13 SD= .68	P= .033



### Comparison of Social Skills Ratings

To determine whether the SA group exhibited greater nonverbal social skill deficits, a series of five 2 group (socially anxious, non-socially anxious) x 2 task (unstructured, structured) repeated measures ANOVAs of nonverbal social skills ratings (orientation, facial expression, gaze, posture and gesture, see Tables 5-9) were conducted. There were no significant group x task interactions (orientation,  $F(1,56)=1.035$ ,  $p>.05$ ; facial expression,  $F(1,56)=1.049$ ,  $p>.05$ ; gaze,  $F(1,56)=.966$ ,  $p>.05$ ; posture,  $F(1,56)=.983$ ,  $p>.05$ ; or gesture,  $F(1,56)=.180$ ,  $p>.05$ ). In addition, there were no significant main effects for group (orientation,  $F(1,56)=.139$ ,  $p>.05$ ; facial expression,  $F(1,56)=.331$ ,  $p>.05$ ; gaze,  $F(1,56)=.005$ ,  $p>.05$ ; posture,  $F(1,56)=.155$ ,  $p>.05$ ; gesture,  $F(1,56)=1.76$ ,  $p>.05$ ), and with the exception of facial expression ( $F(1,56)=6.11$ ,  $p<.05$ ) which showed both groups rated lower during the structured task compared to the unstructured task, there were no significant main effects for task (orientation,  $F(1,56)=1.035$ ,  $p>.05$ ; gaze,  $F(1,56)=.966$ ,  $p>.05$ ; posture,  $F(1,56)=.000$ ,  $p>.05$ ; and gesture,  $F(1,56)=1.78$ ,  $p>.05$ ). Therefore, contrary our hypothesis these results suggest that the SA subjects did not exhibit social skill deficits when compared to the NSA subjects and exhibited equivalent nonverbal social skills during the structured and unstructured interactions.

Table5:

### Means and Standard Deviations for Orientation

Variable	Task	SA (n=29)	NSA (n=30)	p*
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Mean Orientation	Unstructured	M=2.79 SD=.49	M=2.76 SD=.43	G= NS T= NS G x T= NS
	Structured	M=2.82 SD=.46	M=2.76 SD=.43	

\* G= Group, T=Task, G x T = Group X Task Interaction

Table 6:

Means and Standard Deviations for Facial Expression

Variable	Task	SA (n=29)	NSA (n=30)	p*
Mean Facial Expression	Unstructured	M=2.44 SD=.82	M=2.46 SD=.50	G=NS T= .016 G x T= NS
	Structured	M=2.20 SD=.72	M=2.36 SD=.49	

\* G= Group, T=Task, G x T = Group X Task Interaction

Table 7:

Means and Standard Deviations for Gaze

Variable	Task	SA (n=29)	NSA (n=30)	p*
Mean Gaze	Unstructured	M= 2.31 SD=.60	M=2.23 SD=.67	G= NS T= NS G x T= NS
	Structured	M=2.31 SD=.66	M=2.36 SD=.61	

\* G= Group, T=Task, G x T = Group X Task Interaction

Table 8:

Means and Standard Deviations for Posture

Variable	Task	SA (n=29)	NSA (n=30)	p*
Mean Posture	Unstructured	M=2.34 SD=.55	M=2.33 SD=.71	G= NS T= NS G x T= NS
	Structured	M=2.27 SD=.59	M=2.4 SD=.56	

\* G= Group, T=Task, G x T = Group X Task Interaction

Table 9:

Means and Standard Deviations for Gestures

Variable	Task	SA (n=29)	NSA (n=30)	p*
Mean Gesture	Unstructured	M=1.68 SD=1.28	M=2.1 SD=1.02	G= NS T= NS G x T= NS
	Structured	M=1.58 SD=1.18	M=1.9 SD=1.02	

\* G= Group, T=Task, G x T = Group X Task Interaction

Exploratory Comparison of Anxiety in the Restricted Sample

It was hypothesized that standardizing and providing verbal content would decrease anxiety amongst SA subjects as they would not be tasked with trying to produce verbal content and thus be able to adequately demonstrate their nonverbal social skills (if indeed they possess them). It was also hypothesized that not having to construct verbal content would function to decrease anxiety. Contrary to our expectations, not all subjects rated the structured interactions as less anxiety provoking than the unstructured task (i.e. where they were required to produce the verbal content). In fact, a number of participants remarked that the structured task actually increased their anxiety due to the performance demands they felt over having to relay the verbal content. Therefore, in order to test the original hypothesis, data from the subset of SA (n=9) and NSA (n=17) subjects who rated the structured task as less anxiety provoking was examined. First, the two groups were compared on baseline SUDS ratings. Results from a one-way ANOVA found that the SA group endorsed significantly higher levels of anxiety during baseline compared to the NSA group ( $F(1,24)=10.815, p<.05$ ). To determine differences in anxiety across the two tasks a 2 group (socially anxious, non-socially anxious) x 2 task

(unstructured, structured) repeated measures ANOVA was conducted. The results shown in Tables 10-11 show main effects for group ( $F(1,23)=14.64, p<.05$ ), task ( $F(1,23)=81.04, p<.05$ ), and a group x task interaction ( $F(1,23)=58.95, p<.05$ ). These results indicate that the SA subjects endorsed higher rates of anxiety compared to the NSA subjects across both tasks, and that both the NSA and SA subjects reported higher levels of anxiety across the unstructured task compared to the structured task, with the SA subjects endorsing a greater change in anxiety during the unstructured task than the NSA group.

Table 10:

Means and Standard Deviations for Baseline SUDS Ratings in Restricted Sample

Variable	Task	SA N=9	NSA N=17	P
Mean SUDS level	Baseline	4.11 (1.7)	2.23 (1.4)	.003

Table 11:

Means and Standard Deviations for SUDS Rating in Restricted Sample

Variable	Task	SA N=9	NSA N=17	P
Mean SUDS level	Unstructured	5.66 (2.17)	2.29 (1.35)	G=.001 T= 0.00 G x T= 0.00
	Structured	3.44 (1.58)	2.11 (1.21)	

\* G= Group, T=Task, G x T = Group X Task Interaction

Comparison of Social Skills Ratings in the Restricted Sample

To determine whether this restricted SA group exhibited greater nonverbal social skill deficits during the unstructured role-play task, a second series of five 2 group (socially anxious, non-socially anxious) x 2 task (unstructured, structured) repeated

measures ANOVAs of nonverbal social skills ratings (orientation, facial expression, gaze, posture and gesture, see Tables 12-16) were conducted. Results from these analyses show no significant group x task interactions (facial expression,  $F(1,23)=1.88$ ,  $p>.05$ ; gaze,  $F(1,23)=.680$ ,  $p>.05$ ; posture ( $F(1,23)=3.92$ ,  $p<.05$ ; and gesture,  $F(1,23)=.787$ ,  $p>.05$ ). A group x task interaction for orientation was unable to be computed because there was no change in means across the two tasks. There were no main effects for group (orientation,  $F(1,23)=.444$ ,  $p>.05$ ; facial expression  $F(1,23)=.947$ ;  $p>.05$ ; gaze,  $F(1,23)=.447$ ,  $p>.05$ ; posture,  $F(1,23)=.005$ ,  $p>.05$ ; and gesture,  $F(1,23)=2.31$ ,  $p>.05$ ), and with the exception of facial expression ( $F(1,23)=5.58$ ,  $p<.05$ ) which showed both groups rated lower during the structured task compared to the unstructured task, there were no significant main effects for task (gaze  $F(1,23)=.680$ ,  $p>.05$ ; posture,  $F(1,23)=3.92$ ,  $p>.05$ ; and gesture,  $F(1,23)=.787$ ,  $p>.05$ ). Again, a main effect for task was unable to be calculated for orientation because there was no change in the means across tasks. These results do not support the original hypothesis that SA subjects would exhibit greater nonverbal social skill when verbal content is held constant

Table 12:

Means and Standard Deviations for Orientation in Restricted Sample

Variable	Task	SA (n=9)	NSA (n=17)	p*
	unstructured	2.77 (.44)	2.64 (.49)	G= NS T= NS G x T= NS
	structured	2.77 (.44)	2.64 (.49)	

\* G= Group, T=Task, G x T = Group X Task Interaction

Table 13:

Means and Standard Deviations for Facial Expressions in Restricted Sample

Variable	Task	SA (n=9)	NSA (n=17)	p*
	unstructured	2.55 (.72)	2.58 (.50)	G= NS T= .027 G x T= NS
	structured	2.11 (.60)	2.47 (.51)	

\* G= Group, T=Task, G x T = Group X Task Interaction

Table 14:

Means and Standard Deviations for Gaze in Restricted Sample

Variable	Task	SA (n=9)	NSA (n=17)	p*
	unstructured	2.11 (.60)	2.17 (.63)	G= NS T= NS G x T= NS
	structured	2.11 (.60)	2.35 (.60)	

\* G= Group, T=Task, G x T = Group X Task Interaction

Table 15:

Means and Standard Deviations for Posture in Restricted Sample

Variable	Task	SA (n=9)	NSA (n=17)	p*
	unstructured	2.44 (.52)	2.29 (.58)	G= NS T=NS G x T= NS
	structured	2.11 (.78)	2.29 (.58)	

\* G= Group, T=Task, G x T = Group X Task Interaction

Table 16:

Means and Standard Deviations for Gestures in Restricted Sample

Variable	Task	SA (n=9)	NSA (n=17)	p*
	unstructured	1.55 (1.33)	2.35 (.99)	G= NS T= NS G x T= NS
	structured	1.55 (1.13)	2.05 (1.08)	

\* G= Group, T=Task, G x T = Group X Task Interaction

Correlation of Anxiety Level and Skill

To examine whether the SA subjects would exhibit a negative correlation between ratings of nonverbal social skills and level of anxiety, a series of six Pearson correlations were conducted using the participants SUDs level from the unstructured task, the five nonverbal behaviors (orientation, facial expression, gaze, posture and gesture) and the global skill ratings made by independent observers (see Table 14). Results from these analyses found a significant negative correlation for global skill and SUDs rating, suggesting that as the anxiety towards the task increased, global social skill level decreased. However, there were no significant correlations between level of anxiety and specific types of nonverbal social skills.

Table 17:

Correlations of Skill and Subjective Anxiety Ratings in Socially Anxious Participants during the Unstructured Task

N=29	Orientation	Facial Expression	Gaze	Posture	Gesture	Global Skill Rating
SUDs Level	.309	.117	-.182	.100	-.084	-.615**

\*\* p<.01

## DISCUSSION

There has been a debate in the clinical community for some time regarding the nature of social skills and anxiety in social phobia. While both clinical observation and research have demonstrated that individuals with social phobia are less socially skilled than nonanxious individuals, the reason behind this difference has remained unclear. One explanation is that social phobics lack the requisite social skills necessary for effective social communication. However, a competing hypothesis purports that these individuals do in fact possess adequate social skills, but are unable to implement them due to the overwhelming anxiety they feel towards the situation. The following study tested this performance inhibition hypothesis to determine if reducing the anxiety towards a social task will lead to an increase in social skill. The following section will include a discussion of the results along with limitations of the study and its implications for the field of social phobia research and treatment.

### Subjective Anxiety

The performance inhibition hypothesis maintains that individuals with social phobia possess adequate social skills but suffer from an inhibition of these skills due to the anxiety they feel over having to perform in an evaluative social situation. Behavioral role-play tasks are the standard method for assessing social skills in an individual; however it is unclear if performance on these tasks provides an adequate representation of one's social abilities. Because role-play tasks are inherently social in nature, it is unclear if these tasks yield an accurate measurement of one's social competence due to the interfering effects of anxiety. This study attempted to address this issue by



minimizing the evaluative aspects of the interaction through standardized verbal content. Socially anxious and non-socially anxious subjects engaged in two short role-play tasks. Both role-play tasks were designed to be unstructured conversations; however during the second role-play subjects were fitted with a wireless transmitter and were provided with verbal responses through a small earpiece. In order to assess whether this structured situation led to a decrease in anxiety towards the task, subjective anxiety was assessed at baseline and after each of the role-plays.

Results from this study found significant differences between the SA and NSA subjects on a measure of subjective anxiety (SUDS) at baseline, suggesting that SA individuals were more subjectively anxious than their NSA counterparts, even prior to the commencement of the task. This elevated SUDS level was consistent across both the SA subjects in the overall sample and in the subsample for which the subsequent anxiety manipulation was successful. However, it is interesting to note that this difference in baseline SUDS ratings was significantly greater in the restricted sample suggesting that this particular group of SA subjects were considerably more anxious overall than the other group of SA subjects who rated the structured task as more anxiety provoking (Appendix G). While it likely that the heightened anxiety in the SA group was due to anticipation of the role-play tasks, it also may simply reflect a general heightened level of arousal in the SA subjects not related to the task itself. Generalized anxiety disorder (GAD) is commonly comorbid with social phobia with epidemiological studies finding approximately 13% of social phobics also meeting criteria for GAD (Magee et al., 1996). Although there were only 4 cases of confirmed GAD in this sample, GAD was assessed through the computerized CIDI and it is possible that additional SA subjects who did

receive a diagnosis still met subthreshold criteria. In any case, results from this study indicate that the SA subjects endorsed greater levels of baseline anxiety compared to the NSA subjects.

Based on clinical descriptions provided by social phobics who indicated that during social encounters they “can’t think of anything to say”, it was hypothesized that the unstructured role-play would elicit more anxiety in the SA group (hypothesis 1). No such hypothesis was made for the NSA group. However, this hypothesis was not confirmed, as results yielded no main effect for task and no group x task interaction for mean SUDS rating. Furthermore, an inspection of the means across tasks indicates that both the SA and NSA subjects endorsed slightly more distress during the structured task compared to the unstructured task. During the debriefing, subjects were queried regarding the nature of their anxiety ratings, and their responses help inform why this phenomenon occurred. The NSA subjects who rated the unstructured task as more anxiety provoking maintained that they found it difficult to stick to the script throughout the course of the interaction because they had their own comments and questions that they wanted to interject into the conversation. Therefore, for the NSA group confining their verbal content served to increase their anxiety because they did not feel free to interact as they desired. Conversely, while the SA subjects stated relief at the prospect of not having to generate conversation, some also likened the process of having to relay the scripted information almost to a performance in which they needed to “act out” the lines. However, the SA subjects who did rate the structured task as being less anxiety inducing maintained that this reduction was the result of being absolved from conversational responsibilities.

There are several plausible explanations to explain why this discrepancy amongst the SA subjects occurred. It is important to keep in mind that the sample used in this study did not have social phobia, but rather represented a wide spectrum of those with social anxiety. In fact, only 2 out of the 29 SA subjects actually met criteria for a DSM-IV diagnosis of social phobia. Therefore, perhaps the two SA groups (as defined by higher anxiety across the structured vs. unstructured task) may represent distinctly different manifestations of social anxiety. Inspection of mean SUDS ratings across baseline and the unstructured task for the sample with which the manipulation worked evidenced significantly higher mean SUDS ratings compared to the SAs for whom the manipulation was not successful (Appendix G). This might suggest that this group is considerably more reactive and exhibited greater anxiety overall in response to a social task. Therefore, it is plausible that this subgroup represents those subjects who are more generalized in terms of their social fears. Conversely, the social fears of those subjects who endorsed higher SUDS ratings across the structured task may be characterized as more circumscribed and may apply to more performance-based situations. Individuals were selected for this study on the basis of their SPAI difference score. Although, it is impossible to determine from an individual's overall SPAI score what types of feared social situations were endorsed, some additional analyses looking at individual questions on the SPAI were conducted (Appendix G).

Although there were no significant within group differences on reported anxiety across tasks, SA subjects did endorse greater levels of anxiety across both tasks compared to the NSA controls (hypothesis 2). This finding is congruent with the social anxiety

literature which shows that SA individuals rate themselves as more subjectively distressed than NSA subjects during behavioral role-play tasks (e.g. Beidel, Turner, & Dancu, 1985, Hofmann, Gerlach, Wender, & Roth, 1997; Turner, Beidel, & Dancu, 1986; Veljaca & Rapee, 1998). Furthermore, this significant between-group difference confirms that the type of task employed in this study, an unstructured heterosocial conversational task incorporated enough relevant dimensions to invoke anxiety in the SA subjects, and confirms that this sample was consistent with published samples of socially anxious subjects that exist in the literature.

### Social Skill

The primary goal of this study was to examine nonverbal social skills during a role-play task where the social performance demands were minimized through the provision of standardized content. Subjects were rated across five nonverbal behaviors (orientation, facial expression, gaze, posture, and gestures) on a 4-point likert scale. Because of the need to generate verbal content, it was postulated that the SA subjects would exhibit greater nonverbal social skill deficits during the unstructured role play task than during the structured role-play task (hypothesis 3). Results from the overall sample indicated that with the exception of facial expression there were no significant differences in ratings of social skill across either task. One could attribute this negative outcome to the failed experimental manipulation, however, when the same analyses were conducted on the subsample for which the manipulation was successful, similar results were found. Even when their anxiety was significantly lower, there were no group differences on social skill and the SA subjects did not show an increase in skill as a result of decreased

arousal. It is unclear why subjects performed worse on the structured task on a measure of facial expression. One possible explanation is that the subjects were overly focused on relaying the verbal content during the unstructured task to the detriment of also incorporating other nonverbal behaviors. In any case, results from this study do not support the contention that those with social anxiety would demonstrate increased proficiency in social skill simply by reducing their distress.

In addition, it was hypothesized that the SA subjects would exhibit greater nonverbal skill deficits than the NSA subjects across both types of tasks (hypothesis 4). However, this was not the case. There were no main effects for any of the nonverbal skill variables included in this study suggesting that both the SA and NSA subjects demonstrated similar levels of nonverbal social skill. Although there have been several studies which have failed to detect differences across groups on specific skill domains (e.g. Clark & Arkowitz, 1975; Glasgow & Arkowitz, 1975; Strahan & Conger, 1998) this result runs contrary to several other studies in the social skills literature (e.g. Baker & Edelmann, 2002, Halford & Foddy, 1982; Hofmann, Gerlach, Wender, & Roth, 1997). Therefore, it is important to address whether this lack of significant results has to do with the variables selected for this study, the selection criteria used to ascertain the sample, the sample itself or the rating procedure used.

The focus of this investigation was on non-verbal social performance. However, effective social communication involves more than just nonverbal behaviors, and other important elements such as verbal skills (e.g. content, length of response) and paralinguistics (e.g. vocal tone, voice volume) play in a role in overall social competence (Trower, Bryant, & Argyle, 1978). A similar study which focused specifically on verbal

content also failed to find any significant group differences when the performance aspect of the situation was removed (Shackman 2003). It is possible that examining individual behaviors may not yield group differences. However, the effect of even very minor differences on each individual variable may combine in a synergistic fashion to create an overall gestalt of impaired social skills. In support of this hypothesis, all subjects were rated during the unstructured conversational task on an overall rating of social skill. In addition to nonverbal social skills, this rating also incorporated skill domains not directly addressed in this study (e.g. verbal content, paralinguistics). Results from this global skill rating found significant differences across the SA and NSA groups, with the SA group demonstrating less overall social skill. This suggests that the overall skill level in this sample of SA subjects is comparable to samples used in previous social skill research (Beidel, Turner, & Dancu, 1985; Dow, Biglan, & Glaser, 1995; Fydrich, Chambless, Perry, Buergener, & Beazley, 1998).

It is also important to keep in mind that the sample used in this study did not have social phobia. Although research comparing individuals with social anxiety to those with social phobia have found no qualitative differences between the two groups in terms of physiological reactivity and cognitions (Turner, Beidel, & Larkin, 1986), it is plausible that a more severe clinical sample would produce different results. To test this hypothesis, a group of 10 diagnosed social phobics were rated on an unstructured role-play task using the same scale employed in this study, and were found to be rated as slightly less skilled than the SA group used in this study. This suggests that while still impaired compared to normal controls, the SA subjects used in this study were more socially adept than individuals with social phobia presenting for treatment.

Consistent with the outcome based on group comparisons, it was hypothesized that there should be a negative correlation between skill and anxiety. That's is, if anxiety is directly related to social skill, than the greater the anxiety an individual felt towards the task, the less skilled they should appear. Results found a significant correlation between anxiety and rating of overall social skill, but did not find a significant relationship between any of specific nonverbal social skills assessed. This finding runs to contrary to some findings in the literature which have found several nonverbal behaviors to be negatively correlated with anxiety. For example, an early study conducted by Jurich and Jurich (1974) examined correlations between 12 nonverbal social skills and measures of subjective and physiological indicators of anxiety. The authors found that self-reported ratings of anxiety negatively correlated with skill ratings of posture, hand movements, and lack of eye contact. Additional studies have also found significant correlations between anxiety and self manipulations, smiles and gestures (Conger & Farrell, 1981; Millbrook, Farrell, Wallander, & Curran, 1986). It is unclear why these correlations that have been found in previous studies did not appear in the current study. One possibility is that the rating scales used in this study were too constrained. The various nonverbal social skills assessed in this study were rated on a 4-point likert scale with the majority of the means for both groups falling within the middle-to-upper range. It is possible that any differences in skill across the two groups were not large enough to be detected using such a small range, and that previous studies which have found these correlations used rating scales that were able to detect small differences.

Results of this study conclude that while SA subjects do not differ from NSA subjects on specific dimensions of nonverbal behaviors, they are still viewed as less

competent on a global measure of social skill. These results add to the growing body of literature that has found that isolated behaviors are not enough to distinguish SA and NSA individuals from one another, but rather it is the unique combination of all elements of social skill (e.g. nonverbal behaviors, verbal behaviors and paralinguistics) that allows for this differentiation (e.g. Beidel, Turner, & Dancu, 1985; Fydrich, Chambless, Perry, Buergener, & Beazley, 1998). In addition, this study found that social skills in SA subjects did not improve when their subjective anxiety towards the task was minimized through standardized verbal content. In fact, in the one case where skill ratings did differ across tasks (i.e. facial expression) these ratings were actually lower in the structured task, suggesting that the subjects displayed less skill in the structured task. These findings work against the premise of the performance inhibition hypothesis which would have expected to find significant improvement in social skills during the unstructured task, as a result of the SA subjects not being responsible for the verbal content in the task.

In terms of subjective anxiety, results from this study indicate that the SA subjects felt more anxious during baseline, suggesting higher reactivity compared to the NSA in anticipation of the upcoming tasks. Group differences also emerged across the unstructured and structured conversation tasks indicating that the SA subjects felt greater levels of anxiety overall participating in these tasks compared to the NSA group. However, results from this study also showed that ratings were inconsistent across the structured task with some participants rating it as more anxiety provoking than the unstructured task and vice versa. Although there are several plausible explanations as to why this difference occurred they are beyond the scope of this study and future research is needed to clarify these differences.



### Limitations and Future Directions

The primary aim of this study was to further elucidate the interplay of anxiety and social skills in socially anxious individuals. More specifically, the study was designed to test the performance inhibition hypothesis which purports that socially anxious individuals possess adequate social skills, but the use of these skills are inhibited due to the interfering effects of anxiety surrounding the social interaction. Results from this study do not appear to support this hypothesis; however there are several limitations that affect the generalizability of this conclusion.

One important variable that must be addressed is the limited sample size included in this study. The original sample included approximately 30 participants per group, which is typically considered large enough to detect group differences. However, because the anxiety manipulation was not entirely successful, an additional set of analyses were conducted using a smaller subset of the original sample. Therefore, it is possible that this restricted sample did not have enough power to detect differences within and between the two groups. Although, it is worth noting that a visual inspection of the means within the subsample showed little variability between both groups and tasks, with means from both groups tending to fall within the middle-upper range of the rating scale with standard deviations less than one. As a result, it is plausible that such a limited sample size would be unable to detect any small differences within and between groups. Future studies done in this area should include a larger sample size to have the power to detect any subtle differences across groups and tasks.

On a similar note, it is possible that the rating scale used to assess skill for the nonverbal behaviors was too constrained. The ratings which were developed specifically for this study utilized a 4-point likert scale that consisted of behavioral descriptors. Because the means and standard deviations of the two groups tended to show that most subjects scored within the upper-middle section of the rating scale it is possible that any differences between the two groups were small and would not have been captured on such a restrictive scale. For that reason, future studies should include rating scales that would be broad enough to account for subtle individual differences in skill.

Finally, the lack of skill differences seen between group and task may be attributable to the type of role-play chosen for the task. The specific task used in this study was a standard unstructured heterosocial conversation task, chosen because it was general and was thought to be closer to “real life” than some of the other types of role-play tasks. In addition, Beidel, Turner and Dancu (1985) found that a heterosocial interaction produced group differences between SA and NSA subjects while same-sex and public speaking tasks did not. Although this type of task would likely be anxiety provoking to an individual with generalized social anxiety, some SA subjects may have had more specific situations such as public speaking and assertiveness driving their anxiety. Unfortunately, the nature of the study did not allow for the assessment across a wider range of potentially distressing social situations. Although the SA group evidenced greater anxiety and less skill compared to the NSA group during the task, it is possible that the inclusion of the subjects whose fears are more circumscribed could have diluted the overall results and also lead to the lack of group differences on specific skill areas.

Consequently, future research should be aware of the heterogeneity of social phobia and select variables that are specifically geared towards each individual's social fears.

As mentioned previously, one of the biggest limitations of this study was that the anxiety manipulation was not successful for a majority of the subjects in both groups. While the design of the structured task was intended to alleviate the anxiety over having to generate verbal content during the role-play, many subjects indicated that they found this task to be more distressing than the unstructured task. In order to address some of the concerns that were raised, subjects were told that they did not have to stick completely to the script and were permitted to substitute words to make it more realistic, provided that it didn't change the general substance of the script. However, even when the instructions towards the task were changed, many subjects still found the structured task to be more anxiety provoking than the unstructured task. Although skill analyses were conducted on the subset of participants for whom the manipulation worked, it is possible that there was something qualitatively different about this group compared to the overall SA sample. Therefore, it is important that future studies address the problems caused by this manipulation and chose a task that will not cause the same variability in response. One possibility could be the use of a speech task which is intended to be structured and would not cause the same concerns raised in this study.

In terms of anxiety ratings, one important issue that must be addressed is that the anxiety ratings across the tasks were assessed using a subjective anxiety measure. The SUDS level across the tasks tended to be inconsistent with expectations and more objective physiological measures such as heart rate and skin conductance could have been used to further tease apart the changes in anxiety the subjects felt towards the

different tasks. However, it is important to note that some studies have shown that an individual's self-report of anxiety does not necessarily correlate highly with other measures of an individual's anxiety (Jurich & Jurich, 1974).

There were also several methodological issues that are important to address when discussing the limitations of this study. Due to time constraints and the overall scope of the study, a within subjects design was employed. As a result, all subjects participating in the study engaged in both the unstructured and structured tasks with the same confederate used across both tasks. Moreover, the study design did not allow for counterbalancing and the unstructured task always preceded the structured task. Therefore, it is important to keep in mind the ways in which these design considerations could have affected the outcome of the results. Issues such as practice effects and familiarity with the confederate could have resulted in an improved performance and less anxiety during the structured task. The findings from this study do not seem to suggest that these variables had a significant effect on the outcome. One would expect that in either of these cases the end result would have been higher social skill ratings in the structured task; however the findings from this study did not reveal this trend. In fact, the one instance where a between-task difference was found indicated that the subjects performed worse in the structured task. Regardless of the outcome, this study highlights the importance of using a between-subjects design.

Finally, due to the nature of the task, this study was limited to a focus of nonverbal behaviors. Although body language is an important component of effective communication, it is also likely that other social skill components such as what you say (verbal content) and how you say it (paralinguistics) are equally important. A previous

study which employed a similar design also failed to find between-group differences on measures of verbal content (Shackman, 2003), which tends to lend credibility to the notion that social skill can best be defined through the combination of these elements rather than by a specific isolated skill. It is important that future studies in this area find a way to integrate all elements of social behavior rather than focusing solely on a specific skill area.

### Implications

The following study has important implications for the assessment, conceptualization, and treatment of social phobia. In terms of assessment, the following study lends support for the use of behavioral role-play tasks in the assessment of social skills in socially anxious individuals. There has been wide debate within the social skills literature suggesting that role-play assessments may not provide an accurate representation of an individual's social repertoire due to the fact that role-plays are a social task and may induce a level of anxiety that would inhibit a person from adequately showcasing their skills. However, results from this study seem to suggest that socially anxious individuals perform the same regardless of the anxiety they feel towards the task. Therefore, it can be surmised that the current method of evaluating social skills through a behavioral role-play task is an adequate measure of determining the level of social skill that an individual possesses.

Furthermore, although there is a great degree of speculation as to the role of anxiety and its impact on social skills the exact nature of the relationship is unclear. While a myriad of studies do seem to suggest that individuals with social anxiety are

consistently found to be less socially skilled than nonanxious controls the exact cause of this phenomenon has been subject to debate. The performance inhibition hypothesis contends that socially anxious individuals possess the same degree of social skills as nonanxious people, however they are unable to adequately demonstrate these skills due to the anxiety they feel towards the social situation. Results from this study do not support this hypothesis and seem to suggest that minimizing the anxiety felt towards a social situation does not necessarily lead to better social performance. Therefore, when conceptualizing the role of social skills in the social anxiety, one can surmise that these individuals suffer from a social skills deficit which should be addressed during treatment through social skills training.

Finally, social skills training is a common treatment component for social anxiety. Results from this study seem to indicate that when focusing on discrete nonverbal social skills, socially anxious individuals possess the same level of skill compared to nonanxious controls. However, when rated on a global measure of social skill group differences emerged. Therefore, while nonverbal behaviors are an important element of social communication, it is likely the cumulative interplay of all social skills (nonverbal behaviors, verbal behaviors, and paralinguistics) which determine a person's social ability. Therefore, it is imperative that social skills training focus equally on all facets of social skills and that the therapist pay close attention to how elements of an individual's social repertoire interact in a way that determines their level of ability.

Initials: \_\_\_\_\_  
Date: \_\_\_\_\_

## INFORMED CONSENT FORM

### **Nonverbal Social Skills in Socially Anxious Individuals: Skills Deficit vs. Performance Inhibition.**

**Statement of Age of Subject:** I state that I am over 18 years of age, and wish to participate in a research study being conducted by Samuel M. Turner, Ph.D. and Brooke A. Stipelman, B.S., in the Department of Psychology at the University of Maryland, College Park, Maryland 20742.

**Purpose:** The purpose of this research is to examine nonverbal social performance in socially anxious individuals when the evaluative aspects of an interaction are minimized through standardized content.

**Procedures:** First I will participate in a computerized interview where I will answer questions about my feelings and behaviors, as well as some questions about alcohol and drug use and thoughts of suicide. This interview will last about a half hour. If the results of the interview indicate that I do not have and have not been treated for serious emotional problems, I will be invited to participate in two brief social interactions with a member of the research staff. The interactions will be videotaped so that research assistants can transcribe the behaviors from videotape to the computer database.

**Confidentiality:** To the extent permitted by law, all information collected in the study is confidential, and my name will not be identified at any time. The data I provide will be grouped with data others provide for reporting and presentation. All information will be kept in locked files or in encrypted computer files in the investigator's office with access restricted to research staff. All videotapes will be erased after the data has been transferred.

**Risks:** The risks associated with this study are minimal. I may experience some anxiety when engaged in the social interaction task. Based on previous research, such increases probably will be temporary. However, I have the option of discontinuing the social interactions at any time and will be reminded of this fact prior to the beginning of the experiment.

**Benefits:** I understand that the research will not help me personally, but the investigator hopes to learn more about social skills in socially anxious individuals. Results from this study could provide insight into how social phobia is conceptualized, diagnosed, and ultimately treated.

**Freedom to Withdraw and Ask Questions:** I understand that I am free to ask questions or to withdraw from the study at any time without penalty.

**Medical Care:** The University of Maryland does not provide any medical or hospitalization insurance for participants in this research study nor will the University of Maryland provide any compensation for any injury sustained as a result of participation in this research study, except as required by law.

**IRB Contact Information:** If you have any questions about your rights as a research subject or a wish to report a research related injury, please contact: Institutional Review Board Office, University of Maryland, College Park, Maryland 20742; (e-mail) [irb@deans.umd.edu](mailto:irb@deans.umd.edu); (telephone) 301-405-4212.

Samuel M. Turner, Ph.D., ABPP  
Principle Investigator  
Department of Psychology  
University of Maryland  
College Park, MD 20742  
(301) 405-5043

Printed Name of Subject: \_\_\_\_\_

Signature of Subject: \_\_\_\_\_

Date: \_\_\_\_\_

Brooke A. Stipelman, B.S.  
Student Investigator  
Department of Psychology  
University of Maryland  
College Park, MD 20742  
(301) 405-0377

Investigator's Signature: \_\_\_\_\_



Appendix B

**DEMOGRAPHIC INFORMATION SHEET**

Subject ID #: \_\_\_\_\_

The following questions pertain to demographic information. Please answer them as they apply to you personally.

1. What is your age? (Round to the nearest year): \_\_\_\_\_

2. What is your sex? (Circle one):      male                  female

3. What is your current marital status? (Circle one):                  Single                  Married

4. How many years of college have you completed? (Round down to the nearest year):  
\_\_\_\_\_

5. What is your ethnic identity? If more than one category applies, select only the one with which you most strongly identify. (Check one):

\_\_\_\_\_ African or African American (Black)

\_\_\_\_\_ Asian, Pacific Islander, or Asian American

\_\_\_\_\_ European or European American (White)

\_\_\_\_\_ Latino/Latina or Latin American (Hispanic)

\_\_\_\_\_ Arab or Arab American

\_\_\_\_\_ Native American (American Indian or Eskimo)

\_\_\_\_\_ Other (please specify)

## Appendix C

### Scripts for Structured Task

*S=subject*

*C=confederate*

#### **Meeting New Neighbor**

**Introduction to the scene:** The person now entering the room is *Jennifer/Michael*. I want you to imagine that your walking back from class to your apartment, and you see *Jennifer/Michael* in the process of moving in down the hall. You have not yet met *her/him* and this looks like a good time to introduce yourself. Just act as if the situation were really happening. I will tell you when to stop. Please begin the conversation now.

S= Hi, my name is (*subject's name*), welcome to the neighborhood.

C= Thanks, my name is *Jennifer/Michael*.

S= So, are you almost finished moving all your stuff?

C= Yeah, I actually did most of the big stuff over the weekend, so today is really just some of the last minute odds and ends. Do you live in this building?

S= Yeah, I am in apartment 232, it is just down hall from here on the left. Do you go to Maryland?

C= Yeah, I am junior. What about you?

S= Yeah, I am a sophomore. Well, you'll love it here then, there are plenty of Maryland students so it is a pretty lively place.

C= Oh cool. I was actually nervous to leave the dorms and move off campus, but I guess then it won't be too much of a culture shock.

S= No, definitely not. How many roommates are you living with?

C= Well, right now I am by myself, but next semester one of my friends is moving in. What about you?

S= I live in a two-bedroom, and there are four of us.

C= Really? Wow, how do you get any work done?

S= I have to do most of it at the library. But my roommate works part-time at Applebees, so I do get some evenings to myself.

C= That's cool. I can never get any work done at the library because I need lots of noise, so that is why we got a two bedroom.

S= Yeah, I used to like having the TV on when I study, but I got used to it. I bring my walkman and listen to classical music for background noise.

C= Yeah, I have some friends who like using classical music. I guess because there are no words to sing along with.

S= Yeah, that's why I like it too. So you do have questions about the area?

C= Actually, I do. I read that there is Maryland shuttle that runs somewhere around here...but so far I haven't been able to find it.

S= Yeah, it is actually two blocks from here. When you go out the front make a left.

C= Cool, thanks. Does it run often?

S= It's ok. It runs like every half hour. The traffic is bad in the mornings though, it takes like 20 minutes to get to the union.

C= Oh, really? So do you take it much to get to campus?

S= Well, when it's cold or rainy I will take it. Otherwise I just walk. It's only about 20-25 minutes.

C= Well, that's not too bad, I could use the exercise.

S= Yeah, that is how I try to look at it too.

C= I also read that this building allows pets...do you know people that have any?

S= Yeah, this one girl I know who lives on the 4<sup>th</sup> floor has a cat. Why? Are you thinking about getting one?

C= Maybe. My roommate who is moving in next semester is from Rockville and *he/she* has a cat which *his/her* mom wants *him/her* to take.

S= Oh, awesome...I would love to get a dog, but I feel like I don't have the time to take care of it. Maybe in a year or two though.

C= Me too. I would love to get a lab, but my roommate is allergic.

S= Oh no! My roommates and I all want a dog, but one problem would be deciding who gets to keep him after we graduate.

C= Yeah, well this is the perfect area to get one. It has that great jogging trail down the street.

S= Yeah, if you like to rollerblade or run the trail is perfect.

C= Well, I bike ride a lot. I was actually going to check it out sometime this weekend.

S= You definitely should, I roller blade on it all the time. Hey, do you happen to have the time.

C= Yeah, its 12:15.

S= Already? Oh, well then I am actually going to get going and grab some lunch before my 1:00 class.

C= Ok, well it was really nice meeting you.

S= Yeah, same here. If you have any other questions let me know. Good luck with the rest of your move.

C= Thanks.

S= Oh, and before I forget. My roommates and I are having a little party this Saturday night. You should definitely stop by if don't have plans.

C= Actually, I was suppose to meet up with a friend, but maybe I can see if they want to do that.

S= No problem, come by anytime after 9:00.

C= Ok, thanks. See you later.

S= Yeah, bye.

## Eating Lunch at the Union

**Introduction to the scene:** The person now entering the room is *Jennifer/Michael*. I want you to imagine that you are at the student union eating lunch with some friends, and you're seated next to *Jennifer/Michael*. You have never met *her/him* before and you would like to get to know *her/him*. Just act as if the situation was really happening. I will tell you when to stop. Please begin the conversation now.

S= Hi, my name is (*subject's name*), I don't think we've ever met?

C= No, I don't think so. My name is Jennifer/Michael, nice to meet you.

S= Nice to meet you too. So I am guessing that you're either a friend of Susan's or Bob?

C= Yeah, Bob and I met while suffering through Physics last semester

S= I can relate to that, one of the reasons I am majoring in finance is that there is no science classes.

C= (smile) So how do you know Susan and Bob?

S= Susan is actually my roommate and I met Bob through her.

C= Well, your lucky you have a good roommate. I don't know Susan that well, but she seems like so much fun.

S= Yeah, I definitely lucked out, because I have heard some roommate horror stories. So what year are you?

C= I am a sophomore; although technically I should be a junior. I transferred and not all my credits went through.

S= Oh, that sucks. Where did you transfer from?

C= I was at Boston University, but my family has had some money problems so I decided to transfer to Maryland since it was in state.

S= Oh, so your from around here originally?

C= Yeah, I am originally from Burtonsville.

S= Oh, I am from New York, so I really don't know much Maryland geography outside College Park.

C= It's maybe like a half hour from here....not too far. Close enough that my parents wanted me to commute, but I had to draw the line somewhere.

S= understandable.

C= So your originally from New York, what part?

S= Upstate, it's a small town near Syracuse. It's very scenic, but it gets pretty cold.

C= I can imagine, just wait until winter hits here at College Park. One 2-inch snow storm and the place shuts down in a panic.

S= Yeah, I have heard. I can't wait until I can call home and tell my parents that classes are canceled because of two inches of snow on the ground.

C= I realized I never asked you what year you were. A freshman I would presume since your Susan's roommate?

S= Yeah, I am freshman.

C= How do you like it here so far?

S= I like it a lot, although I was a little homesick at first because I have never been away before.

C= Really? So how long did that last?

S= Probably about a month. Once the work starting piling up and I began to make friends I felt more adjusted.

C= Yeah, I had the same experience when I was up at BU. It was nice to get away from my high school classmates and start fresh, but it can be a bit intimidating too.

S= Seriously, and this place is so huge. I actually missed my first class in college because I was wandering around looking for the building.

C= Yeah, it is pretty big. Although over time you learn where all the important places are and then just ignore the rest.

S= Well, I am starting to get the hang of it. I know where class, the union, and my dorm are...that's about it.

C= Well, that's the basics I guess.

S= True. So what is your major?

C= I am majoring in archeology.

S= Really? Wow, that's an interesting major. What do you plan to do with that?

C= I really love ancient Greece and Roman history, so I am thinking that maybe I would like to spend a couple years doing excavations in Europe. Then, maybe be a professor or something.

S= Wow, that's so cool. I love watching shows on the discovery channel about that kind of work, but I just don't think I would have the patience for it.

C= Yeah, well I guess it is not the most instantly gratifying work.

S= Have you ever been on a dig before?

C= No, not yet. Although next summer I am going to spend six weeks in Mexico at a sight where they are excavating Mayan ruins. So what is your major?

S= Well, I haven't declared yet or anything, but I think it is going to be finance.

C= Oh, I have a few friends who are finance majors; supposedly the business school is pretty good.

S= Yeah, that is what I heard too. So far I am just taking Intro to Finance, which I like a lot. But I do want to try out other things like marketing and accounting to see which I like the most.

C= Well, as I said, I have some friends in the business school so if you ever need any advice on professors or classes I can introduce you to some people with the inside scoop.

S= Oh wow, that would be great. Thanks!

C= No problem.

S= Hey, do you happen to have the time?

C= Yeah, it's a quater to 2:00

S= Oh wow...already? I actually have to get going or I am going to miss my 2:00 class.

C= Yeah, you had better get a move on.

S= Well, it was greet meeting you *Jennifer/Michael*. I am sure I will you see around soon.

C= Definitely. I am actually having a BBQ this Saturday. You should come with Bob and Susan.

S= Sounds great, I will definitely try.

C= Cool, see you later

S= Yeah, bye!



## **BAT Assessment Script for Master's Thesis**

**\*\*\*DOUBLE CHECK THAT CAMERA IS RECORDING\*\*\***

**Walk in Room and Introduce the Assistant (do not use names):** “This is the assistant who will be helping out with today’s tasks”

### **Introduction to Baseline:**

Throughout this procedure, I will ask you to rate how anxious or nervous you are using the feelings thermometer that is in front of you. We call this number your SUDS rating. You will be asked to circle the number that indicates how anxious or nervous you are feeling at that particular moment. You will use a new fear thermometer for each rating. Do you understand what you are to do?

Now for the next 5 minutes, we need you to just sit quietly. At a certain point I will ask you to circle your SUDS rating on the recording sheet in front of you. After you do that, just return to a comfortable resting position.

**After 5 minutes:** Ok *(subject's name)*, please circle your SUDS level now.

### **Introduction to the General Task**

You will now participate in two social interactions with another person. These tasks might seem difficult, but it is important that you try to do your best.

### **Task I: Unstructured Conversation Task (3 minutes)**

*Read whichever scene the subject was randomized to receive in the unstructured task. (see page 2 for script)*

**After 3 minutes:** Thank you, the assistant may now leave the room. Please circle your SUDS level where it says Task 1, on the second page of your packet.

### **Introduction to Structured Task**

You will now be fitted with a bug-in-the-ear wireless transmitter. This device will be worn in your ear and will allow me to communicate with you during the next social interaction. This second role-play will proceed identical to the first one, except in this scene your verbal content will be provided to you via the wireless transmitter. Your role in this task is to relay the content as naturally as possible. I want you act as you normally would if the situation were really happening. After you are fitted with the device you will have several minutes to practice using it until you feel comfortable.

*Allow for about 5 minutes of practice time. Practice using general conversational content such as greetings, asking and answering general questions.*

**Task II: Structured Conversation Task (3 minutes)**

*Read whichever scene was not used in the unstructured task. (see page 2 for script)*

**After 3 minutes:** Thank you, the assistant may now leave the room. Please circle your SUDS level where it says Task 2, on the third page of your packet.

**\*\*\*Scripts for the Role-Play Scenes\*\*\***

**Meeting New Neighbor**

The person now entering the room is *Jennifer/Michael*. I want you to imagine that you are walking back from class and you see *Jennifer/Michael* who recently moved into the dorm room next door. You have not yet met *her/him* and this looks like a good time to introduce yourself. Again, just act as you would if the situation were really happening. I will tell you when to stop. Please begin the conversation now.

**Eating Lunch at the Union**

The person now entering the room is *Jennifer/Michael*. I want you to imagine that you are at the student union eating lunch with some friends, and you're seated next to *Jennifer/Michael*. You have never met *her/him* before and you would like to get to know *her/him*. Just act as you would if the situation was really happening. I will tell you when to stop. Please begin the conversation now.

## Appendix E

### BAT OBSERVER RATING SHEET

Subject's #: \_\_\_\_\_  
Rater Name: \_\_\_\_\_  
Date: \_\_\_\_\_

Tape #: \_\_\_\_\_  
Rater #: 1 or 2

### UNSTRUCTURED CONVERSATION (TASK I)

#### NONVERBAL BEHAVIOR

##### **Orientation**

- (0) Poor: Participant is turned completely away (more than 90 degrees) from the confederate, orientation is awkward and disruptive to the interaction.
- (1) Fair: Participant is turned to far from the confederate (less than 90 degrees); orientation is awkward, but not disruptive to the interaction.
- (2) Good: Participant is turned slightly away from the confederate, but orientation is not awkward or disruptive to the interaction.
- (3) Very Good: Participant displays normal orientation for a casual/personal interaction.

##### **Facial Expression**

- (0) Poor: Participant's face is completely blank during the course of the interaction, does not engage in any emotional expression.
- (1) Fair: Participant's face is abnormally blank during the course of the interaction. Emotional facial expression is severely limited, and participant may engage in some inappropriate expressions.
- (2) Good: Participant tends to be inexpressive, but does exhibit some appropriate emotional facial expressions.
- (3) Very Good: Participant is animated and/or displays an appropriate range of range of emotional facial expressions (e.g. appropriate smiling and relaxed expression)

**Gaze:**

- (0) Poor: Participant completely avoids looking at confederate OR stares continually. Gaze pattern is awkward and disruptive to the interaction.
- (1) Fair: Participant frequently avoids eye contact (or stares). Gaze pattern is awkward, but not disruptive to the interaction.
- (2) Good: Participant occasionally avoids eye contact or tends to look too much (stares) while confederate is speaking or during shifts in the conversation, but gaze pattern is not awkward or disruptive to the interaction.
- (3) Very Good: Participant keeps appropriate eye contact during the conversation, does not stare; shifts focus during pauses in the conversation.

**Posture**

- (0) Poor: Participant displays either an extremely rigid and immobile body posture or is extremely slouched. Posture appears awkward and gives off an impression of being uncomfortable and/or unfriendly.
- (1) Fair: Participant displays an abnormally stiff/rigid or slouched body posture, posture appears awkward, but gives off no impression of being uncomfortable and/or unfriendly.
- (2) Good: Participant displays a slightly stiff or slouched body posture, but posture is not awkward and gives off no impression of being uncomfortable and/or unfriendly.
- (3) Very Good: Participant displays a relaxed and apparently comfortable style.

**Gesture:**

- (0) Poor: Participant never gestures during the interaction.
- (1) Fair: Participant has an abnormally limited use and range of gestures. When gestures are used, they may be excessive or inappropriate to the interaction.
- (2) Good: Participant displays limited use or range of gestures, however when gestures are used they are expressive and appropriate to the interaction.
- (3) Very Good: Participant displays a normal amount and variety of gestures.

## **STRUCTURED CONVERSATION (TASK II)**

### **NONVERBAL BEHAVIOR**

#### **Orientation**

- (0) Poor: Participant is turned completely away (more than 90 degrees) from the confederate, orientation is awkward and disruptive to the interaction.
- (1) Fair: Participant is turned to far from the confederate (less than 90 degrees), orientation is awkward, but not disruptive to the interaction.
- (2) Good: Participant is turned slightly away from the confederate, but orientation is not awkward or disruptive to the interaction.
- (3) Very Good: Participant displays normal orientation for a casual/personal interaction.

#### **Facial Expression**

- (0) Poor: Participant's face is completely blank during the course of the interaction, does not engage in any emotional expression.
- (1) Fair: Participant's face is abnormally blank during the course of the expression. Emotional facial expression is severely limited, and participant may engage in some inappropriate expressions.
- (2) Good: Participant tends to be inexpressive, but does exhibit some appropriate emotional facial expressions.
- (3) Very Good: Participant is animated and/or displays an appropriate range of range of emotional facial expressions (e.g. appropriate smiling and relaxed expression)

#### **Gaze:**

- (0) Poor: Participant completely avoids looking at confederate OR stares continually. Gaze pattern is awkward and disruptive to the interaction.
- (1) Fair: Participant frequently avoids eye contact (or stares). Gaze pattern is awkward, but not disruptive to the interaction.

- (2) Good: Participant occasionally avoids eye contact or tends to look too much (stares) while confederate is speaking or during shifts in the conversation, but gaze pattern is not awkward or disruptive to the interaction.
- (3) Very Good: Participant keeps appropriate eye contact during the conversation, does not stare; shifts focus during pauses in the conversation.

### **Posture**

- (0) Poor: Participant displays either an extremely rigid and immobile body posture or is extremely slouched. Posture appears awkward and gives off an impression of being uncomfortable and/or unfriendly.
- (1) Fair: Participant displays an abnormally stiff/rigid or slouched body posture, posture appears awkward, but gives off no impression of being uncomfortable and/or unfriendly.
- (2) Good: Participant displays a slightly stiff or slouched body posture, but posture is not awkward and gives off no impression of being uncomfortable and/or unfriendly.
- (3) Very Good: Participant displays a relaxed and apparently comfortable style.

### **Gesture:**

- (0) Poor: Participant never gestures during the interaction.
- (1) Fair: Participant has an abnormally limited use and range of gestures. When gestures are used, they may be excessive or inappropriate to the interaction.
- (2) Good: Participant displays limited use or range of gestures, however when gestures are used they are expressive and appropriate to the interaction.
- (3) Very Good: Participant displays a normal amount and variety of gestures.

### OVERALL SKILL RATING

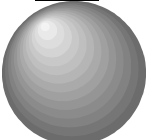
- (0) Not Skilled At All: Extremely awkward, barely responds if at all; does not ask questions.
- (1) Minimally Skilled: Moderately awkward, answers questions but with few words, asks few if any questions, does little to keep the conversation going.
- (2) Moderately Skilled: Mild awkwardness, able to answer questions fully; asks some questions, some degree of fluidity, and moderate effort to keep the conversation going; may be somewhat inappropriate.
- (3) Skilled: No awkwardness, clearly able to communicate; asks questions, appropriate effort to maintain conversation, no inappropriateness.
- (4) Very Skilled: Good interpersonal skill; carries part of the conversation, self discloses, uses appropriate transitioning, enjoys interaction.

Subject ID: \_\_\_\_\_

## Self-Rating of Anxiety

### 5-Minute Baseline

9	<b>Extreme Fright/Terror</b>
8	
7	
6	
5	
4	<b>Moderately Anxious</b>
3	
2	
1	<b>Completely Calm &amp; Relaxed</b>





## **Task I: Unstructured Conversation**

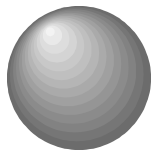
9	<b>Extreme Fright/Terror</b>
8	
7	
6	
5	
4	<b>Moderately Anxious</b>
3	
2	
1	<b>Completely Calm &amp; Relaxed</b>



# Self-Rating of Anxiety

## Task II: Structured Conversation

9	<b>Extreme Fright/Terror</b>
8	
7	
6	
5	
4	<b>Moderately Anxious</b>
3	
2	
1	<b>Completely Calm &amp; Relaxed</b>



## Appendix G

### A.1 Means and Standard Deviations for Baseline and Unstructured Task SUDS Ratings in the Socially Anxious Group\*

Variable	Task	SA1 (n=9)	SA2 (n=20)	P
Mean SUDS Level	Baseline	M=4.11 SD=1.76	M=2.7 SD=1.38	.027
	Unstructured	M=5.66 SD=2.17	M=3.10 SD=1.25	.000

### A.2 Demographic Information for the Socially Anxious Group\*

Demographic Variable	SA1 (n=9)	SA2 (n=20)	P
Age	M=22.66 SD=8.87	M=19.6 SD=19.6	NS
Years of College Completed	M=1.66 SD=1.5	M=1.25 SD=1.16	NS
Gender Male Female	n=5 n=4	n=10 n=10	NS
Marital Status Single Married	n=9 n=0	n=20 n=0	NS
Ethnicity Caucasian African-Amer. Latino Asian Arab Other	n=4 n=2 n=0 n=2 n=1 n=0	n=11 n=2 n=1 n=5 n=0 n=1	NS

\* Where SA1 is the group for whom the anxiety manipulation was successful and SA2 is the group for whom the anxiety manipulation was not successful.

### A.3 Differences on Specific SPAI Questions in the Socially Anxious Group\*

SPAI Question	SA1 (n=9)	SA2 (n=20)	P
SPAI Difference Score	M=88.04 SD=18.35	M=76.27 SD=16.75	NS
Q #1- anx. in small groups	M=4.0 SD=1.58	M=3.8 SD=1.50	NS
Q #2- anx. in large groups	M=5.0 SD=1.73	M=4.85 SD=1.46	NS
Q #3- center of attention	M=5.44 SD=1.01	M=5.35 SD=1.18	NS
Q #11 avg.- anx. in bar/restaurant	M=4.41 SD=1.44	M=3.2 SD=1.29	.046
Q #12 avg.- anx. in new situation	M=5.13 SD=1.09	M=4.66 SD=.92	NS
Q #18 avg.- initiating conversation	M=5.91 SD=.86	M=4.73 SD=1.19	.013
Q#19 avg.- maintaining conversation	M=4.61 SD=1.41	M=4.15 SD=1.01	NS
Q # 22 avg.- anx. speaking in front of	M=6.08 SD=.85	M=4.63 SD=1.31	.006
Q # 24 avg.- avoidance	M= 3.77 SD=1.55	M=3.57 SD=1.43	NS
Q # 25 avg.- leave social situations	M=3.03 SD=1.93	M=2.97 SD=1.71	NS

\* Where SA1 is the group for whom the anxiety manipulation was successful and SA2 is the group for whom the anxiety manipulation was not successful.

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