

## ABSTRACT

Title of Dissertation:                   DIFFERENTIATING SOCIAL PHOBIA FROM SHYNESS

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**Objectives:** This study aimed to clarify the boundaries of social phobia and the nature of shyness. Despite the similarities between social phobia and shyness, the vast majority of shy persons do not meet diagnostic criteria for social phobia. Conversely, most persons with social phobia, specifically the generalized subtype, are shy. This study sought to identify factors that delineate generalized social phobia from shyness.

**Methods:** Of the 78 participants, 25 were shy with social phobia, 26 were shy without social phobia, and 27 were not shy. The groups were compared on self-reported symptomatology and indicators of functioning. Social skills were assessed via unstructured social interactions and an impromptu speech task during which heart rate and skin conductance were monitored. Performance and anxiety were rated by participants and independent observers.

**Results:** All symptoms were more prevalent among the shy with social phobia than the shy without social phobia. Almost 40% of the shy without social phobia did not endorse

social fears per se, even though they reported high levels of shyness. Those with social phobia reported higher levels of impairment and lower levels of quality of life compared to the shy without social phobia. Both the shy and social phobia groups reported similar levels of anticipatory anxiety prior to the social tasks; however, the social phobia group reported relatively elevated levels of anxiety *during* the social tasks. Those with social phobia demonstrated social skills deficits across tasks, whereas the shy did so only in the unstructured social tasks. Both groups underestimated their effectiveness during the speech relative to independent observers. None of the three groups differed on the physiological measures.

**Conclusions:** The findings indicated that shyness is a broader construct than social phobia. Some subsets of the shy group appeared to be more qualitatively similar to the social phobia group than others. Those with social phobia appeared to experience more anxiety and exhibit more social skills deficits during the social interactions than the shy without social phobia, which may account for the higher levels of impairment they reported. The results are discussed in the context of current theoretical models of social phobia.

DIFFERENTIATING SOCIAL PHOBIA FROM SHYNESS

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## **Chapter 1: Specific Aims**

This study was designed to provide a better understanding of how the clinical condition of social phobia (Social Anxiety Disorder) differs from shyness, a less well-defined lay term that is considered by many to be a normal facet of personality (e.g., Carducci, 1999). To date, very few studies have directly compared shyness and social phobia. In addition, prior studies of shyness did not distinguish between shy persons and persons with social phobia, making it difficult to interpret their findings. This study identified “purely” shy persons (i.e., those without social phobia or other psychiatric disorders) and compared them to shy persons with social phobia. An examination of the distinction between these groups further elucidates the characteristics and boundaries of social phobia and clarifies the nature of shyness.

The specific aims of this study were to determine if persons with social phobia differ from very shy persons without social phobia in terms of the following characteristics:

### Symptomatology

- Feared social situations
- Avoided social situations
- Somatic symptoms experienced in social situations
- Cognitive symptoms
- Sociability (measure of preference for social interaction)
- Functional impairment
- Quality of life

### Social Skills during Behavioral Assessment Tasks

- Self-reported ratings of anxiety and effectiveness during behavioral assessment tasks
- Independent ratings of anxiety and effectiveness during behavioral assessment tasks
- Independent ratings of molecular behaviors (e.g., eye contact) during behavioral assessment tasks

### Physiological Arousal during Behavioral Assessment Tasks

- Heart rate during behavioral assessment tasks
- Skin conductance during behavioral assessment tasks

In addition, shy persons and persons with social phobia were compared to a third group consisting of non-shy persons without psychiatric diagnoses.

## **Chapter 2: Background and Significance**

### **Social Phobia**

#### *Clinical Syndrome*

Social phobia is an anxiety disorder that is characterized by fear and avoidance of social situations and results in marked distress and impairment in functioning. Social phobia was first introduced as a psychiatric disorder in 1980 in the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition* (DSM III; APA, 1980).

According to the most recent diagnostic criteria, social phobia is “a marked and persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others” (DSM-IV; APA, 1994, p. 416). The specific diagnostic criteria from the DSM-IV are contained in Appendix A.

As specified by the diagnostic criteria, social phobia refers to individuals who have significant social fears, particularly a fear of acting in a humiliating or embarrassing way in front of others. The feared social or performance situations invariably provoke significant anxiety. However, persons with this disorder also recognize these fears as excessive or unreasonable. Persons with social phobia tend to avoid the feared situations or endure them with intense anxiety or distress. To be diagnosed with social phobia, patterns of avoidance and distress must interfere with the person's normal routines, occupational functioning or social relationships, or there must be marked distress about having the phobia. In adults, the social fears and anxiety must be present for at least six months before considering a diagnosis of social phobia.

Virtually any situation where a person could be observed or scrutinized by others can be feared by persons with social phobia. Commonly feared situations include formal

speaking, attending a social event, maintaining a conversation, performing in front of others, and eating or writing in front of others (Holt, Heimberg, & Hope, 1992; Turner, Beidel, Dancu, & Keys, 1986a). In addition, persons with social phobia often experience considerable somatic distress when in the feared situation, most commonly increased heart rate, blushing, sweating, and trembling (Amies, Gelder, & Shaw, 1983; Gorman & Gorman, 1987).

Two types of social phobia are currently recognized in the DSM-IV: a generalized subtype and a specific subtype. Those with the generalized subtype experience distress across a broad range of social and performance situations and those with the specific (circumscribed) subtype experience distress in only one or two social situations. For example, those with the specific subtype may have a fear of public speaking only. Studies have found that the generalized subtype is the more severe and more common type (Holt, Heimberg, & Hope, 1992; Kessler, Stein, & Berglund, 1998; Turner, Beidel, & Townsley, 1992).

The modal age of onset of social phobia is during adolescence (Amies et al., 1983; Mannuzza, Fyer, Liebowitz, & Klein, 1990; Ost, 1987; Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992; Turner et al., 1986a). However, studies have found that social phobia may be diagnosed in children as young as age eight (Beidel & Turner, 1988; Beidel, Turner, & Morris, 1999). Adults with social phobia commonly report that their social fears have been constant since their onset and many describe themselves as having social phobia “all of their lives” (Schneier et al., 1992; Solyom, Ledwidge, & Solyom, 1986). Similarly, Turner et al. (1986a) found that persons with social phobia reported an average of 21 years of social distress caused by the disorder and an average

of 15 years during which they avoided the feared social situations. Thus, social phobia tends to have an early onset and a chronic course.

Social phobia typically interferes with one's ability to obtain personal and professional goals and even to function daily. Numerous studies have found that persons with social phobia report that their social anxiety makes it difficult for them to attain and maintain satisfying social relationships and to perform well at school or work (e.g., Schneier et al., 1994; Turner et al., 1986a; Wittchen & Beloch, 1996). In addition, studies have found that persons with social phobia are less likely to be employed, to be married, and to earn as much as their counterparts (e.g., Magee, Eaton, Wittchen, McGonagle, & Kessler, 1996; Schneier et al., 1992). Social phobia is also associated with an increased risk of having another psychiatric disorder (e.g., Magee et al., 1996; Schneier et al., 1992). Thus, the disorder is associated with significant impairment in the lives of those affected.

### ***Epidemiology***

The prevalence estimates of social phobia among adults range from 2 to 8 percent depending on the assessment methodology and sample used. Early estimates of the prevalence of social phobia came from the National Institute of Mental Health Epidemiological Catchment Area study (ECA), which provided one of the largest epidemiological samples for the study of psychopathology in the United States. Studies based on ECA samples reported lifetime rates of social phobia of 2 percent (Robins et al., 1984; Schneier et al., 1992).

More recent data, such as those based on the National Comorbidity Survey (NCS), reported higher rates of social phobia. The NCS was a large epidemiological



study in the United States that used DSM-III-R (APA, 1987) criteria and a new assessment instrument (the Composite International Diagnostic Interview) to estimate the prevalence rate of 14 psychiatric disorders including social phobia. Based on the NCS, the 12-month prevalence rate of social phobia was 8 percent and the lifetime rate was 13 percent (Kessler et al., 1994).

Other more recent studies are consistent with the higher estimates based on the NCS data (Pelissolo, Andre, Moutard-Martin, Wittchen, & Lepine, 2000; Stein & Kean, 2000; Stein, Torgrud, & Walker, 2000). The discrepancy between earlier and later estimates may reflect the use of improved assessment instruments in the later studies and increased knowledge of social phobia in more recent years. Overall, estimates based on the more recent studies suggest that social phobia is highly prevalent and the most common of the anxiety disorders.

### ***Treatment***

A number of psychosocial treatment strategies have been developed to treat social phobia. These strategies include exposure, cognitive restructuring, social skills training, or some combination of these strategies. Controlled studies have found that behavioral and cognitive-behavioral strategies are efficacious for treating social phobia (Butler, Cullington, Munby, Amies, & Gelder, 1984; Heimberg et al., 1990a; Mattick & Peters, 1988; Mattick, Peters, & Clarke, 1989; Turner, Beidel, & Jacob, 1994). In addition, several follow-up studies suggest that treatment gains are maintained for as long as 2 years after treatment (Turner, Beidel, & Cooley Quille, 1995; Wlazlo, Schroeder-Hartwig, Hand, Kaiser, & Munchau, 1990) and one found treatment gains were maintained up to 5 years after treatment (Heimberg, Salzman, Holt, & Blendell, 1993).

Several meta-analyses also have shown that psychosocial treatment strategies are efficacious (Fedoroff & Taylor, 2001; Feske & Chambless, 1995; Gould, Buckminster, Pollack, Otto, & Yap, 1997; Taylor, 1996). These studies indicate that exposure is consistently an efficacious treatment for social phobia and that the addition of cognitive strategies does not improve treatment outcomes compared to exposure alone. Certain medications (i.e., benzodiazepines and SSRIs) also have been shown to be efficacious in treating social phobia (Fedoroff & Taylor, 2001; Gould et al., 1997). However, the long-term efficacy of these medications is unknown. In summary, although social phobia can be a very debilitating condition, efficacious treatments are available.

### **Shyness and Social Phobia**

From the time that social phobia was introduced as a psychiatric disorder in the DSM-III in 1980, researchers and clinicians have theorized about the relationship between social phobia and shyness. Both conditions are characterized by fear of social situations and anxiety and inhibition in social situations. Social phobia is a well-defined diagnostic condition, as discussed above. Shyness, on the other hand, is a broadly defined term rather than a well-defined diagnostic term (Cheek & Watson, 1989; Harris, 1984). Shyness has been defined primarily by social and personality psychologists and such definitions include: anxiety and discomfort in social situations, particularly those involving evaluations, and social withdrawal (Crozier, 1979); discomfort and inhibition in social situations that interferes with obtaining interpersonal or professional goals (Henderson & Zimbardo, 1998); fear of negative evaluation by others (Buss, 1985); and avoidance of and failure to participate appropriately in social situations (Pilkonis, 1977a). Henderson and Zimbardo (1998) defined shyness as:

“...discomfort and/or inhibition in interpersonal situations that interferes with pursuing one's interpersonal or professional goals. It is a form of excessive self-focus, a preoccupation with one's thoughts, feelings and physical reactions. It may vary from mild social awkwardness to totally inhibiting social phobia.” (p. 497)

The definitions are similar in their descriptions of the central features of shyness, namely, nervousness and uncomfortableness in social situations, fear of negative evaluation by others, and avoidance of social situations. However, despite the similarities in the definitions of shyness, there are no specific criteria for defining shyness or identifying shy persons. In some shyness studies, shy persons include those who label themselves as shy (e.g., Zimbardo, 1977). Pilkonis (1977a) included students in a shy group if they reported that they were moderately to extremely shy, more or much more shy than their peers, and shy in 50 percent or more of social situations. In many studies, shy persons included those who scored above a certain cutoff point on a self-report survey such as the Revised Cheek and Buss Shyness scale (e.g., Cheek & Buss, 1981; Schmidt, 1999).

Because of the lack of a precise definition of shyness, the different methods of identifying shy persons, and the use of self-labeling, shyness is likely to be a more heterogeneous category than social phobia. In addition, the use of different methods for classifying participants as shy or not shy makes it difficult to compare results across shyness studies. Relatedly, the shifting of the definition of shyness towards that of social phobia suggests that studies of shyness may be more and more likely to include persons with social phobia. This shifting definition makes it more difficult to draw any conclusions about the difference between shyness and social phobia.

Even studies that use the same method to identify shy persons may have very heterogeneous samples in terms of the psychological make-up of the participants. For example, numerous studies have used the Revised Cheek and Buss Shyness (RCBS) scale to identify shy persons (Addison & Schmidt, 1999; Arkin & Grove, 1990; Bradshaw, 1998; Bruch, Gorsky, Collins, & Berger, 1989; Joiner, 1997; Melchior & Cheek, 1990; Page & Hammermeister, 1995; Schmidt, 1999; Schmidt & Fox, 1994). Heiser, Turner, and Beidel (2003) used the RCBS to identify shy individuals and then examined their psychological characteristics. They found that the shy group was very heterogeneous in terms of their psychological make-up. Specifically, a significant proportion of the shy group appeared to suffer from a range of psychiatric disorders including mood disorders, anxiety disorders, and substance-use disorders. Similarly, a significant proportion did not meet criteria for any psychiatric disorder.

Thus, shyness studies have in essence used shyness as a behavioral descriptor to identify their sample. They did not exclude persons with social phobia or other psychological problems. Therefore, prior studies most likely included persons with social phobia as well as those who were otherwise anxious or depressed. The inclusion of these individuals in shyness studies makes it difficult to interpret past findings. For example, shyness studies suggest that shy persons experience significant distress in social situations and impairment in their personal and professional lives (e.g., Zimbardo, Pilkonis, & Norwood, 1975). In response to this literature, shyness programs have been developed to treat shyness (e.g., The Shyness Clinic in Palo Alto, California, founded by Philip Zimbardo and colleagues). However, the extent to which these findings about

distress and functional impairment among the shy are driven by the inclusion of persons with social phobia or other psychiatric disorders in the sample is not clear.

Researchers have put forth different hypotheses about the relationship between shyness and social phobia. One hypothesis is that the conditions are essentially the same. Rapee (1998) noted that "many words and terms have been used to describe shyness, including social phobia, social anxiety, avoidant personality disorder....they all refer basically to the same thing" (p. xi). Another hypothesis is that the two conditions are completely different. Carducci (1999) concluded that "shyness is also not a social disease such as social phobia or avoidant personality disorder...Shyness is not listed in the *Diagnostic and Statistical Manual of Mental Disorders IV*...because it's not a mental illness, merely a normal facet of personality" (p. 6).

Yet a third hypothesis is that social phobia is an extreme form of shyness. Marshall and Lipsett (1994) concluded that shyness is a form of social anxiety and generalized social phobia in particular is an extreme form of shyness. Consistent with this view, Henderson and Zimbardo (1998) described shyness as varying "from mild social awkwardness to totally inhibiting social phobia" (p. 497). According to this hypothesis, the two conditions are quantitatively but not qualitatively different.

A fourth hypothesis put forth by Heckelman and Schneier (1995) is that shyness is a more heterogeneous category than social phobia, that it may overlap with mild cases of social phobia, and that it may also "extend outside of the social phobia spectrum" (p. 11). Similarly, Beidel and Turner (1999) concluded that the overlapping behavioral features of shyness and social phobia support the notion that a relationship between them

exists, but the nature of the relationship remains to be elucidated. This fourth hypothesis suggests that the two conditions may be qualitatively different from each other.

The similarities between social phobia and shyness are striking. However, because the literatures on these conditions have been separate lines of research and shyness studies have most likely included persons with social phobia and other psychiatric conditions, the nature of shyness is unclear as is its relationship to social phobia. Thus, the hypotheses above about their relationship have gone largely untested. Studies are needed to disentangle the groups and to determine the relationship between the two conditions. Such studies will clarify how the conditions of shyness and social phobia are related. In addition, studies that clearly identify shy persons without psychiatric disorders will help us interpret the findings of past shyness studies. For example, if future studies determine that “purely” shy persons are not significantly impaired or distressed, it is likely that the findings of prior shyness studies were driven by the inclusion of clinical populations.

This study advances the literature by disentangling the groups of interest. Specifically, shy persons with social phobia were identified, as was a group of “purely shy” individuals (i.e., shy persons without psychiatric disorders). Shy persons were identified using an instrument widely used in the shyness literature: the Revised Cheek & Buss Shyness scale. This research approach will help to clarify the relationship between social phobia and shyness and to describe the construct of shyness apart from clinical conditions. By identifying “purely shy” persons and comparing their characteristics to persons with social phobia in the same sample, this study allows for a

direct comparison of the two groups without the methodological confounds of prior studies.

This study examined the patterns of fears among the shy and compared them to those of persons with social phobia. In addition, the study compared shy persons with social phobia, “purely shy” persons, and non-shy persons along the following dimensions: symptomatology (somatic, cognitive, and behavioral symptoms), social skills and psychophysiological reactivity during social situations, quality of life and level of functional impairment, and sociability.

## **Chapter 3: Literature Review**

Despite the lack of a precise definition of shyness, the similarity in the descriptions of shyness and social phobia has lead researchers to compare the two conditions on numerous dimensions such as their symptomatology and epidemiology (Chavira & Stein, 1999; Turner, Beidel, & Townsley, 1990). This review updates and extends prior reviews by comparing the two conditions along the following dimensions: symptomatology, epidemiology, functional impairment, quality of life, social skills and arousability in social situations, and sociability. The review is based on studies of shyness and separate studies of social phobia because few studies have directly compared the two conditions. The next chapter reviews the few studies that have directly compared the two conditions. The review is followed by a description of the purpose, methodology, and findings of the current study.

### **Symptomatology**

#### ***Somatic Symptoms***

Persons with social phobia often experience significant somatic distress. Amies et al. (1983) found that at least half of the persons with social phobia in the study reported experiencing the following symptoms when they were in their most feared social situation: blushing, heart palpitations, tense muscles, dry throat and mouth, sinking feeling in stomach, trembling, sweating, and feeling hot or cold. Gorman and Gorman (1987) reported that heart palpitations, trembling, sweating, and blushing seemed to be particularly characteristic of persons with social phobia. Similarly, Turner et al. (1990) reported that heart palpitations, sweating, blushing, shaking, and urinary urgency were reported significantly more by persons with social phobia compared to normal controls.



Many persons with social phobia fear that their somatic symptoms will be visible to others and thus will reveal their anxiety. Therefore, in addition to the physical discomfort of these symptoms, persons with social phobia often fear that the symptoms are visible to others and that they will be judged negatively as a result.

Similar findings have been reported in the shyness literature. Henderson and Zimbardo (1998) list the following somatic symptoms of shyness: accelerated heart rate, trembling or shaking, sweating, feeling faint or dizzy, nausea, and dry mouth. Pilkonis (1977b) found that students rated internal discomfort as the second most distressing aspect of their shyness, the first being a failure to respond appropriately in social situations. Cheek and Watson (1989) found that a significant proportion of shy persons defined their shyness based on somatic symptoms such as blushing and trembling.

In summary, shy persons and persons with social phobia appear to share similar somatic responses in social situations and to experience significant distress due to these somatic reactions. However, the extent to which the groups differ in terms of the types and severity of the somatic symptoms is unclear. In addition, although the symptoms are commonly reported by both groups, the extent to which shy persons report them is unclear.

### *Cognitive Symptoms*

The cognitive features of social phobia center on a fear of negative evaluation. Persons with social phobia fear being humiliated or doing something embarrassing in front of others (APA, 1994). Persons with social phobia report having negative cognitions about social situations and during social situations (Heimberg et al., 1990a; Turner, Beidel, & Larkin, 1986b). Similarly, fear of negative evaluation appears to be an

important component of shyness (Crozier, 1979; Jones, Briggs, & Smith, 1986; Pilkonis, 1977b). Cheek and Watson (1989) found that a significant proportion of shy persons defined their shyness by the presence of negative thoughts and worries (e.g., fear of rejection and self-consciousness). Similarly, in a study by Bruch et al. (1989), shy persons reported more negative thoughts than non-shy persons.

Therefore, based on these separate bodies of literature, shy persons and persons with social phobia appear to have negative cognitions about social interactions.

However, the content, prevalence, and severity of the negative cognitions among the shy and how they compare to those of persons with social phobia has not been examined.

### ***Behavioral Responses***

Persons with social phobia often avoid the feared social situation making avoidance a key feature of the disorder. For example, Turner et al. (1986a) found that 86 percent of a sample of persons with social phobia reported avoiding social situations. The large majority (71%) avoided formal speaking and over half (57%) avoided informal speaking (e.g., parties and speaking to coworkers). The remaining persons with social phobia denied such avoidance but reported that they felt significant distress in social situations.

Some studies suggest that avoidance of social situations may also be an important feature of shyness. Jones et al. (1986) found social avoidance to be an important factor among shy persons based on a factor analysis. Cheek and Watson (1989) found that shy persons often cited avoiding or withdrawing from social interactions as a defining feature of their shyness. However, Pilkonis (1977b) found that shy persons rated avoidance as

the least important aspect of their shyness. Thus, the extent to which avoidance is an important feature of shyness is unclear.

Overall, these studies suggest that shyness and social phobia appear to be similar in terms of their somatic and cognitive symptoms but that behavioral responses may vary. However, this conclusion is based on indirect comparisons of the two conditions, including studies using different methodologies and assessment instruments. In addition, the shyness studies reviewed above may have included persons with social phobia. Thus, this empirical study was needed to directly compare the two conditions along these dimensions.

### **Epidemiology**

Based on numerous studies, the prevalence of shyness appears to be at least twice the prevalence of social phobia. As discussed above, the prevalence of social phobia has been estimated to be about 8 percent in recent studies (Kessler et al., 1994). The most widely accepted estimates of social phobia have been based on large, nationally representative epidemiological studies. Prevalence estimates of shyness are much higher than rates of social phobia, ranging from 20 to 48 percent (Carducci & Zimbardo, 1995; Spielberger, Polland, & Worden, 1984; Zimbardo et al., 1975). Although variability in the prevalence estimates of both shyness and social phobia exist and may reflect differences in methodology, the prevalence estimates of shyness are consistently higher than those of social phobia. These prevalence studies suggest that shyness and social phobia are not the same condition.

Studies also suggest that shyness and social phobia may differ in course. Shyness is often transitory. For example, Bruch, Giordano, and Pearl (1986) found that half of

their sample of non-shy college students reported that they were shy as young teens. Similarly, Zimbardo et al. (1975) found that 50 percent of the people surveyed did not consider themselves to be shy at the time of assessment, but considered themselves to be shy at some point in their past. However, for some individuals, shyness may be a stable condition that emerges in early childhood and continues into adulthood (Caspi, Elder, & Bem, 1988; Kerr, Lambert & Bem, 1996). As discussed above, social phobia is typically chronic and unremitting (Schneier et al., 1992; Solyom et al., 1986; Turner et al., 1986a).

### **Impairment**

Both shyness and social phobia appear to have some detrimental effects on functioning. By definition, the anxiety experienced by persons with social phobia interferes significantly in their functioning. Specifically, “the avoidance, anxious anticipation, or distress in the feared social or performance situation(s) interferes significantly with the person’s normal routine, occupational (academic) functioning, or social activities or relationships, or there is marked distress about having the phobia” (APA, 1994, p. 417). Both epidemiological and clinic studies of persons with social phobia have provided information on the impact of social phobia on a person’s functioning. The literature on the impact of shyness on functioning is less extensive. However, it suggests that shy persons experience emotional distress and functional impairment related to their shyness, as discussed further below.

### ***Impairment and Social Phobia***

Several studies using community samples have found that persons with social phobia were less likely to be married, less educated, and of lower socioeconomic status than those without social phobia (Davidson, Hughes, George, & Blazer, 1993; Magee et

al., 1996; Schneier et al., 1992). These same studies found that the majority of persons with social phobia had another psychiatric disorder at some point in their lives, typically following the onset of social phobia. Schneier et al. (1992) also found that persons with social phobia were more likely to be financially dependent (e.g., receiving welfare or disability payments) and to have considered suicide than normal controls.

Using a community sample from Canada, Stein et al. (2000) found that persons with social phobia reported impairment across a variety of functional domains that they attributed to their social phobia. The impairment they reported was significantly higher than that of persons without social phobia. About half reported that their social phobia interfered "some" or "a lot" with their education, their ability to obtain a job, and their personal life. Almost half reported that they dropped out of classes because of their social fears, and about one-fifth reported that they turned down a job or promotion because of their social fears.

Another study by Stein and Kean (2000) using the Ontario Mental Health Survey reported similar results. Persons with social phobia reported functional impairment in multiple domains including their main activity (i.e., work, school, household chores, or volunteering) and other daily activities (e.g., personal care and getting around the neighborhood). The level of impairment was similar to that reported by persons with depression.

Early clinic studies that examined the clinical manifestations of social phobia also described significant impairment among persons with social phobia. Amies et al. (1983) found that among persons with social phobia, over half (54%) were in lower social classes, 38% were single, 20% used alcohol excessively, and a significant proportion

(14%) reported parasuicidal acts. Liebowitz, Gorman, Fyer, and Klein (1985) described the disability of 11 clinic patients with social phobia based on the DSM-III. These patients exhibited significant occupational impairment (e.g., inability to work) and/or social impairment (e.g., minimal social interaction), and about half abused alcohol or tranquilizers.

Similarly, Turner et al. (1986a) found that among 21 persons with social phobia, 85% believed that their social phobia interfered with their academic functioning (e.g., preventing them from speaking in class); 92% believed it interfered with their occupational functioning (e.g., inability to contribute ideas in small groups or give presentations); 69% believed it interfered with their social relationships (e.g., inability to attend social events); and 50% believed it interfered with their ability to establish and maintain heterosocial relationships. They cited the following as consequences of their social anxiety: poor grades in school, lack of career advancement, and lack of friends and intimate relationships. In addition, about half of the group reported that they often used alcohol at or prior to social events to reduce their social anxiety.

More recent studies have used instruments specifically designed to assess functional impairment and included comparison groups. For example, Schneier et al. (1994) used the Liebowitz Self-Rated Disability Scale and the Disability Profile to examine functional impairment among persons with social phobia compared to normal controls. On both scales, more than half of all persons with social phobia reported at least moderate impairment due to social phobia in the areas of education, work, family relationships, romantic relationships, and friendships. In addition, more than half of persons with social phobia reported at least moderate impairment in regulating alcohol

intake due to social phobia. The reported impairment among persons with social phobia was significantly greater than that reported by normal controls for most items on both measures.

Another study (Wittchen & Beloch, 1996) used the Liebowitz Self-Rated Disability Scale to assess functional impairment among persons with social phobia. The study found that persons with social phobia reported impairment in multiple domains, with the highest being romantic relationships, education and careers, mood, performing household work, and relationships with family and friends. The level of impairment reported by persons with social phobia was significantly higher than that reported by normal controls. Stein, McQuaid, Laffaye, and McCahill (1999) reported similar findings among 36 persons with social phobia who sought treatment at a primary care health clinic.

These studies show that persons with social phobia report significant impairment in many areas of their lives, particularly their social and work lives. In addition, studies indicate that persons with social phobia often suffer from other psychiatric disorders such as depression and alcoholism. The consequences they commonly cite include inability to attain and maintain close personal relationships and to achieve career goals. Based on these studies, social phobia often causes significant impairment and distress in the lives of those affected.

### ***Impairment and Shyness***

Although the literature on functional impairment among shy persons is less extensive than that for persons with social phobia, studies have found that shy persons

experience emotional distress and social difficulties due to their shyness and that they often view their shyness as a significant problem in their lives.

Numerous studies suggest that shyness is associated with psychological distress and social difficulties. For example, studies have reported that shyness was positively correlated with loneliness (Booth, Bartlett, & Bohnsack, 1992; Cheek & Busch, 1981; Fox & Schmidt, 1995; Joiner, 1997; Maroldo, 1981). A study by Henderson (1997) found that shy persons seeking treatment for their shyness reported high levels of depression, generalized anxiety, and emotional sensitivity. Joiner (1997) found that among 172 college students, depression and shyness were positively and significantly correlated. Shyness was also positively correlated with negative affect and negatively correlated with positive affect. Jones et al. (1986) found that shyness was negatively correlated with assertiveness and self-esteem.

Consistent with these findings, Schmidt and Fox (1995) found that shy female college students reported higher levels of depression, fearfulness, and social anxiety, and lower self-esteem than non-shy students. In addition to emotional difficulties, they found that shy females were more likely to report specific health-related problems, namely gastrointestinal ailments and allergies, than non-shy females. Shyness also has been found to be associated with substance use among shy males (Page, 1989).

In a study by Zimbardo et al. (1975), shy persons reported that they have difficulty making friends, expressing opinions, being assertive, and dealing with misperceptions by others about their abilities. Similarly, Watson and Cheek (1986) found that shy females reported that conversing with others and encountering strangers or unfamiliar surroundings were problematic for them. Somatic symptoms also appear to be



problematic for shy persons. In a study asking students to rate the importance of five aspects of their shyness, internal discomfort was ranked as the second most distressing aspect of shyness (Pilkonis, 1977b).

Other studies have examined specific negative consequences associated with shyness. One study (Caspi et al., 1988) found that shyness may have long-term, potentially negative consequences. They found that shy males tend to marry, become fathers, and establish careers later than non-shy males. They also found that shy females were less likely to work outside of the home or continue to work following marriage than non-shy females. Similarly, Kerr et al. (1996) found that shyness was associated with delays in marital, career, and educational attainment. Other studies are consistent with these findings. Hamer and Bruch (1997), for example, found that shyness was related to inhibition of career development. Similarly, Phillips and Bruch (1988) found that shy college students were less likely to seek information about careers and less likely to be interested in interpersonally-oriented careers than non-shy students. However, the extent to which these delays in achieving these “milestones” are clinically significant remains unknown.

Studies also indicate that many shy persons do not like being shy. One study found that 79 percent of shy college students did not like being shy, 63 percent found their shyness to be a real problem, and over 50 percent wanted therapeutic help for their shyness (Zimbardo et al., 1975). In another study, about half of shy children felt their shyness was a problem and wanted to join a counseling group to reduce their shyness (Lazarus, 1982).

Overall, these studies suggest that shy persons experience significant emotional distress and have problems initiating and maintaining meaningful relationships, and that shyness may have a negative impact on career and educational attainment. In addition, many shy persons do not like being shy and view it as a significant problem in their lives.

Although both shy persons and those with social phobia have social and psychological difficulties, Turner et al. (1990) concluded that shy persons, on average, do not appear to experience the degree of daily impairment that persons with social phobia do based on preliminary evidence. For example, avoidance of social situations is common among persons with social phobia, but was rated as the least important aspect of shyness in one study (Pilkonis, 1977b). However, because this evidence is based on indirect comparisons, the extent to which these conditions can be distinguished based on the degree of impairment is unclear.

### **Quality of Life**

Other studies have examined the impact of social phobia on a person's "quality of life." Quality of life has been described as the person's perception of his or her own well-being (Bobes, 1998; Gladis, Gosch, Dishuk, & Crits-Christoph, 1999; Mendlowicz & Stein, 2000). This subjective component is important to assess because more objective measures including symptom reduction (i.e., decrease in anxiety or decrease in avoidance behavior) and life circumstances (e.g., income) may not correlate strongly with perceptions of quality of life (see Frisch, Cornell, Villanueva, & Retzlaff, 1992; Mendlowicz & Stein, 2000).

A handful of studies have used a variety of measures to examine quality of life among persons with social phobia as compared to normal controls. Wittchen & Beloch

(1996) used the Medical Outcomes Study 36-Item Short Form Health Survey (SF-36) to assess the quality of life among persons with social phobia. The quality of life scores among persons with social phobia were compared to those of a matched control group consisting of persons with a chronic physical illness. The SF-36 assesses satisfaction in 8 domains: general health; physical functioning, bodily pain, role limitations due to physical health problems, social functioning, general mental health, role limitations due to emotional problems, and vitality. Compared to the control group, persons with social phobia had significantly lower scores on all domain scales except the physical functioning scale. The largest differences were on the following scales: role limitations due to emotional problems, social functioning, general mental health, and vitality. A negative correlation was found between the number of feared social situations and quality of life. In addition, a negative correlation was found between quality of life and level of functional impairment.

Safren, Heimberg, Brown, and Holle (1996/1997) examined satisfaction with life in various domains among 44 persons with social phobia using the Quality of Life Inventory (QOLI). This instrument assesses a person's satisfaction in domains that he or she rates as important. The mean quality of life rating among the persons with social phobia was significantly lower than the mean score of a general, nonclinical, adult sample reported by the scale's developer. Quality of life scores were correlated moderately but significantly with global impairment ratings made by clinicians and with symptom severity. In addition, they found that quality of life scores were significantly higher after treatment compared to before treatment. However, post-treatment scores were still lower than those of the normative sample. Another study (Antony, Roth,

Swinson, Huta, & Devins, 1998) found that 49 persons with social phobia reported interference with their functioning in multiple domains. The level of impairment they reported was similar to that reported by persons with Obsessive-Compulsive Disorder or Panic Disorder and higher than that reported by persons with chronic medical illnesses.

In a more recent study, Stein and Kean (2000) administered the Quality of Well-Being Scale to persons with social phobia who participated in the Mental Health Survey Supplement of the Ontario Health Survey. The Quality of Well-Being Scale assesses seven indicators: energy, control of emotion, state of morale, interest in life, perceived stress, perceived health status, and satisfaction with relationships. A diagnosis of social phobia (both past year and lifetime diagnosis) was associated with lower quality of well-being, even after adjusting for age, gender, and comorbid lifetime depression. In addition, a series of questions was asked about the participants' satisfaction with life in five domains: their main activity, family relationships, friendships, leisure activities, and income. A diagnosis of social phobia (both past year and lifetime diagnosis) was associated with a significantly greater likelihood of reporting dissatisfaction in all of the five domains compared to that reported by persons without social phobia.

These studies indicate that persons with social phobia have a lower perceived quality of life in multiple domains when compared to normal controls and other groups such as those with chronic medical problems. No studies have examined quality of life among shy persons. Therefore, a comparison of perceived quality of life among shy persons and persons with social phobia cannot currently be made.

## **Sociability**

Researchers have suggested that, although socially inhibited individuals may display similar behavior (e.g., inhibition in and avoidance of social situations), there are different underlying factors driving this behavior. Developmental researchers, for example, who study social isolation among children, have identified multiple causes for social reticence including fear of social interaction, peer rejection, and preference to be alone (Asendorpf, 1993). Unsociability, or a preference to be alone, is a possible factor underlying social withdrawal and avoidance. Persons with social phobia may vary from shy persons on this dimension. Persons with social phobia desire but fear social situations; therefore, they are unlikely to be highly unsociable. Shy persons, however, may have varying degrees of sociability.

Cheek and Buss (1981) demonstrated that shyness and sociability are related but different constructs. They found shyness (defined as uncomfortableness and nervousness in social situations) to be moderately related (i.e., correlation of  $-.3$ ) to sociability (defined as preference to be alone). Therefore, shyness is not merely low sociability and shy persons may vary in terms of their sociability. Cheek and Buss (1981) also found that shyness was related to fearfulness ( $.50$ ) but sociability was not ( $-.09$ ), and that shyness was negatively related to self esteem ( $-.51$ ) but sociability was not ( $.18$ ).

Other studies have replicated the findings that sociability and shyness are correlated but not the same construct (Bruch, Rivet, Heimberg, Hunt, & McIntosh, 1999; Jones et al., 1986; Schmidt & Fox, 1994). For example, Jones et al. (1986) found a correlation of  $-.55$  between sociability and shyness. Eisenberg, Fabes, and Murphy (1995) found that shyness is associated with measures of emotionality (e.g., intensity,

negative affect, and distress) whereas low sociability was unrelated to negative emotionality. Thus, shy persons appear to be more anxious and fearful than unsociable persons.

Cheek and Buss (1981) also examined shyness and sociability in a laboratory setting using a behavioral assessment task involving a social interaction. The results indicated that the shy/sociable group talked less, averted eye contact more, and engaged in more nervous self-manipulations than other groups. However, Bruch et al. (1989) and Schmidt and Fox (1994) were unable to replicate these findings. The latter two studies did find psychophysiological differences between shy, sociable individuals and unsociable ones. Bruch et al. (1989) found that the unsociable/non-shy group had significantly less of an increase in autonomic arousal during the social interaction than other groups. Schmidt and Fox (1994) found that the shy/sociable group had higher, more stable heart rates than the other groups.

### **Social Skills**

Two prominent hypotheses have been put forth about socially inhibited behavior and social skills (e.g., Stravynski & Amado, 2000). One hypothesis is that socially inhibited persons, such as shy persons or persons with social phobia, do not have the social skills needed to perform well in social situations. According to this hypothesis, a lack of social skills results in negative social experiences, which then leads to increased anxiety and further withdrawal from social situations. This cycle has also been discussed in the childhood literature. Specifically, literature on social withdrawal in childhood suggests that children who are socially withdrawn during their formative years may not develop adequate social skills due to a lack of socialization. This lack of socialization in

turn leads to more failed interactions and in turn, to more inhibited behavior (Rubin & Mills, 1988). Thus, persons who are socially anxious and withdrawn may not have the skills needed to attain and maintain successful social relationships.

Another prominent hypothesis is that shy and socially anxious individuals have adequate social skills, but that their anxiety inhibits their performance (Juster, Heimberg, & Holt, 1996). Their poor performance leads to negative experiences and further social withdrawal. This hypothesis rests on the Yerkes-Dodson inverted-U arousal and performance relationship, which states that moderate levels of arousal will enhance performance but excessive arousal will impede performance (Yerkes & Dodson, 1908).

The answer to this question of whether socially inhibited persons have social skills deficits or whether they have adequate social skills that are impaired by anxiety has important treatment implications for social phobia. If persons with social phobia have social skill deficits, treatment should include social skills training. Improved social skills could lead to more successful social interactions and reduced anxiety. If, on the other hand, persons with social phobia have adequate skills and it is the anxiety that interferes with their ability to perform in social situations, treatment should focus on extinguishing the anxiety (i.e., exposure) and social skills training would not be indicated. Some treatment programs (e.g., Social Effectiveness Therapy; Turner, Beidel, Cooley, Woody, & Messer, 1994) incorporate both social skills training and exposure. However, the literature on the efficacy of a social skills training component is sparse and mixed (Nathan & Gorman, 1998).

### *Social Skills and Social Anxiety*

Early studies examined the social skills of individuals reporting high levels of “social anxiety” on self-report instruments. It is unclear how many of these studies included persons with social phobia and how many of the subjects could have been labeled as shy. These studies examined the social skills of college students who reported being more anxious in social situations than their peers on self-report instruments. They used a behavioral assessment task (BAT) that typically required participants to engage in an unstructured conversation with another person for 3-5 minutes or to give a speech in front of a small audience.

In many of these studies, anxious students were judged by independent raters as being less socially skilled than non-anxious students (Arkowitz, Lichtenstein, McGovern, & Hines, 1975; Beidel, Turner, & Dancu, 1985; Borkovec, Stone, O’Brien, & Kaloupek, 1974; Dow, Biglan, & Glaser, 1985; Glasgow & Arkowitz, 1975; Greenwald, 1977; Halford & Foddy, 1982; Twentyman & McFall, 1975). Relatively few differences on specific behavioral measures such as time spent talking, number of smiles and nods, or facial gaze were detected (Arkowitz et al., 1975; Beidel et al., 1985; Borkovec et al., 1974; Dow et al., 1985; Glasgow & Arkowitz, 1975; Greenwald, 1977). Therefore, differences were detected primarily when using global measures of social skill. Other studies, however, did not find differences between anxious and non-anxious groups on either global or molecular-level measures of social skill (Clark & Arkowitz, 1975; Himadi, Arkowitz, Hinton, & Perl, 1980; Wessberg, Mariotto, Conger, Farrel, & Conger, 1979).



Among the studies that asked the participants to rate their own performance during the BAT, all found that the anxious group rated themselves to be less socially skilled compared to the non-anxious group (Borkovec et al., 1974; Clark & Arkowitz, 1975; Glasgow & Arkowitz, 1975; Wessberg et al., 1979). In some studies, the participants' perceptions were consistent with judges' ratings, supporting the social skills deficit hypothesis (Borkovec et al., 1974; Glasgow & Arkowitz, 1975). However, in other studies, their perceptions were inconsistent with judges' ratings, suggesting that socially anxious persons are overly critical of their own performance (Clark & Arkowitz, 1975; Wessberg et al., 1979).

Thus, the majority of these studies suggest that socially anxious persons are less socially skilled than non-anxious persons, but a significant number of studies did not replicate these findings. When differences in social skills were found, they were based primarily on global measures of social skill with very few specific behavioral measures discriminating between groups. In most studies, anxious participants' perceived their own skill to be lower than that of their non-anxious peers, but evidence was mixed as to whether independent raters agreed with their perceptions.

Another study by Shackman, Beidel and Turner (in preparation) took a different approach to investigating whether socially anxious persons have social skills deficits. Highly socially anxious students and non-anxious students participated in either a role-play task or a task requiring them to respond in writing to a series of written behavioral vignettes. The study found that independent judges rated the socially anxious individuals as less skilled than the non-anxious group in both the written and role-play tasks. Thus, this study suggests that the anxious group had less knowledge of socially-appropriate and

skillful responses, even when not in a social situation (i.e., the written task), and that their performance in the role-play was not inhibited by anxiety. This study supports the social skills deficit hypothesis.

### ***Social Phobia and Social Skills***

Some studies have examined social skills among persons with social phobia. Rapee and Lim (1992) compared the social skills of persons with social phobia and normal controls during a brief speech. Results showed that observers' ratings of the social skills of persons with social phobia were not significantly worse than their ratings of normal controls using either global or specific measures. However, social phobics' self-ratings of their skill were significantly lower than judges' ratings, and significantly lower than the self-ratings of normal controls. Alden and Wallace (1995) compared the social skills of persons with social phobia to normal controls during an unstructured conversation. Persons with social phobia were judged to have less verbal behavior and more anxiety, to convey less warmth, and to be rated as less likeable than controls. Social phobics' ratings of their own performance were significantly worse than the experimenters' ratings.

Another study by Hofmann, Gerlach, Wender, and Roth (1997) found that, compared to normal controls, persons with social phobia showed longer and more frequent pauses during a speech task, but did not differ on several measures of facial gaze. In an earlier similar study, Hofmann, Neuman, Ehlers, and Roth (1995) found that persons with social phobia spoke for less time during a public speaking task than normal controls.

Overall, these findings are mixed with some studies finding differences in social skill among persons with social phobia and normal controls and others not finding differences. The studies were consistent in their finding that persons with social phobia rated their own performance in a behavioral task lower than judges' ratings.

Other studies examined the performance of persons with social phobia in behavioral tasks but did not compare their performance to a control group. Instead, they compared the performance of persons with social phobia by subtype (generalized versus specific) or by the presence of Avoidant Personality Disorder (APD). Overall, these studies found that those with more severe pathology had poorer social skills, but most of the results were not significant (Herbert, Hope, & Bellack, 1992; Tran & Chambless, 1995; Turner et al., 1992). However, one study by Turner et al. (1986a) found significant differences in social skill between those with APD and those with social phobia. Those with APD were rated as less skillful than persons with social phobia and differences were also found on two specific measures (gaze and tone of voice). Two recent studies examined the social skills of children with social phobia (Beidel et al., 1999; Spence, Donovan, & Brechman Toussaint, 1999). In both studies, children with social phobia were rated as having poorer social skills than normal controls.

Thus, the evidence on whether persons with social phobia have social skills deficits is mixed. Some studies found that differences in social skill may exist between persons with social phobia and normal controls (both adults and children) and between different diagnostic groups, and other studies did not find such differences.

### *Shyness and Social Skills*

A handful of studies have investigated social skills among shy persons compared to non-shy persons. Pilkonis (1977a) compared the social skills of shy and non-shy persons during an unstructured social interaction and a speech task. The study found differences between the shy and non-shy groups on some specific behavioral measures for the conversation task, such as latency to speech, gaze, and time spent talking, but not on others such as gesturing and self-manipulation. Shy persons were judged to be more nervous than the non-shy during their speech, but their speeches were not judged to be poorer in terms of content or style.

Cheek and Buss (1981) also examined social skills among shy and non-shy persons during an unstructured conversation task. In this study, shy persons talked for less time than the non-shy. Shy participants who were also sociable (desired social interaction) engaged in more self-manipulation than others and also exhibited more gaze aversion than the non-shy participants. Independent observers rated the shy, sociable participants as more tense, inhibited, and unfriendly compared to the other groups. In addition, the shy group reported feeling more tense, worried and uncomfortable than the non-shy group.

In another study, Hill (1989) investigated shy persons' knowledge of appropriate social behaviors and their perceptions of their ability to engage in such behaviors. This study found that shy persons could identify appropriate social behaviors as well as the non-shy. However, the shy reported lower perceived ability to engage in the behaviors. The author suggested that shy persons have the knowledge needed to perform in social

situations, but report not being able to do so. These findings are consistent with the hypothesis that anxiety interferes with performance.

Two studies found that shy persons perceived themselves to be socially unskilled (Matsushima, Shiomi, & Kuhlman, 2000; Miller, 1995). In addition, Pilkonis (1977b) found that shy persons reported that a failure to respond in social situations was the most bothersome aspect of their shyness. Therefore, shy persons appear to negatively evaluate their social skills and to be quite distressed by their social awkwardness.

In summary, based on these findings, it is unclear if persons with social phobia and shy persons have social skill deficits or not. They do, however, appear to rate their own performance more critically than others. There may be different groups of individuals that vary in terms of their social skill and anxiety, including persons without social skill deficits, persons with social skills who are unable to perform due to high anxiety, and persons with social skills who can perform but experience intense internal discomfort when doing so. The latter two groups are similar to the subgroups of shy persons that Pilkonis (1977b) described as “publicly” and “privately” shy.

### **Physiological Reactivity**

Studies suggest that both shy persons and persons with social phobia may have different physiological responses when in social situations compared to normals. These findings are consistent with findings that both shy persons and persons with social phobia report experiencing numerous somatic symptoms during social situations including heart palpitations, trembling, shaking, sweating, and blushing.

Turner et al. (1986b) found that when participating in an impromptu speech, persons with social phobia had higher systolic blood pressure increases between baseline

and the task, but not significantly higher heart rate increases than normal controls. No differences were found in arousal during other unstructured conversation tasks. Other studies did not find differences in reactivity as measured by heart rate between persons with generalized social phobia and normal controls during a speech task (Hofmann et al., 1995; Levin et al., 1993). Another study found differences in physiological response between the specific and generalized subtypes of social phobia, with the former being more reactive (Heimberg, Hope, Dodge, & Becker, 1990).

Studies of shy persons suggest that shy persons are more easily aroused than non-shy persons. In an early study, Brodt and Zimbardo (1981) examined differences in heart rate between shy and non-shy female college students during a social situation with a male. They found that heart rate increased significantly more among the shy group compared with the non-shy group during the social interaction. Addison and Schmidt (1999) conducted a study on risk-taking and shyness. In this study, the mean change in heart rate from baseline to the risk taking task was significantly higher for the shy group compared to the non-shy group.

In another study, the relationship between psychophysiology, shyness, and sociability was investigated. Schmidt and Fox (1994) found that shy/sociable participants displayed a significantly higher and more stable heart rate during a behavioral assessment task than shy/unsociable participants and non-shy/sociable participants. Thus, those who were shy but desirous of social situations had the highest, most stable heart rate. Together, these findings suggest that shy persons may have different psychophysiological responses to social situations than non-shy persons.

## **Chapter 4: Preliminary Studies**

The studies described above provide preliminary evidence on the relationship between shyness and social phobia. The disparate prevalence rates of the two conditions suggest that they are not the same condition, but studies suggest that they are similar in terms of their symptomatology, social skill, and physiological arousal during social situations. Both conditions appear to cause significant distress and impairment, but social phobia may be associated with greater distress and impairment than shyness.

The studies reviewed thus far did not compare the two conditions in the same study. However, a few studies have directly compared shyness and social phobia. Two of the studies focused on the prevalence of social phobia among shy persons. The third, an unpublished dissertation study, compared persons with social phobia, shy persons, and normal controls on numerous dimensions. Although this study suffers from significant methodological flaws, it is suggestive of potential relationships between the two conditions and is included in the review below.

### **Overlap of Shyness and Social Phobia**

In two recent studies, the relationship between social phobia and shyness was examined (Chavira, Stein, & Malcarne, 2002; Heiser, Turner & Beidel, 2003). Heiser, Turner and Beidel (2003) examined the prevalence of shyness, social phobia, and other psychiatric diagnoses in a sample of college students. Shyness was assessed with the widely used shyness instrument, the Revised Cheek and Buss Shyness scale. A structured clinical interview, the Composite International Diagnostic Interview (CIDI), was used to determine if participants met criteria for social phobia as well as other psychiatric disorders.

In the Heiser, Turner, and Beidel (2003) study, 48% of the sample was identified as shy whereas only 10% met criteria for social phobia. The prevalence of social phobia was significantly higher among shy persons (18%) compared to non-shy persons (3%). The small percentage of non-shy persons with social phobia (n=3) had shyness scores just below the cutoff or had only one specific social fear, such as a fear of writing in public. The majority of shy individuals (82%) did not meet criteria for social phobia.

Therefore, social phobia appears to represent a subset of the shy population. Although there was a moderate relationship between social phobia and the severity of shyness, this relationship was not strong enough to differentiate the two groups. Shy persons also were more likely to have other psychiatric disorders including other anxiety disorders and mood disorders compared to the non-shy group.

The other study (Chavira, Stein, & Malcarne, 2002) found that the prevalence rate of social phobia increased as shyness increased. However, a significant proportion of the very shy groups (i.e., those with shyness scores at the 90th, 95th, and 98th percentiles or above) did not meet criteria for social phobia. For example, of the participants at the 90<sup>th</sup> percentile of shyness and above, only 27% met criteria for generalized social phobia. These two studies suggest that social phobia is associated with higher levels of shyness, but that other factors need to be identified to delineate the two groups.

### **Comparison of Shyness and Social Phobia**

Another study (an unpublished dissertation study by Dennis, 1992) aimed to examine differences between persons with social phobia, shy persons, and non-shy persons. However, the non-shy persons were not assessed to ensure that they did not meet criteria for social phobia or other psychiatric disorders. In addition, the shy group



was assessed using a standard semi-structured interview (ADIS-R), but the results of whether or not any of them met criteria for social phobia or other disorders were not reported. Furthermore, based on the results that were reported (i.e., responses to specific ADIS-R questions), it appears likely that some of the shy persons did indeed meet criteria for social phobia. Therefore, the methodology used to define the groups did not ensure that the groups were mutually exclusive, and they most likely were not. Although this methodological problem limits the usefulness of the study's results, the findings may be suggestive and are discussed next.

With the given limitations noted above, Dennis (1992) identified the three groups labeled as persons with social phobia, shy persons, and normal controls. These groups were then compared in terms of (1) their shyness, anxiety, and avoidance patterns; (2) their performance in a social interaction with a member of the opposite sex as rated by independent raters and the participants' thoughts during this interaction; and (3) constitutional factors (i.e., perceptions of parents' anxiety and degree of past shyness).

The study found that the mean scores on the shyness and social anxiety measures were significantly different for all groups, with the non-shy reporting the lowest levels of shyness and social anxiety, followed by the shy, and then by those with social phobia. The ratings on these scales were highly correlated ( $r = .7-.8$ ). In terms of the nature of their fears, the study found that persons with social phobia rated feared situations similarly to that of shy persons, but they reported significantly more fear of attending a party, using a public restroom, and talking to authority figures. The two groups reported similar somatic complaints.

A pronounced difference was found for avoidance of social situations. Persons with social phobia avoided all 11 situations assessed to a significantly greater extent than shy persons. Thus, the avoidance behavior was more pervasive and substantial among persons with social phobia compared to shy persons. A significantly higher proportion of persons with social phobia (100%) reported that their social fears interfered with their functioning compared to shy persons (21%). Similarly, persons with social phobia rated the degree of interference and impairment significantly higher than shy persons.

In a social interaction task, shy persons and persons with social phobia rated themselves as experiencing significantly less positive affect, more negative affect, higher levels of anxiety and worry, and more somatic complaints than the non-shy. However, based on independent ratings of participants' skill in the social interactions, no significant differences between groups were found. That is, differences between the social skills of persons with social phobia, shy persons, and non-shy persons did not emerge.

Overall, this study found that persons with social phobia reported higher levels of shyness and anxiety compared to shy persons. In addition, persons with social phobia reported more behavioral symptoms (i.e., avoidance patterns) and a higher degree of impairment in their functioning than shy persons. However, persons with social phobia reported similar cognitive and somatic symptoms as shy persons. Although persons with social phobia reported higher levels of fear and anxiety as well as higher levels of impairment in functioning, independent raters were not able to detect differences in the social skills of shy persons compared to those of persons with social phobia during a

social interaction. In addition, the social skills of shy persons and those with social phobia did not differ from those of the non-shy individuals.

The author noted that there were some limitations that may have impeded the ability of the raters to assess the social interactions and the study's ability to detect differences in the social skills of these groups (e.g., poor video tape quality, small sample size). In addition, the methodological limitations discussed above may have contributed to the failure to detect differences between the groups.

### **Implications**

Although the relationship between shyness and social phobia remains unclear, the literature suggests that they share many features (e.g., somatic and cognitive symptoms), but may vary on others (e.g., level of avoidance and impairment). Recent studies suggest that those with social phobia represent a subset of the shy population. However, the factors that distinguish the subset of shy persons with social phobia from other shy persons remains to be examined in an empirically sound study.

The hypothesis that shyness and social phobia are completely different conditions ignores the literature reviewed above that demonstrates the similarities between the two conditions and the finding that most individuals with social phobia are also shy. The hypothesis that shyness and social phobia are the same condition ignores the discrepancy in their prevalence rates, which clearly indicates that they are not the same condition. The literature also suggests that social phobia is not merely extreme shyness. Many very shy persons do not meet criteria for social phobia. It is unclear if these persons are similar to persons with social phobia in all respects except the level of impairment, or if

they are different from persons with social phobia in other regards such as their symptomatology, social skills, sociability, or arousability.

This study compared persons who are very shy but do not meet criteria for social phobia to those who are very shy and do meet criteria for social phobia. The findings provided information about what sets the subgroup of persons with social phobia apart from other shy persons.

## **Chapter 5: Study Methodology**

As summarized above, the difference between the conditions of shyness and social phobia remains unknown. It is unclear why some shy persons do not meet criteria for social phobia, despite reporting high levels of shyness. This study was designed to identify factors that differentiate shy individuals with social phobia from those without social phobia. Two groups of shy individuals were identified; one group met diagnostic criteria for social phobia and one group did not meet criteria for social phobia or any other psychiatric diagnoses. By comparing two groups that are similar in terms of shyness but who differ in terms of their social phobia diagnostic status, factors that delineate the two groups can be identified. The two groups were also compared to a group of non-shy individuals who did not meet criteria for social phobia or any other psychiatric disorder. Thus, three groups were included in this study: (1) shy persons with social phobia (referred to as the social phobia group); (2) shy persons without social phobia or other psychiatric diagnoses (referred to as the shy group); and (3) non-shy persons without social phobia or other diagnoses (referred to as the non-shy group).

The following characteristics of the three groups were examined:

### Symptomatology

- Feared social situations
- Avoided social situations
- Somatic symptoms experienced in social situations
- Cognitive symptoms
- Sociability
- Functional impairment

- Quality of life

#### Social Skills during Behavioral Assessment Tasks

- Self-reported ratings of anxiety and effectiveness during behavioral assessment tasks
- Independent ratings of anxiety and effectiveness during behavioral assessment tasks
- Independent ratings of molecular behaviors (e.g., eye contact) during behavioral assessment tasks

#### Physiological Arousal during Behavioral Assessment Tasks

- Heart rate during behavioral assessment tasks
- Skin conductance during behavioral assessment tasks

### **Participants**

A total of 78 individuals participated in this study. The majority of the participants (n = 61; 78.2%) were students at the University of Maryland, College Park who were enrolled in introductory psychology courses. The other 17 participants were recruited from persons seeking participation in a social phobia treatment study being conducted at the Maryland Center for Anxiety Disorders at the University of Maryland, College Park. Ten of these participants (58.8%) were students at the University of Maryland, College Park.

The characteristics of the sample are presented in Table 1. The sample consisted of 34 women (43.6%) and 44 men (56.4%). Their ages ranged from 18-41, with a mean age of 20.7 years and a standard deviation of 4.3 years. Of the 78 participants, 64.1% were Caucasian, 14.1% were Asian, 14.1% were African American, 5.1% were Hispanic,

and 2.6% were of other race and ethnic groups. Over half of the participants (57.7%) reported coming from households with annual incomes of \$75,000 or greater and 60.2% of the participants reported coming from households in the upper or upper-middle socioeconomic categories.

Table 1  
*Demographic Characteristics of Study Participants*

Variable	Number	Percent
Gender		
Female	34	43.6
Male	44	56.4
Race/Ethnicity		
African American	11	14.1
Asian	11	14.1
Caucasian	50	64.1
Hispanic	4	5.1
Other	2	2.6
Income		
< \$25,000	6	7.7
\$25,000-49,999	12	15.4
\$50,000-74,999	15	19.2
\$75,000-99,999	15	19.2
\$100,000 +	30	38.5
SES		
Lower SES	5	6.4
Lower-Middle SES	5	6.4
Middle SES	21	26.9
Upper-Middle SES	38	48.7
Upper SES	9	11.5
Total	78	100.0
Average Age (SD)	20.7 (4.3)	

The sample included shy persons with social phobia ( $n = 25$ ), shy persons without social phobia or other psychiatric diagnoses ( $n = 26$ ), and non-shy persons with no psychiatric diagnoses ( $n = 27$ ). Shyness was assessed using the Revised Cheek and Buss

Shyness scale (RCBS). Psychiatric diagnoses were determined through the use of structured or semi-structured interview schedules. Specifically, participants who were recruited from introductory psychology courses were diagnosed with the Composite International Diagnostic Interview-Automated, Version 2.1 (CIDI-Auto; World Health Organization, 1993).

Persons seeking participation in the social phobia treatment study at the Maryland Center for Anxiety Disorders were diagnosed with the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV) (Di Nardo, Brown, & Barlow, 1995). Participants were included in the social phobia group if they had a diagnosis of generalized social phobia and were excluded if they had a diagnosis of specific social phobia. Those with specific social phobia have been shown to be different from those with multiples social fears (Stein, Walker, & Forde, 1996; Liebowitz et al., 1992).

Comparisons of demographic data across the three groups were conducted (Table 2). There was no significant relationship between group membership and gender ( $\chi^2(2, N = 78) = 4.57, p > .05$ ). There was a significant relationship between group membership and race/ethnicity ( $\chi^2(2, N = 78) = 8.57, p < .05$ ); 57.7% of the shy group was non-white, compared with 29.6% of the non-shy group and 20.0% of the social phobia group. Similarly, age was significantly related to group membership ( $F(2, 75) = 10.98, p < .05, \eta^2 = .226$ ). Bonferroni-adjusted pairwise comparisons revealed that those in the social phobia group were significantly older than those in the other two groups ( $M(\text{social phobia}) = 23.6$  years,  $M(\text{shy}) = 19.5$  years,  $M(\text{non-shy}) = 19.1$  years); the latter two groups did not differ from one another in terms of age. In subsequent analyses, group



differences in age and race/ethnicity were controlled for statistically. Race/ethnicity and age were not significant covariates unless specifically noted.

Table 2

*Demographic Characteristics by Group*

Variable	Social Phobia (n = 25)		Shy (n = 26)		Non-Shy (n = 27)		Test Statistic
	#	%	#	%	#	%	
Gender							
Female	10	40.0	8	30.8	16	59.3	$\chi^2 (2, N = 78) = 4.57, p > .05$
Male	15	60.0	18	69.2	11	40.7	
Race/Ethn.							
Non-White	5	20.0	15	57.7	8	29.6	$\chi^2 (2, N = 78) = 8.57, p < .05$
White	20	80.0	11	42.3	19	70.4	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Age	23.6	6.4	19.5	1.9	19.1	1.3	$F(2, 75) = 10.98, p < .05,$ $\eta^2 = .226$

Seven of the individuals with social phobia (28.0%) had additional psychiatric diagnoses. One had a comorbid diagnosis of Major Depressive Disorder (MDD), three had a comorbid diagnosis of Generalized Anxiety Disorder (GAD), one had a diagnosis of GAD and Substance Abuse, one had a diagnosis of MDD and Substance Abuse, and one had comorbid diagnoses of GAD, Dysthymia and Substance Abuse. Participants in the other two groups were only included if they did not have psychiatric disorders.

**Assessment Instruments**

***Shyness***

- **Revised Cheek and Buss Shyness Scale (RCBS).** The Revised Cheek and Buss Shyness scale (RCBS; Cheek, 1983) was used to assess shyness. The RCBS is a 13 item self report survey that has a scale range of 13 to 65. The RCBS, which

has been characterized as "the measure of choice" in shyness studies (Leary, 1991), assesses both affective and behavioral aspects of shyness. Studies of the RCBS reported an internal consistency of .90 (Cronbach's alpha); an average inter-item correlation of .39; and a 45 day test retest reliability of .88 (Leary, 1991). In addition, the RCBS had adequate convergent validity, correlating highly with many other measures of shyness, including other self-report measures and aggregated ratings of shyness by friends and family (Leary, 1991).

### *Psychiatric Diagnoses and Symptomatology*

- **Composite International Diagnostic Interview (CIDI).** Study participants from introductory psychology classes were assessed for psychiatric diagnoses with the Composite International Diagnostic Interview-Automated Version, Version 2.1 (CIDI-Auto; World Health Organization, 1993). The CIDI is a fully structured interview schedule that assesses for DSM-IV Axis I disorders present in the past 12 months. In this study, the CIDI was self-administered on a computer by the study participants. In addition, information on social fears, avoidance of social situations, and somatic symptoms experienced in social situations was collected with the CIDI. Studies have established the psychometric properties of the CIDI when administered by a clinician or lay person and when self administered (Andrews & Peters, 1998; Blanchard & Brown, 1998; Peters & Andrews, 1995; Wittchen, 1994). Interrater reliability as assessed by kappa was greater than .9 for the majority of disorders and greater than .7 for all disorders (Wittchen, 1994). Test-retest reliability has been shown to be adequate with kappas ranging from .5 to .8 for the various disorders, with an average test-retest kappa of .68 (Wittchen,

1994). Validity studies have found adequate concordance rates between the CIDI and clinicians' checklists ( $\kappa = .76$ ) and between the CIDI and independent clinicians' diagnoses (kappas ranging from .73 to .83; Wittchen, 1994). Studies of the automated version have shown acceptance of the computerized format by participants (Andrews & Peters, 1998; Peters, Clark, & Carroll, 1998). In addition, the validity of the CIDI among a similar study sample was established in a prior study on shyness and social phobia by Heiser, Turner, and Beidel (2003).

- **Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV).** Study participants seeking participation in a social phobia treatment study at the Maryland Center for Anxiety Disorders were assessed for DSM-IV Axis I psychiatric diagnoses using the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Di Nardo, Brown, & Barlow, 1995). The ADIS-IV is a clinician-administered, semi-structured interview. The ADIS-IV was also used to collect information on social fears, avoidance of social situations, and somatic symptoms experienced during social situations.

### *Self-Report Assessments*

- **Quality of Life Inventory (QOLI).** The Quality of Life Inventory (QOLI; Frisch et al., 1992) was used to assess participants' perceptions of their well-being and satisfaction with life. The QOLI assesses overall life satisfaction and satisfaction within various domains (e.g., work, health, friendships, love relationships, and living conditions). Domains that are highly valued by the respondents are given more weight than those that are less valued. Norms for the QOLI are available for clinical and non-clinical groups. Frisch et al. (1992) reported the following

psychometric properties of the QOLI. Using three different clinical samples and three different non-clinical samples, test-retest reliabilities ranged from .80 to .91 and internal consistency coefficients ranged from .77 to .89. In addition, the QOLI was significantly and positively correlated with seven related measures of subjective well-being, including peer- and clinician-rated measures. The QOLI was significantly and negatively correlated with measures of psychopathology and it discriminated between clinical and non-clinical groups.

- **Liebowitz Self-Rated Disability Scale (LSRDS).** The Liebowitz Self-Rated Disability Scale (LSRDS; Schneier et al., 1994) was used to assess impairment due to emotional problems, in this case social fears. This self-report instrument assesses impairment in the domains of education, employment, daily living, and family, social and romantic relationships. In addition, the scale includes items about alcohol abuse, drug abuse, and mood dysregulation. Schneier et al. (1994) reported that the internal consistency of the scale was high ( $\alpha = .92$ ) and that it distinguished between a group of persons with social phobia and normal controls. The scale was also significantly and positively correlated with similar disability measures (e.g., Disability Profile, Sheehan Disability Scale) and moderately correlated with symptom inventories such as the Liebowitz Social Anxiety Scale (Schneier et al., 1994).
- **Social Thoughts and Beliefs Scale (STABS).** The Social Thoughts and Beliefs Scale (STABS; Turner, Johnson, Beidel, Heiser, & Lydiard, 2003) was used to assess negative social cognitions. STABS is a 21-item, self-report inventory designed to assess the presence of various pathologic cognitions in those with

social phobia. The scale was empirically derived and was found to differentiate persons with social phobia from those with other anxiety disorders and from those with no psychiatric disorders. The inventory also was found to have adequate test-retest reliability and internal consistency (Turner et al., 2003).

- **Cheek and Buss Sociability Scale.** The five-item Cheek and Buss Sociability Scale (Cheek & Buss, 1981) was used to assess one's preference for being with others. Bruch et al. (1989) found the scale to have adequate internal consistency ( $\alpha = .76$ ) and divergent validity (i.e., sociability was weakly correlated with fearfulness and public self-consciousness and moderately correlated with shyness).

### ***Behavioral Assessment***

- **Subjective Units of Distress Scale (SUDS).** A Subjective Units of Distress (SUDS) scale was used to assess participants' anxiety during the tasks. The scale ranged from 0 to 8, with zero being no anxiety and 8 being intense anxiety.
- **Behavioral Tasks.** A series of behavioral tasks were used to assess social skills and physiological arousal. They included: (a) an unstructured interpersonal interaction with a confederate of the opposite gender; (b) an unstructured interpersonal interaction with a confederate of the same gender; and (c) an impromptu speech. During the tasks, physiological arousal was monitored and the participants were videotaped. Participants reported their level of anxiety and an estimate of their skill after completion of the tasks. (See "Procedures" section below for more details).

- **Social Skills and Anxiety Rating Scales.** Likert scales were used by independent raters to rate overall skill and anxiety during the conversation (i.e. role play) tasks and the speech. These scales have been used in previous assessments of skill and anxiety in similar tasks (Turner et al., 1986a; Turner et al., 1994). Participants also rated their overall skill and anxiety using these scales so that their perceptions of their performance and level of anxiety could be compared to those of the independent raters.
- **Social Performance Rating Scale (SPRS).** The Social Performance Rating Scale (SPRS; Fydrich, Chambless, Perry, Buergener, & Beazley, 1998) was used to assess the participants' performance during the behavioral assessment tasks. Specifically, the SPRS was used to assess conversation flow, voice quality, length of response, gaze, and discomfort during the role play tasks and to assess voice quality, gaze, and discomfort during the speech task. The psychometric properties of this rating scale were reported by Fydrich et al., 1998. They found that the sum of the ratings yields an internally consistent total score ( $\alpha = 0.72$ ) and that interrater reliabilities were adequate, ranging from .75 to .95 for individual items and equaling .93 for the total score. Convergent validity was demonstrated with moderate to large correlations between the SPRS and instruments measuring related constructs (e.g., social reticence and social anxiety). Divergent validity was demonstrated by low correlations between the SPRS and a measure of general anxiety. Finally, the rating system was able to discriminate between social performance of persons with social phobia, those with other anxiety disorders, and normal controls.

See Appendix B for unpublished assessment instruments.

### ***Physiological Assessment***

Skin conductance and heart rate were monitored continuously throughout the behavioral assessment tasks using the Biopac MP100 Data Acquisition System. Biopac's AcqKnowledge 3.7 software was used to analyze the data. Heart rate was measured using the noninvasive NIBP100 for the first 25 participants. This device provides a measurement of heart rate via assessment of blood pressure. The device uses a wrist sensor that applies variable pressure directly above the radial artery, continuously measuring pulse pressure. Because calibration of this device for each participant proved to be more time consuming than anticipated, heart rate was measured using two pre-gelled disposable electrodes for the remaining participants. These electrodes were placed by the participant on his or her rib cage.

For all participants, palmar sweat gland activity (skin conductance level) was measured in microSiemen with the BIOPAC GSR100C using a constant voltage method. Silver-silver chloride, unpolarizable, finger electrodes were placed on the subject's index and middle fingers of the non-dominant hand and contained isotonic recording gel. One ground was placed on the lower arm.

### **Procedures**

#### ***Participant Recruitment***

Participants for this study were recruited from either introductory psychology courses at the University of Maryland, College Park or from persons seeking participation in a social phobia treatment study being conducted at the Maryland Center for Anxiety Disorders at the University of Maryland, College Park.

Students in introductory psychology courses at the University of Maryland were required to participate in research studies or write research papers. Students who chose to participate in research projects completed the shyness measure at the beginning of the semester. The RCBS was completed by 1,303 students over a one year time period. The RCBS scores of these students were used to determine the mean and standard deviation of the RCBS. The mean RCBS was 33.0 with a standard deviation of 9.5. Students with an RCBS score equal to one standard deviation above or below the mean were eligible to participate in the study. Thus, individuals with RCBS scores of 24 and below or 43 and above were eligible to participate in the study.

Students were informed of their eligibility for the study by electronic mail (i.e., E-mail). Students who were interested in the study used an electronic system to sign up for the study. When participants arrived for the study, the experimenter reviewed the consent form orally and the participants read and signed the consent form. The participant then completed the Composite International Diagnostic Interview-Automated Version (CIDI-Auto) on a computer in a private room. Participants who met criteria for one of the three groups based on their diagnostic status then participated in the behavioral assessment tasks and completed the self-report measures.

After the study was completed, students met with the experimenter for a debriefing about the study and they were provided a debriefing memorandum. Participants in the study who had a psychiatric disorder based on the CIDI were interviewed by the experimenter during the debriefing and referrals for assessment and treatment services were made as needed.



Seventeen participants, 10 of whom were students, were recruited from the social phobia treatment study being conducted at the Maryland Center for Anxiety Disorders. This study recruited participants through newspaper and radio advertisements. Individuals who responded to the advertisements and were appropriate for the study came to the Maryland Center for Anxiety Disorders for an assessment. Individuals who met criteria for generalized social phobia using the ADIS-IV were invited to participate in this study in addition to the treatment study. Participants completed the consent process for this study and participated in the study as described above.

### ***Behavioral Assessment Tasks***

#### ***Baseline***

Prior to presentation of the behavioral tasks, the participants' baseline level of physiological arousal was assessed during a 5-minute resting period. The physiological monitoring equipment was placed on the participant as described above. The participant was asked to sit quietly for 5 minutes while baseline levels were measured. The participant then gave a SUDS rating for the baseline period. Heart rate and skin conductance levels were recorded continuously during the baseline period and the behavioral assessment tasks.

#### ***Role Play Tasks***

The participants engaged in two unstructured conversation tasks, one with an opposite-gender confederate and one with a same-gender confederate. The participant was instructed to act as if the situation was actually happening. Confederates were trained to remain neutral during the interaction, leaving the burden of conversation maintenance on the participant. Scenarios were presented to the participant by the

experimenter. One scenario required the participant to imagine that the confederate was someone seated next to him/her at a dinner party. The other scenario required the participant to imagine that the confederate was a new neighbor. The scenarios and order of role play (same versus opposite gender confederate) were counterbalanced. After presentation of the scenario, the participant was instructed to begin the interaction. Each interaction lasted 3 minutes. After the tasks were completed, the participant provided a SUDS rating for the role play tasks. In addition, they provided anxiety and effectiveness ratings using the Likert scales.

### *Speech Task*

After the role play tasks, the participant engaged in an impromptu speech task. The participant was given a 3 minute period to select topics from among a list of topics and prepare for the speech. The participants then delivered a 5 minute speech. The two confederates and the experimenter served as the audience. At the end of the task, participants provided a SUDS rating and ratings of anxiety and effectiveness using the Likert scales. The participants then completed the self-report measures.

### *Behavioral Ratings*

The behavioral assessment tasks were videotaped and rated later by independent raters who were unaware of the group status of the participant. The raters were trained so that interrater reliability was .80 with the experimenter on all variables. Twenty-five percent of the behavioral assessments were rated by two trained raters to assess interrater reliability, which was found to be .80 or higher for all variables.

## Chapter 6: Results

### Shyness

The mean RCBS for the total sample ( $N = 78$ ) was 39.1 with a standard deviation of 14.9. The mean RCBS scores for the three groups were compared using a one-way analysis of covariance (ANCOVA) controlling for age and race/ethnicity. The mean RCBS scores for the three groups were significantly different ( $F(2, 73) = 413.33, p < .05, \eta^2 = .919$ ). Bonferroni-adjusted pairwise comparisons revealed that the social phobia group had significantly higher shyness scores ( $M = 51.7, SD = 4.9$ ) than the shy group ( $M = 47.2, SD = 4.5$ ), and that both of these groups had significantly higher shyness scores than the non-shy group ( $M = 19.7, SD = 3.1$ ).

### Symptomatology

Chi-Square tests were used to examine differences among the three groups in the number and types of social fears reported and the number and types of social situations avoided (Tables 3 and 4; also see Appendix C for graphical representation of results). In some cases, the sample was too small to support the Chi-Square test, as indicated in the tables.

All persons with social phobia reported having social fears, compared to 61.5% of the shy without social phobia, and 25.9% of the non-shy. The vast majority of those with social phobia reported a fear of attending parties (80.0%), engaging in informal conversations (100.0%), participating in classes or meetings (84.0%), and giving formal speeches (100.0%). Less than half of the shy group reported a fear of attending parties (34.6%), engaging in informal conversations (42.3%), participating in classes or meetings (42.3%), and giving formal speeches (42.3%). Very few of those in the non-shy group

reported such social fears, with the exception of 18.5% who reported a fear of public speaking. Persons with social phobia also reported a fear of eating (31.8%) and writing (18.2%) in public, compared with less than 10% of those in the shy group and none of those in the non-shy group.

Table 3

*Types of Social Fears*

Variable	Social Phobia (n = 25)		Shy (n = 26)		Non-Shy (n = 27)		Chi-Square Statistic
	#	%	#	%	#	%	
Parties	20	80.0	9	34.6	0	0.0	$\chi^2(2, N = 78) = 35.68, p < .05$
Conversations	25	100.0	11	42.3	1	3.7	$\chi^2(2, N = 78) = 48.69, p < .05$
Meetings/classes	21	84.0	11	42.3	1	3.7	$\chi^2(2, N = 78) = 34.29, p < .05$
Formal speaking	25	100.0	11	42.3	5	18.5	$\chi^2(2, N = 78) = 36.21, p < .05$
Eating in public	8	32.0	2	7.7	0	0.0	N/A <sup>1</sup>
Writing in public	4	16.0	2	7.7	0	0.0	N/A <sup>1</sup>
Any social fear	25	100.0	16	61.5	7	25.9	$\chi^2(2, N = 78) = 30.09, p < .05$

<sup>1</sup>Expected cell frequencies are too small to support a reliable chi-square test.

As shown in Table 4 , almost all of those with social phobia reported avoidance of a feared social situation (96.0%), compared to half of those in the shy group (50.0%), and 3.7% of those in the non-shy group. The majority of those with social phobia reported that they avoid parties (76.0%), informal conversations (80.0%), and formal speeches (68.0%), and about one-half (56.0%) reported that they avoid participating in meetings and classes. Among the shy group, about 30% reported that they avoid informal conversations (30.8%) and parties (30.8%), and about one-fifth reported that they avoid formal speeches (19.2%) and participation in meetings and classes (19.2%). None of the

non-shy group reported avoidance of social situations, with the exception of 3.7% who reported avoidance of formal speeches.

Table 4

*Avoidance of Social Situations*

Variable	Social Phobia (n = 25)		Shy (n = 26)		Non-Shy (n = 27)		Chi-Square Statistic
	#	%	#	%	#	%	
Parties	19	76.0	8	30.8	0	0.0	$\chi^2 (2, N = 78) = 33.38, p < .05$
Conversations	20	80.0	8	30.8	0	0.0	$\chi^2 (2, N = 78) = 36.55, p < .05$
Meetings/classes	14	56.0	5	19.2	0	0.0	$\chi^2 (2, N = 78) = 22.65, p < .05$
Formal speaking	17	68.0	5	19.2	1	3.7	$\chi^2 (2, N = 78) = 27.78, p < .05$
Eating in public	5	20.0	1	3.8	0	0.0	N/A <sup>1</sup>
Writing in public	2	8.0	1	3.8	0	0.0	N/A <sup>1</sup>
Any avoidance	24	96.0	13	50.0	1	3.7	$\chi^2 (2, N = 78) = 44.29, p < .05$

<sup>1</sup>Expected cell frequencies are too small to support a reliable chi-square test.

Chi-Square tests were used to examine differences among the three groups in the types of somatic symptoms experienced in feared social situations (Table 5). All of those with social phobia reported experiencing somatic symptoms in feared social situations, compared to 61.5% of the shy group and 22.2% of the non-shy group. Commonly reported symptoms among the social phobia group were racing heart (100.0%), sweating (92.0%), blushing (72.0%), trembling and shaking (52.0%), and nausea and stomach discomfort (48.0%). Among the shy group, 46.2% reported racing heart, 42.3% reported blushing, 34.6% reported sweating, 15.4% reported nausea and stomach discomfort, and 7.7% reported trembling and shaking. Among the non-shy group, 22.2% reported racing heart, 22.2% reported blushing, 11.1% reported trembling and shaking, and 7.4% reported sweating.

Table 5

*Types of Somatic Symptoms*

Variable	Social Phobia ( <i>n</i> = 25)		Shy ( <i>n</i> = 26)		Non-Shy ( <i>n</i> = 27)		Chi-Square Statistic
	#	%	#	%	#	%	
Racing heart	25	100.0	12	46.2	6	22.2	$\chi^2$ (2, <i>N</i> = 78) = 33.01, <i>p</i> < .05
Sweating	23	92.0	9	34.6	2	7.4	$\chi^2$ (2, <i>N</i> = 78) = 39.05, <i>p</i> < .05
Stomach upset	12	48.0	4	15.4	0	0.0	$\chi^2$ (2, <i>N</i> = 78) = 18.97, <i>p</i> < .05
Blushing	18	72.0	11	42.3	6	22.2	$\chi^2$ (2, <i>N</i> = 78) = 13.11, <i>p</i> < .05
Trembling	13	52.0	2	7.7	3	11.1	$\chi^2$ (2, <i>N</i> = 78) = 17.43, <i>p</i> < .05
Other	9	36.0	2	7.7	0	0.0	N/A <sup>1</sup>
Any symptom	25	100.0	16	61.5	6	22.2	$\chi^2$ (2, <i>N</i> = 78) = 32.82, <i>p</i> < .05

<sup>1</sup>Expected cell frequencies are too small to support a reliable chi-square test.

In addition to the non-parametric analyses conducted above, a between subjects multivariate analysis of covariance (MANCOVA) was used to evaluate group differences on measures of symptomatology. This analysis included the symptoms above as well as a measure of social cognitions and sociability. Specifically, the independent variable was group membership (i.e., social phobia, shy, non-shy), the covariates were age and race/ethnicity, and the dependent variables were the number of social fears, number of feared social situations avoided, number of somatic symptoms experienced in social situations, negative social cognitions as measured by the Social Thoughts and Beliefs Scale (STABS), and sociability as measured by the Cheek and Buss Sociability Scale (CBSS).

The results of the MANCOVA indicated that the dependent variables of symptomatology taken together were significantly related to group membership ( $F(10, 134) = 11.32, p < .05, \eta^2 = .458$ ). Univariate analyses of covariance revealed that each dependent variable included in the multivariate analysis was significantly related to group

membership (Table 6). To examine which groups differed from each other, pairwise comparisons using the Bonferroni correction were examined. Those with social phobia reported more social fears, avoidance of social situations, somatic symptoms, and negative social cognitions, followed by the shy group and then by the non-shy group. The social phobia and shy groups reported similar levels of sociability, which were significantly lower on average than that reported by the non-shy group.

Table 6

*Continuous Measures of Symptomatology*

Variable	Social phobia ( <i>n</i> = 25)		Shy ( <i>n</i> = 25)		Non-Shy ( <i>n</i> = 25)		One-way ANCOVA	$\eta^2$
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Social fears	4.1	0.8	1.8	1.8	0.2	0.5	$F(2, 70) = 46.87, p < .05$	.573
Situations avoided	3.1	1.2	1.1	1.4	0.0	0.2	$F(2, 70) = 36.71, p < .05$	.512
Somatic symptoms	3.7	1.1	1.6	1.5	0.6	1.2	$F(2, 70) = 30.56, p < .05$	.466
Negative cognitions	53.5	11.1	36.1	13.2	9.9	6.8	$F(2, 70) = 84.80, p < .05$	.708
Sociability	15.3	4.2	16.1	3.1	21.6	3.2	$F(2, 70) = 18.15, p < .05$	.341

### Functional Impairment and Quality of Life

A between-subjects multivariate analysis of covariance (MANCOVA) was used to evaluate group differences on measures of impairment in functioning and quality of life. The independent variable was group membership, the covariates were age and race/ethnicity, and the dependent variables were functional impairment, as measured by the Liebowitz Self-Rated Disability Scale, and quality of life, as measured by the Quality of Life Inventory.

The results of the MANCOVA indicated that the dependent variables taken together were significantly related to group membership ( $F(4, 146) = 12.81, p < .05, \eta^2$

= .260). Univariate analyses of covariance revealed that each dependent variable included in the multivariate analysis was significantly related to group membership (Table 7). To examine which groups differed from each other, pairwise comparisons using the Bonferroni correction were examined. All groups differed significantly from one another on the quality of life measure, with the social phobia group reporting the lowest level of quality of life, followed by the shy group and then by the non-shy group. The social phobia group reported a higher level of impairment than the other two groups; the shy and non-shy groups did not differ significantly from each other in terms of level of impairment.

Table 7

*Functional Impairment and Quality of Life*

Variable	Social phobia ( <i>n</i> = 25)		Shy ( <i>n</i> = 26)		Non-Shy ( <i>n</i> = 27)		One-way ANCOVA	$\eta^2$
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Functional Impairment	14.3	7.8	6.0	7.0	1.6	2.0	$F(2, 73) = 23.21, p < .05$	.389
Quality of Life	0.6	1.2	2.0	1.1	3.3	1.1	$F(2, 73) = 28.76, p < .05$	.441

## Social Anxiety during Behavioral Tasks

### *Anxiety at Baseline*

A between-subjects analysis of covariance (ANCOVA) was used to evaluate group differences in participants' baseline ratings of anxiety using the Subjective Units of Distress (SUDS) scale (Table 8). The independent variable was group membership, the covariates were age and race/ethnicity, and the dependent variable was SUDS rating for the baseline period. The results indicated that the baseline SUDS rating differed significantly by group ( $F(2, 72) = 9.50, p < .05, \eta^2 = .209$ ). To examine which groups



differed from each other, pairwise comparisons using the Bonferroni correction were examined. Baseline SUDS ratings of the social phobia group ( $M = 3.5$ ) and the shy group ( $M = 3.1$ ) did not differ significantly from each other, but both were significantly higher than that of the non-shy group ( $M = 1.6$ ). In subsequent analyses of the role play and speech tasks, SUDS were adjusted for baseline-level SUDS (i.e., in subsequent analyses, the dependent variable equals the SUDS for the task minus the baseline SUDS).

Table 8

*Changes in Subjective Units of Distress from Baseline by Task*

Variable	Social phobia ( $n = 24$ )		Shy ( $n = 26$ )		Non-Shy ( $n = 27$ )		One-way ANCOVA	$\eta^2$
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Baseline SUDS	3.5	1.7	3.1	1.7	1.6	1.5	$F(2, 72) = 9.50, p < .05$	.209
Change from Baseline:								
Opposite Sex Role Play	1.6	1.3	0.5	1.5	0.1	1.5	$F(2, 72) = 3.37, p < .05$	.086
Same Sex Role Play	1.6	1.4	0.7	1.8	0.0	1.7	$F(2, 72) = 4.08, p < .05$	.102
Speech	3.0	1.9	1.2	2.1	0.8	2.0	$F(2, 72) = 4.81, p < .05$	.118

### ***Anxiety during Role Plays***

The role play tasks included two unstructured conversation tasks, one with a confederate of the same gender as the participant and one with a confederate of the opposite gender. A repeated measures analysis of covariance (ANCOVA) was used to evaluate the effect of the gender of the confederate in the role plays (within-subjects factor) on baseline-adjusted SUDS level (dependent variable) by group (between subjects factor), controlling for group differences in age and race/ethnicity (covariates). The results indicated no main effect for type of role play ( $F(1, 72) = 1.56, p > .05, \eta^2 = .021$ ), and no interaction effect for type of role play by group ( $F(2, 72) = 1.05, p > .05, \eta^2 =$

.028). The main effect for group was significant ( $F(2, 72) = 3.94, p < .05, \eta^2 = .099$ ), indicating that across the role plays, change in SUDS ratings from baseline to task varied significantly by group.

Subsequent univariate analyses of covariance were used to examine group differences in adjusted SUDS levels (Table 8). Analyses revealed that adjusted SUDS ratings varied significantly by group in both the same gender and the opposite gender role plays. Bonferroni-adjusted pairwise comparisons showed that in both the same gender and opposite gender role plays, the adjusted SUDS rating for the social phobia group was significantly higher than the SUDS for the non-shy group, but that it did not differ significantly from the shy group. The shy group also did not differ from the non-shy group on this measure.

### ***Anxiety during Speech***

A between-subjects analysis of covariance (ANCOVA) was used to evaluate group differences in adjusted SUDS ratings for the speech task. The results indicated that the adjusted SUDS level for the speech task differed significantly by group ( $F(2, 72) = 4.81, p < .05, \eta^2 = .118$ ). Bonferroni-adjusted pairwise comparisons revealed that the adjusted SUDS for the speech task of the social phobia group ( $M = 3.0$ ) was significantly higher than that for the non-shy group ( $M = 0.8$ ), but that it did not differ significantly from that of the shy group ( $M = 1.2$ ). The shy group did not differ from the non-shy group on this variable.

## **Physiological Reactivity during Behavioral Assessment Tasks**

### ***Heart Rate Methodology***

As noted above, one method was used to measure heart rate for the first 25 participants, and another method was used for the remaining participants. An analysis was conducted to determine if heart rate differed significantly by method used. Results indicated that heart rate did not differ significantly between the two methods for baseline, the role play tasks, or the speech task (baseline:  $t(70) = 1.60, p > .05$ ; opposite gender role play:  $t(72) = 1.62, p > .05$ ; same gender role play:  $t(72) = 1.54, p > .05$ ; speech task:  $t(69) = 0.15, p > .05$ ).

### ***Physiological Reactivity during Baseline***

A between-subjects multivariate analysis of covariance (MANCOVA) was used to evaluate group differences in heart rate and skin conductance during baseline (Table 9). The independent variable was group membership (i.e., social phobia, shy, non-shy), the covariates were age and race/ethnicity, and the dependent variables were average heart rate and average skin conductance over the last 3 minutes of the baseline. The results of the MANCOVA indicated that, taken together, heart rate and skin conductance during baseline did not differ significantly by group ( $F(4, 130) = 1.64, p > .05, \eta^2 = .048$ ). Thus, no additional analyses were conducted on baseline differences in physiological measures.

### ***Physiological Reactivity during Role Plays***

A repeated measures multivariate analysis of covariance (MANCOVA) was used to evaluate the effect of type of role play (within-subjects factor) on heart rate and skin conductance levels (dependent variables) by group (between subjects factor), controlling

for group differences in age and race/ethnicity (covariates). The dependent variables, heart rate and skin conductance, were included as change from baseline (Table 9).

Table 9

*Changes in Heart Rate and Skin Conductance from Baseline by Task*

Variable	Social phobia			Shy			Non-Shy		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Baseline									
Heart Rate	80.3	13.3	22	78.5	12.4	25	81.2	10.8	23
Skin Conductance	4.6	3.3	22	3.4	2.4	25	3.6	1.6	23
Change from Baseline:									
Role Play – Opposite Sex									
Heart Rate	3.5	5.6	22	6.0	8.3	25	4.4	6.6	23
Skin Conductance	1.6	1.3	22	2.4	1.4	25	2.2	1.2	23
Role Play – Same Sex									
Heart Rate	2.4	5.4	22	5.0	8.4	25	1.5	10.3	23
Skin Conductance	2.1	1.8	22	2.6	1.6	25	2.4	1.4	23
Speech									
Heart Rate	7.4	7.9	21	6.1	9.7	25	6.2	6.1	22
Skin Conductance	3.0	2.2	21	3.4	2.3	25	2.8	1.7	24

The main effect for group was not significant, indicating that across role plays, heart and skin conductance, taken together, did not differ significantly by group ( $F(4, 130) = 0.63, p > .05, \eta^2 = .019$ ). The main effect for role play was not significant ( $F(2, 64) = 1.14, p > .05, \eta^2 = .034$ ), indicating that across groups, heart rate and skin conductance taken together did not differ significantly by type of role play (i.e., same versus opposite gender role play). The interaction effect for type of role play by group also was not significant ( $F(4, 130) = 0.97, p > .05, \eta^2 = .029$ ). Thus, no further analyses were conducted on physiological reactivity during the role plays.

### ***Physiological Reactivity during Speech***

A between-subjects multivariate analysis of covariance (MANCOVA) was used to evaluate group differences in heart rate and skin conductance during the speech task (Table 9). The independent variable was group membership (i.e., social phobia, shy, non-shy), the covariates were age and race/ethnicity, and the dependent variables were average heart rate and average skin conductance during the speech task. The results of the MANCOVA indicated that, taken together, heart rate and skin conductance during the speech task did not differ significantly by group ( $F(4, 126) = 0.55, p > .05, \eta^2 = .017$ ).

### ***Change in Reactivity during Speech***

A repeated measures multivariate analysis of covariance (MANCOVA) was used to evaluate changes in heart rate and skin conductance (dependent variables) during the speech (within subjects factor) by group (between subjects factor), controlling for group differences in age and race/ethnicity (Table 10). The main effect for group was not significant, indicating that across the five minutes of the speech task, heart rate and skin conductance, taken together, did not differ significantly by group ( $F(4, 110) = 0.40, p > .05, \eta^2 = .014$ ). The main effect for the within-subjects factor (i.e., time measured in minutes) was not significant ( $F(8, 48) = 0.59, p > .05, \eta^2 = .089$ ), indicating that across groups, heart rate and skin conductance taken together did not differ significantly across the five minutes of the speech task. The interaction effect for group by time also was not significant ( $F(16, 98) = 0.67, p > .05, \eta^2 = .099$ ). Thus, no further analyses were conducted on physiological reactivity during the speech.

Table 10

*Changes in Reactivity during Speech*

Variable	Social phobia			Shy			Non-Shy		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Heart Rate									
Minute 1	89.9	13.6	21	88.1	12.3	26	89.3	11.0	25
Minute 2	87.7	15.5	21	85.3	15.9	26	87.0	10.8	24
Minute 3	84.9	13.7	20	85.4	15.4	26	86.2	11.0	24
Minute 4	83.0	13.7	15	83.8	14.2	25	86.1	11.0	22
Minute 5	81.9	13.1	14	84.6	14.6	26	85.3	11.1	21
Skin Conductance									
Minute 1	7.8	5.3	21	6.8	4.3	25	6.6	2.2	25
Minute 2	7.6	5.2	21	6.8	4.4	25	6.4	2.2	25
Minute 3	7.9	4.9	20	6.8	4.4	25	6.3	2.2	25
Minute 4	7.2	3.0	15	6.8	4.4	25	6.3	2.2	25
Minute 5	7.1	3.1	14	6.9	4.6	25	6.3	2.2	25

**Social Skills and Social Anxiety*****Role Plays***

Participants provided an anxiety and effectiveness rating for the role plays combined, as did the independent raters (Table 11). A repeated measures multivariate analysis of covariance (MANCOVA) was used to evaluate the effect of the rater (i.e., self versus judge as the within-subjects factor), on anxiety and effectiveness ratings (dependent variables) by group (between subjects factor), controlling for group differences in age and race/ethnicity (covariates). The main effect for group was significant, indicating that across raters, anxiety and effectiveness ratings, taken together, differed significantly by group ( $F(4, 128) = 8.83, p < .05, \eta^2 = .216$ ). The main effect for rater (self versus judge) was not significant ( $F(2, 63) = 0.14, p > .05, \eta^2 = .004$ ), indicating that across groups, anxiety and effectiveness ratings taken together did not

differ significantly by rater. The interaction effect for rater by group was not significant ( $F(4, 128) = 0.81, p > .05, \eta^2 = .025$ ).

Table 11

*Anxiety and Effectiveness Ratings by Rater for Role Plays*

Variable	Social phobia ( <i>n</i> = 19)		Shy ( <i>n</i> = 23)		Non-Shy ( <i>n</i> = 27)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self Ratings						
Anxiety	2.9	0.7	4.1	1.2	5.3	1.3
Effectiveness	3.8	0.8	4.6	0.9	5.7	1.1
Judges' Ratings						
Anxiety	3.5	1.1	4.2	1.2	5.2	1.2
Effectiveness	4.1	1.0	4.7	1.0	5.4	1.1
Across Raters						
Anxiety	3.2	0.3	4.0	0.2	5.3	0.2
Effectiveness	4.0	0.2	4.6	0.2	5.6	0.2

To follow-up on the significant main effect for group, univariate analyses of covariance were conducted for anxiety and effectiveness across raters. The univariate analyses revealed that each dependent variable was significantly related to group membership (anxiety:  $F(2, 64) = 23.03, p > .05, \eta^2 = .419$ ; effectiveness:  $F(2, 64) = 20.07, p > .05, \eta^2 = .385$ ). Bonferroni-adjusted pairwise comparisons revealed that the social phobia and shy groups did not differ from each other on these measures, but that they did differ from the non-shy group for both anxiety and effectiveness. For anxiety, the social phobia ( $M = 3.2$ ) and shy groups ( $M = 4.0$ ) were rated as more anxious than the non-shy group ( $M = 5.3$ ). (Note, on the latter measure, lower ratings reflect higher levels of anxiety). Similarly, for effectiveness, the social phobia ( $M = 4.0$ ) and shy groups ( $M = 4.6$ ) were rated as less effective than the non-shy group ( $M = 5.6$ ).

## *Speech*

A repeated measures multivariate analysis of covariance (MANCOVA) was used to evaluate the effect of the rater (self versus judge as the within-subjects factor), on anxiety and effectiveness ratings (dependent variables) by group (between subjects factor), controlling for group differences in age and race/ethnicity (covariates). The main effect for group was significant, indicating that across raters, anxiety and effectiveness ratings, taken together, differed significantly by group ( $F(4, 130) = 6.45, p < .05, \eta^2 = .166$ ). The main effect for rater (self versus judge) was not significant ( $F(2, 64) = 0.29, p > .05, \eta^2 = .009$ ), indicating that across groups, anxiety and effectiveness ratings taken together did not differ significantly by rater. The interaction effect for rater by group was significant ( $F(4, 130) = 2.63, p < .05, \eta^2 = .075$ ).

To follow up on the significant interaction effect of group by rater, univariate analyses of covariance were conducted. The univariate analyses revealed that the group by rater interaction was significant for effectiveness ( $F(2, 65) = 4.74, p < .05, \eta^2 = .128$ ), but not anxiety ( $F(2, 65) = 1.61, p > .05, \eta^2 = .047$ ). Thus, ratings of effectiveness by group vary by type of rater, self versus judge (Table 12; Figure 1). Bonferroni-adjusted pairwise comparisons revealed that the social phobia and shy groups rated themselves significantly less effective than judges rated them to be. Conversely, for the non-shy group, there was no significant difference between self ratings and judges' ratings of effectiveness. Thus, persons with social phobia and shyness rated themselves as less effective than judges rated them to be, but non-shy persons' ratings were consistent with the judges' ratings. Across raters, persons with social phobia were rated as less effective than the shy, which did not differ from the non-shy group.



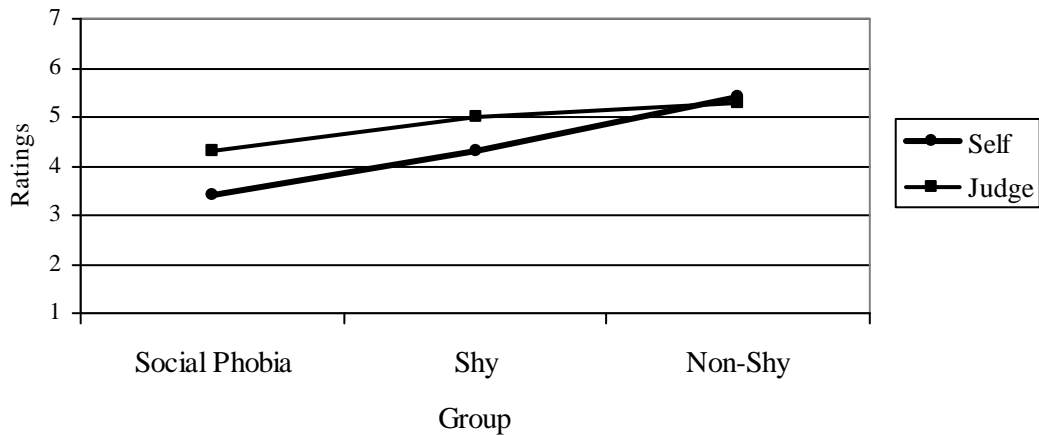
Table 12

*Anxiety and Effectiveness Ratings by Rater for Speech Task*

Variable	Social phobia ( <i>n</i> = 20)		Shy ( <i>n</i> = 23)		Non-Shy ( <i>n</i> = 27)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self Ratings						
Anxiety	2.9	1.0	3.8	1.4	5.2	1.5
Effectiveness	3.4	1.1	4.3	1.2	5.4	1.2
Judges' Ratings						
Anxiety	3.6	1.6	4.5	1.5	5.2	1.5
Effectiveness	4.3	1.4	5.1	1.2	5.3	1.4

Figure 1

*Effectiveness Ratings by Group and Rater*



The significant main effect for group was examined for anxiety. Univariate analyses revealed that anxiety ratings, across raters, differed significantly by group ( $F(2, 65) = 13.49, p < .05, \eta^2 = .293$ ). Bonferroni-adjusted pairwise comparisons showed that the social phobia and shy groups were rated as significantly more anxious ( $M = 3.2$  and  $M = 4.1$ , respectively) than the non-shy group ( $M = 5.3$ ). (Note, for anxiety, lower ratings reflect higher levels of anxiety).

## **Molecular-Level Variables**

### ***Role Plays***

A between-subjects multivariate analysis of covariance (MANCOVA) was used to evaluate group differences on ratings of molecular-level behaviors during the role play tasks. The independent variable was group membership, the covariates were age and race/ethnicity, and the dependent variables were gaze, voice quality, length of responses, discomfort, and flow. The results of the MANCOVA indicated that the dependent variables taken together were significantly related to group membership ( $F(10, 122) = 3.84, p < .05, \eta^2 = .239$ ).

Univariate analyses of covariance revealed that each dependent variable included in the multivariate analysis was significantly related to group membership (Table 13). Bonferroni-adjusted pairwise comparisons were examined for each dependent variable. The social phobia and shy groups were rated as having significantly poorer voice quality and higher levels of discomfort compared to the non-shy group. The social phobia group was rated as having significantly poorer facial gaze, conversation flow, and length of responses compared to the non-shy group, but the shy group did not differ significantly on these measures from either the social phobia or non-shy groups.

### ***Speech***

A between-subjects multivariate analysis of covariance (MANCOVA) was used to evaluate group differences on ratings of molecular-level behaviors during the speech task. The independent variable was group membership, the covariates were age and race/ethnicity, and the dependent variables were gaze, voice quality, and discomfort. The

results of the MANCOVA indicated that the dependent variables taken together were significantly related to group membership ( $F(6, 128) = 2.93, p < .05, \eta^2 = .121$ ).

Table 13

*Ratings of Molecular-Level Behaviors for Role Plays*

Variable	Social phobia ( <i>n</i> = 19)		Shy ( <i>n</i> = 23)		Non-Shy ( <i>n</i> = 27)		One-way ANCOVA	$\eta^2$
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Gaze	3.6	1.2	4.1	0.8	4.2	0.9	$F(2, 64) = 4.21, p < .05$	.116
Voice Quality	3.4	1.2	3.6	0.9	4.3	0.7	$F(2, 64) = 9.63, p < .05$	.231
Length	3.9	1.2	4.0	0.6	4.4	0.7	$F(2, 64) = 3.66, p < .05$	.103
Discomfort	3.0	1.1	3.3	0.8	3.9	0.9	$F(2, 64) = 7.89, p < .05$	.198
Flow	3.1	1.0	3.6	0.7	4.0	0.9	$F(2, 64) = 8.48, p < .05$	.209

Univariate analyses of covariance revealed that each dependent variable included in the multivariate analysis was significantly related to group membership (Table 14).

For each dependent variable, Bonferroni-adjusted pairwise comparisons were examined to evaluate which groups differed from one another.

Table 14

*Ratings of Molecular-Level Behaviors for Speech Task*

Variable	Social phobia ( <i>n</i> = 20)		Shy ( <i>n</i> = 23)		Non-Shy ( <i>n</i> = 27)		One-way ANCOVA	$\eta^2$
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Gaze	3.3	1.3	3.2	1.0	3.9	1.0	$F(2, 65) = 5.87, p < .05$	.153
Voice Quality	3.5	1.1	3.6	0.9	4.3	0.7	$F(2, 65) = 8.57, p < .05$	.209
Discomfort	3.2	1.0	3.7	1.0	4.0	0.9	$F(2, 65) = 4.54, p < .05$	.123

The social phobia and shy groups were rated as having significantly poorer facial gaze and voice quality during the speech task compared to the non-shy group. The social phobia group was rated as having significantly more discomfort than the non-shy group; the shy group did differ significantly from the other two groups on this measure. Of note, the covariate *age* was significant for facial gaze and voice quality, with older participants having better gaze and voice quality.

## **Chapter 7: Discussion**

This study was designed to shed light on the growing debate about the difference between social phobia and shyness. The similarity between the two conditions, both of which are characterized by discomfort and anxiety in social situations, has been noted since the introduction of social phobia into the psychiatric nomenclature in 1980. Two leading hypotheses about the relationship between social phobia and shyness have been put forth. One hypothesis conceptualizes the conditions as being part of a continuum, referring to social phobia as “extreme shyness” (Marshall & Lipsett, 1994; McNeil, 2001; Stein, 1999). According to this hypothesis, the distinction between the two conditions is that persons with social phobia have more severe symptoms and are impaired by their discomfort in social situations, whereas shy persons are not. This reasoning is consistent with the general thought that shyness is a subclinical condition, or a normal facet of personality that is not pathological (Carducci, 1999). The second hypothesis is that shyness and social phobia are overlapping conditions, and that shyness is a broader construct than social phobia (Beidel & Turner, 1999; Heckelman & Schneier, 1995; Heiser, Turner, & Beidel, 2003). According to this hypothesis, shyness and social phobia may be qualitatively different in some regards, rather than varying only in degree of shyness.

Recent empirical investigations are beginning to define the boundary between shyness and social phobia (Chavira, Stein, & Malcarne, 2002; Heiser, Turner, & Beidel, 2003). These studies lend support for the latter hypothesis, that shyness and social phobia are overlapping yet unique, qualitatively different conditions. First, shyness has been found to be associated with psychopathology in general, and not solely with social

phobia. Thus, the shy population is heterogeneous, consisting of people with a range of psychological problems. Furthermore, a significant proportion had no psychiatric diagnoses (Heiser, Turner, & Beidel, 2003).

Second, the subtype of social phobia proved to be important (Heiser, Turner, & Beidel, 2003). Those with the specific subtype of social phobia may not be shy at all. This finding is consistent with clinical observations of speech phobics, for example, who do not appear to be shy or report being shy (Turner, Beidel, & Townsley, 1990). It appears, however, that those with the generalized subtype of social phobia are indeed shy (Heiser, Turner, & Beidel, 2003). This finding is consistent with clinical observations of persons with generalized social phobia, who typically report that they “have always been shy” (Beidel & Turner, 1998).

However, the majority of shy persons, including those in the “very shy” range, do not appear to meet criteria for social phobia (Chavira, Stein, & Malcarne, 2002; Heiser, Turner, & Beidel, 2003). That is, a person can be extremely shy but not have a diagnosis of social phobia. This is, in fact, more often the case than not. Thus, social phobia cannot be characterized simply as “extreme shyness.” The pertinent question becomes how does the subset of shy persons with generalized social phobia differ from other shy persons? This question was the focus of this study. Specifically, the main objective of this study was to determine what factors, if any, distinguish generalized social phobia from shyness, restricting the analysis to very shy individuals. Because shyness has been shown to be associated with multiple psychological problems, the shy group in this study consisted of those without psychiatric diagnoses so that comparisons between a “purely” shy group and those with social phobia could be made.

Several key findings emerged from the current study. First, this study found that, compared to the social phobia group, symptoms including social fears, and cognitive, somatic, and behavioral symptoms (i.e., avoidance) were less prevalent among the shy group without social phobia. Furthermore, the shy group consisted of a very heterogeneous group with regard to social fears. Specifically, nearly 40% of the very shy without social phobia did not report *any* social fears during the diagnostic interview (i.e., the CIDI). Thus, although they reported high levels of shyness on the shyness inventory (i.e., the RCBS), they responded negatively when asked if they had a fear of social situations on the CIDI. The RCBS is a dimensional measure which asks participants to rate how characteristic a statement is of them on a scale of 1 to 5 (e.g., “I feel inhibited in social situations.”). The CIDI, on the other hand, asks the participants for a positive or negative response to being anxious or afraid in social situations, and inquires about commonly feared situations. Although these differences in methodology and terminology may partly explain these discrepant findings, it is unlikely that they explain them fully.

One possible factor that may provide a better understanding of this finding was explored in this study. Specifically, it has been suggested that the shy population includes individuals who are not anxious or fearful of social situations, but rather who prefer to be alone (Zimbardo, 1977). These individuals would be low on the dimension of sociability. Past research has shown that shyness and sociability are related but unique constructs (Bruch et al., 1989; Cheek & Buss, 1981). Therefore, it is possible that in the current study, the shy who did not report social fears are relatively unsociable. However,

this study found that the shy and social phobia groups did not differ in terms of their level of sociability, although they reported lower levels of sociability than the non-shy group.

Another construct, which was not explored in this study but is worth consideration in future research, is Eysenck's Extraversion-Introversion and Neuroticism-Stability personality dimensions (Eysenck & Eysenck, 1985). Eysenck's research and other studies suggest that shyness is positively but moderately related to introversion and neuroticism (Briggs, 1988; Jones, Briggs, & Smith, 1986; Eysenck & Eysenck, 1969). A more recent study by Heiser, Turner, & Beidel (2003) found that those comorbid for social phobia and shyness were significantly more introverted and neurotic than shy persons without social phobia. However, neuroticism appeared to be related to Axis I disorders in general and not specifically to social phobia. The extent to which the groups in this study would vary in terms of these dimensions is yet to be examined.

It is unclear at this time, then, why such a large proportion of shy individuals did not endorse social fears on the CIDI. Nevertheless, this finding highlights the heterogeneity of the shy population. Some of the shy reported no social fears, while others reported multiple, non-circumscribed fears. These findings suggest that some subsets of the shy are more similar to those with social phobia than other subsets. The group with no reported social fears appears to be quite large and qualitatively different from those with social phobia.

Overall, the prevalence of all the symptoms examined in this study was lower among the shy group without social phobia compared to those with social phobia. Prior studies have suggested that specific clusters of symptoms may be more prevalent among the shy compared to those with social phobia, but this was not the case in this study. For



example, Carducci, Hutzell, Morrison, and Weyer (2001) reported that shyness had more conceptual similarity with social phobia on the affective dimension (i.e., fear and anxiety), and less so on the behavioral dimension (i.e., avoidance) in their study. In this study, no specific cluster of symptoms was more prevalent among the shy relative to the social phobia group. Therefore, on the one hand, the shy group appears to have less symptomatology across all of the symptom domains. On the other hand, they are very heterogeneous in terms of the central component of both conditions, social fears.

The second key finding of this study was that the shy group did not report significant impairment in their lives due to shyness, whereas those with social phobia did. Similarly, on a measure of quality of life, the shy group's responses were in the average range, whereas those of the social phobia group were in the "very low" range. These findings are consistent with prior studies of persons with social phobia (Amies et al., 1983; Liebowitz et al., 1985; Schneier et al., 1994; Stein & Kean, 2000; Stein et al., 1999; Turner et al., 1986a; Wittchen & Beloch, 1996). This is the first time these measures have been used with a shy population. Thus, it appears that one factor distinguishing the shy and social phobia groups is the degree of impairment, which has been reported in the past (Turner, Beidel, & Townsley, 1990). This finding is also consistent with the finding above, that symptoms are less prevalent among the shy than those with social phobia. However, the reason that high shyness does not translate into more symptomatology and impairment is likely to differ for the subgroups of shy persons identified in this study – i.e., those who endorse social fears and those who do not.

The above results are based on participants' self-report of symptoms and impairment. This study also included a more objective source of information --

participants' anxiety and performance during simulated social tasks. Social skills and anxiety are central concepts in many theories of social phobia. Specifically, one hypothesis is that persons with social phobia do not have the social skills needed to perform well in social situations. According to this hypothesis, a lack of social skills results in negative social experiences, which in turn leads to increased anxiety and further withdrawal from social situations (Stravynski & Amado, 2000).

Another hypothesis is that those with social phobia have adequate social skills, but that their anxiety inhibits their performance (Juster, Heimberg, & Holt, 1996). This hypothesis rests on the Yerkes-Dodson inverted-U arousal and performance relationship which states that moderate levels of arousal will enhance performance but excessive arousal will impede performance (Yerkes & Dodson, 1908). The current study investigated whether the shy with and without social phobia differed in terms of social skills and anxiety during social situations, which could help explain why shyness does not appear to be as debilitating as social phobia.

Thus, the third key finding of this study was that both the shy and social phobia groups exhibited social skills deficits in the unstructured conversation tasks, but only the social phobia group exhibited social skills deficits in the impromptu speech task. Both groups were rated as equally anxious across both types of tasks.

Regarding social skills, the findings of this study are consistent with prior research that found that persons with social phobia exhibit social skills deficits during social tasks (Alden & Wallace, 1995; Hofmann, Gerlach, Wender, & Roth, 1997; Hofmann, Neuman, Ehlers, & Roth, 1995). The shy exhibited social skills deficits only in the conversation tasks. These findings suggest that the shy may be more capable of

performing in more formal situations, such as meetings, than persons with social phobia, even though they exhibit similar levels of anxiety. This may account in part for the differences found in impairment and quality of life. That is, shy persons may not experience as much interference in their schooling, careers, or other endeavors requiring formal performances as persons with social phobia.

Evidence from this study also suggests that one's subjective experience of anxiety may be a factor that differentiates the two groups. The shy and social phobia groups reported similar anticipatory anxiety, but the social phobia group reported elevated levels of subjective anxiety during the conversation and speech tasks. This finding is consistent with the hypothesis that anxiety interferes with performance (Juster, Heimberg, & Holt, 1996). This study is not able to determine why social skills deficits were exhibited (i.e., lack of skill or interference due to anxiety). However, the results suggest that subjective anxiety may have been a factor, in that persons with social phobia reported elevated levels of subjective distress during the tasks.

The hypothesis that persons with social phobia have social skills but that anxiety interferes with their performance emphasizes the role of cognitive factors. That is, they postulate that the primary problem in social phobia is the cognitive bias that persons with social phobia have of their own behavior (Clark & Wells, 1995; Rapee & Heimberg, 1997). Indeed, several past studies have found that persons with social phobia rate their own performance in behavioral tasks more poorly than independent observers do (Alden & Wallace, 1995; Rapee & Lim, 1992). In the current study, the tendency to underestimate one's performance was found only in the speech task for both the shy and social phobia groups. Thus, the nature of the task is important to consider when

examining differences between groups (Turner et al., 1986b). This finding was the same for both the shy and social phobia groups, and, therefore, does not appear to be a factor distinguishing the two groups.

Finally, a fourth key finding of this study was that the shy and social phobia groups did not differ on any measures of physiological reactivity recorded during the baseline period or during any of the behavioral tasks. This finding was somewhat surprising because past research indicates that, in general, anxiety in both clinical and non-clinical samples is associated with physiological arousal as measured by heart rate and skin conductance (see Barlow, 2002, for a review). In addition, studies suggest that anxiety patients are over-aroused relative to non-anxious controls while at rest (i.e., at baseline).

However, results of prior studies are less robust concerning physiological reactivity during stressful tasks. Although a significant amount of research has been conducted on the relationship between anxiety and psychophysiology, relatively few studies have compared persons with social phobia to non-anxious controls. Furthermore, there has been relatively little research on physiological arousal at rest among persons with social phobia (McNeil, Ries, & Turk, 1995). A few studies of shy persons are suggestive that shy persons become more aroused in anxiety-producing situations than the non-shy (Addison & Schmidt, 1999; Brodt & Zimbardo, 1981; Schmidt & Fox, 1994). However, as with other studies of shy persons, these studies did not distinguish between shy persons with and without social phobia.

In this study, none of the three groups differed significantly from each other on heart rate or skin conductance during baseline. Thus, although shy persons with and

without social phobia reported higher levels of anxiety (i.e., SUDS) at baseline compared to the non-shy, this anxiety was not captured by psychophysiological measures. This finding is inconsistent with prior research on anxiety in general, which indicates that anxiety patients tend to be chronically over-aroused even when at rest. However, the finding is consistent with a recent study that focused on persons with social phobia (Edelmann & Baker, 2002). The latter study found that persons with social phobia, other anxiety patients, and non-anxious controls did not differ from each other on several psychophysiological measures during baseline. Thus, the data in the current study and Edelmann and Baker's study, both of which specifically assessed physiological reactivity during baseline of persons with social phobia, suggest that the generally accepted finding that anxiety patients have elevated arousal at baseline may not apply to persons with social phobia. Similarly, it does not appear to apply to shy persons either.

Furthermore, in the current study, the three groups did not differ in physiological reactivity during any of the behavioral assessment tasks. This finding is generally consistent with prior research on anxiety that differences in psychophysiology are often *not* found between anxious and non-anxious groups during stressful tasks. Furthermore, this finding is consistent with Edelmann and Baker's (2002) study, which found that persons with social phobia, other anxiety patients, and controls did not differ on any of the physiological measures recorded during a variety of behavioral assessment tasks, including a social conversation task. Several possibilities for these findings exist.

First, past research has found that anxiety patients and "behaviorally inhibited" persons tend to show less variability in autonomic response during stressful tasks than controls (e.g., Kagan, Reznick, & Snidman (1988); see Barlow, 2002, for a review). This

“autonomic inflexibility” has been hypothesized to be a response to chronic anxiety (Barlow, 2002). While a more healthy response is characterized by a low resting arousal state and a strong reaction to stressors or threats, anxious and “inhibited” individuals appear to have a chronically high arousal state that does not react as much to stress. Thus, it is possible that this inflexibility results in less change from baseline measures than might be expected.

Some researchers have postulated that persons with social phobia are not distinguishable from controls on physiological measures because of the role of the parasympathetic nervous system (Thayer, Friedman, & Borkovec, 1996). Specifically, a feeling of embarrassment, which is a central feature of social phobia, is associated with a decrease in heart rate due to arousal of the parasympathetic nervous system. Thus, it has been suggested that arousal in the parasympathetic nervous system offsets that of the sympathetic nervous system and results in a combination of a high level of subjective distress and low arousal (McNeil, Vrana, Melamed, Cuthbert, & Lang, 1993).

Furthermore, others have proposed that the demands of the tasks typically used in these studies require significant effort and energy of all participants, such as voice projection and gesturing, and that this cardiovascular response may mask differences between groups (McNeil, Ries, & Turk, 1995).

It has also been suggested that, although physiological arousal is associated with anxiety among anxious individuals, the difference is a reflection of misperceptions of internal responses rather than the responses themselves. This hypothesis is consistent with studies that found that self-reported somatic symptoms are somewhat independent of actual physiological responses (Lang, 1978). This possibility could account for the lack

of differences at baseline in this study. Edelmann and Baker (2002) found that those with social phobia reported their heart rate and level of sweating as being greater than that indicated by psychophysiological measures. The researchers concluded that the social phobic group was relatively inaccurate in ratings of bodily sensations and that what was important was perceived versus actual physiological arousal. This finding would account for differences found in this study between reported anxiety and somatic symptoms by the shy and social phobia groups, and the lack of differences on psychophysiological measures.

When interpreting these results, the nature of the study and the tasks involved must also be considered. It is possible that the performance tasks used in the study were not anxiety-producing enough to elicit a clinically significant anxiety response. Alternatively, it is possible that the tasks were considerably novel for all participants, and required significant performance from all participants so that they induced similar reactions in all groups. Finally, another reason that differences on the physiological measures were not found among groups may be that only the tonic dimension of heart rate and skin conductance was examined. Results may be different if the phasic dimension is examined both for event-related changes and spontaneous fluctuations.

In summary, the findings of the current study do not support the hypothesis that the shy with social phobia experience more physiological arousal than those without social phobia. However, it is possible that persons with social phobia experience somatic symptoms and anxiety as more debilitating than the shy, as suggested by the higher prevalence of somatic symptoms among those with social phobia and their elevated ratings of subjective units of distress during the simulated social tasks.

Overall, this study found that the shy group is more heterogeneous than the social phobia group, and that some subsets of the shy group are more qualitatively similar to the social phobia group than others. Emotional, cognitive, behavioral, and somatic symptoms were more prevalent among the social phobia group, which also reported significantly more functional impairment and lower levels of quality of life than the shy group. One possible factor accounting for this finding is that the shy did not exhibit social skills deficits across tasks, whereas the social phobia group did. Furthermore, the shy did not report as much anxiety during the tasks as those with social phobia, even though they appeared to be just as anxious to independent observers.

This study has several limitations. As with all studies, the characteristics of the sample must be considered when interpreting the results. This sample consisted primarily of undergraduate college students at the University of Maryland, and the results may not be generalizable to other populations. The sample also included 17 persons who were seeking treatment for social anxiety as part of another research study. Although most of these participants were also students at the University of Maryland, the characteristics of a treatment-seeking population may vary from a non-treatment seeking population. Their symptoms, for example, may be more severe than those of the non-treatment seeking population. Relatedly, students could choose whether or not to participate in the study. Therefore, self-selection bias most likely played a role in this study, as in all studies.

Patient assessments were conducted using two different instruments, the ADIS-IV and CIDI. Although this is not ideal, the two instruments have been shown to have satisfactory reliability among a sample similar to the one in this study. Similarly, two



methods were used to measure heart rate, but the methods were shown to be comparable in this study. The behavioral assessment tasks were conducted in a laboratory instead of a naturalistic setting, which may have influenced the participants' behavior. Similarly, monitoring of physiological response and videotaping during the task may have influenced the manner in which the participants approached the task. For example, a participant may have been more nervous in the conversation task than they typically are given that they were being videotaped.

Further research is needed in two areas. First, a better understanding of the characteristics of the group of shy persons who did not report social fears on the CIDI is needed; it is possible that this finding reflects the fact that the meaning of shyness is very subjective in nature (Harris, 1984). Second, research is needed to identify factors that differentiate the subgroup of shy persons that is very similar to the social phobia group from those with social phobia. The heterogeneity of the shy group in this study limited the ability to identify such factors.

Overall, this study supports the hypothesis that shyness is a broader construct than social phobia and that the shy group is very heterogeneous. With this difference established, a study of the subset of the shy who report all the symptoms of social phobia except functional impairment can be conducted in an attempt to identify factors that may "protect," in a sense, the shy from the debilitation associated with social phobia. Based on this study, possible factors include a more intense experience or interpretation of somatic symptoms and anxiety among those with social phobia, and a lack of social skills, particularly in performance situations.

## Appendix A: DSM-IV Criteria for Social Phobia

- A. A marked and persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others. The individual fears that he or she will act in a way (or show anxiety symptoms) that will be humiliating or embarrassing. *Note:* In children, there must be evidence of the capacity for age-appropriate social relationships with familiar people and the anxiety must occur in peer settings, not just in interactions with adults.
- B. Exposure to the feared social situation almost invariably provokes anxiety, which may take the form of a situationally bound or situationally predisposed Panic Attack. *Note:* In children, the anxiety may be expressed by crying tantrums, freezing, or shrinking from social situations with unfamiliar people.
- C. The person recognizes that the fear is excessive or unreasonable. *Note:* In children, this feature may be absent.
- D. The feared social or performance situation are avoided or else are endured with intense anxiety or distress.
- E. The avoidance, anxious anticipation, or distress in the feared social or performance situation(s) interferes significantly with the person's normal routine, occupational (academic) functioning, or social activities or relationships, or there is marked distress about having the phobia.
- F. In individuals under age 18 years, the duration is at least 6 months.
- G. The fear or avoidance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition and is not better accounted for by another mental disorder (e.g., Panic Disorder With or Without Agoraphobia, Separation Anxiety Disorder, Body Dysmorphic Disorder, a Pervasive Developmental Disorder, or Schizoid Personality Disorder).
- H. If a general medical condition or another mental disorder is present, the fear in Criterion A is unrelated to it, e.g., the fear is not of Stuttering, trembling in Parkinson's disease, or exhibiting abnormal eating behavior in Anorexia Nervosa or Bulimia Nervosa.

*Specify if:*

**Generalized:** if the fears include most social situations (also consider the additional diagnosis of Avoidant Personality Disorder).

## **Appendix B: Unpublished Assessment Instruments**

- Revised Cheek and Buss Shyness Scale
- Cheek and Buss Sociability Scale
- Subjective Units of Distress Scale
- Anxiety and Effectiveness Rating Scales

## Revised Cheek & Buss Shyness Scale

INSTRUCTIONS: Please read each item carefully and decide to what extent it is characteristic of your feelings and behavior. Fill in the blank next to each item by choosing a number from the scale printed below.

- 1 = Very uncharacteristic or untrue, strongly disagree
- 2 = Uncharacteristic
- 3 = Neutral
- 4 = Characteristic
- 5 = Very characteristic or true, strongly agree

- \_\_\_ 1. I feel tense when I'm with people I don't know well.
- \_\_\_ 2. I am socially somewhat awkward.
- \_\_\_ 3. I do not find it difficult to ask other people for information.
- \_\_\_ 4. I am often uncomfortable at parties and other social functions.
- \_\_\_ 5. When in a group of people, I have trouble thinking of the right things to talk about.
- \_\_\_ 6. It does not take me long to overcome my shyness in new situations.
- \_\_\_ 7. It is hard for me to act natural when I am meeting new people.
- \_\_\_ 8. I feel nervous when speaking to someone in authority.
- \_\_\_ 9. I have no doubts about my social competence.
- \_\_\_ 10. I have trouble looking someone right in the eye.
- \_\_\_ 11. I feel inhibited in social situations.
- \_\_\_ 12. I do not find it hard to talk to strangers.
- \_\_\_ 13. I am more shy with members of the opposite sex.

## Cheek and Buss Sociability Scale

**INSTRUCTIONS:** Please read each item carefully and decide to what extent it is characteristic of your feelings and behavior. Fill in the blank next to each item by choosing a number from the scale printed below.

- 1 = Very uncharacteristic or untrue, strongly disagree
- 2 = Uncharacteristic
- 3 = Neutral
- 4 = Characteristic
- 5 = Very characteristic or true, strongly agree

- \_\_\_ 1. I like to be with people.
- \_\_\_ 2. I welcome the opportunity to mix socially with people.
- \_\_\_ 3. I prefer working with others rather than alone.
- \_\_\_ 4. I find people more stimulating than anything else.
- \_\_\_ 5. I'd be unhappy if I were prevented from making many social contacts.

## Subjective Units of Distress Scale (SUDS)

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### Anxiety and Distress Rating

0	1	2	3	4	5	6	7	8
Not at all		A little bit		Some		A lot		Very, very much

## ROLE PLAYS: JUDGE RATINGS

ID#: \_\_\_\_\_ CODER: \_\_\_\_\_ DATE: \_\_\_\_\_

### Overall Anxiety

Please circle the number that best describes how the subject appeared overall during the social interactions.

1. **Extremely Anxious**. He/she was so anxious he/she could not participate in the tasks.
2. **Severely Anxious**. He/she was very anxious and uncomfortable and showed clear and consistent signs of anxiety.
3. **Moderately Anxious**. He/she was somewhat anxious and showed signs of anxiety and discomfort.
4. **Mildly Anxious**. He/she was a little anxious and occasionally showed some signs of anxiety.
5. **Not Anxious**. He/she was not anxious and did not show consistent or clear signs of anxiety.
6. **Somewhat Comfortable**. He/she was not anxious and was at ease and relaxed.
7. **Very Comfortable**. He/she was very relaxed, at ease, and engaging.

Please circle the number that best describes how effective you think the subject was overall during the social interactions.

### Overall Effectiveness

1. **Non-Responsive**. He/she did not participate in the tasks.
2. **Not Effective**. He/she barely spoke and was very awkward.
3. **Minimally Effective**. He/she was awkward, responded with short answers, and did not participate much.
4. **Moderately Effective**. He/she was mildly awkward, responded to questions and asked some questions, but was reserved.
5. **Effective**. He/she was not awkward, responded to questions, asked questions and maintained some of the conversation.
6. **More Effective**. He/she had good interpersonal skill and maintained part of the conversation.
7. **Very Effective**. He/she had good interpersonal skill, lead the conversation, and was very engaging.

## SPEECH: JUDGE RATINGS

ID#: \_\_\_\_\_ CODER: \_\_\_\_\_ DATE: \_\_\_\_\_

### Overall Anxiety

Please circle the number that best describes how the subject appeared overall during the speech task.

1. **Extremely Anxious.** He/she was so anxious he/she could not participate in the task.
2. **Severely Anxious.** He/she was very anxious and uncomfortable and showed clear and consistent signs of anxiety.
3. **Moderately Anxious.** He/she was somewhat anxious and showed signs of anxiety and discomfort.
4. **Mildly Anxious.** He/she was a little anxious and occasionally showed some signs of anxiety.
5. **Not Anxious.** He/she was not anxious and did not show consistent or clear signs of anxiety.
6. **Somewhat Comfortable.** He/she was not anxious and was at ease and relaxed.
7. **Very Comfortable.** He/she was very relaxed, at ease, and engaging.

Please circle the number that best describes how effective you think the subject was overall during the speech task.

### Overall Effectiveness

1. **Non-Responsive.** He/she did not participate in the task.
2. **Not Effective.** He/she barely spoke and was very awkward.
3. **Minimally Effective.** He/she was awkward and disorganized, and quickly ran out of things to say.
4. **Moderately Effective.** He/she was mildly awkward but able to present information somewhat coherently.
5. **Effective.** He/she was not awkward, and was able to communicate clearly.
6. **More Effective.** He/she was not awkward, was organized, and covered the topics well.
7. **Very Effective.** He/she was not awkward, was organized, covered the topics well, and was very engaging.



## ROLE PLAYS: SELF-RATINGS

### Overall Anxiety

Please circle the number that best describes how you felt overall during the social interactions.

1. **Extremely Anxious**. I was so anxious I could not participate in the tasks.
2. **Severely Anxious**. I was very anxious and uncomfortable and showed clear and consistent signs of anxiety.
3. **Moderately Anxious**. I was somewhat anxious and showed signs of anxiety and discomfort.
4. **Mildly Anxious**. I was a little anxious and occasionally showed some signs of anxiety.
5. **Not Anxious**. I was not anxious and did not show consistent or clear signs of anxiety.
6. **Somewhat Comfortable**. I was not anxious and was at ease and relaxed.
7. **Very Comfortable**. I was very relaxed, at ease, and engaging.

Please circle the number that best describes how effective you think you were overall during the social interactions.

### Overall Effectiveness

1. **Non-Responsive**. I did not participate in the tasks.
2. **Not Effective**. I barely spoke and was very awkward.
3. **Minimally Effective**. I was awkward, responded with short answers, and did not participate much.
4. **Moderately Effective**. I was mildly awkward, responded to questions and asked some questions, but was reserved.
5. **Effective**. I was not awkward, responded to questions, asked questions and maintained some of the conversation.
6. **More Effective**. I had good interpersonal skill and maintained part of the conversation.
7. **Very Effective**. I had good interpersonal skill, lead the conversation, and was very engaging.

## SPEECH: SELF-RATINGS

### Overall Anxiety

Please circle the number that best describes how you felt overall during the speech task.

1. **Extremely Anxious.** I was so anxious I could not participate in the task.
2. **Severely Anxious.** I was very anxious and uncomfortable and showed clear and consistent signs of anxiety.
3. **Moderately Anxious.** I was somewhat anxious and showed signs of anxiety and discomfort.
4. **Mildly Anxious.** I was a little anxious and occasionally showed some signs of anxiety.
5. **Not Anxious.** I was not anxious and did not show consistent or clear signs of anxiety.
6. **Somewhat Comfortable.** I was not anxious and was at ease and relaxed.
7. **Very Comfortable.** I was very relaxed, at ease, and engaging.

Please circle the number that best describes how effective you think you were overall during the speech task.

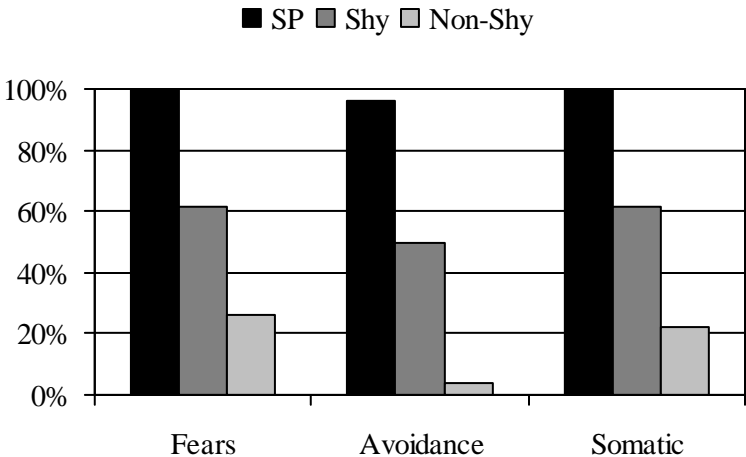
### Overall Effectiveness

1. **Non-Responsive.** I did not participate in the task.
2. **Not Effective.** I barely spoke and was very awkward.
3. **Minimally Effective.** I was awkward and disorganized, and quickly ran out of things to say.
4. **Moderately Effective.** I was mildly awkward but able to present information somewhat coherently.
5. **Effective.** I was not awkward, and was able to communicate clearly.
6. **More Effective.** I was not awkward, was organized, and covered the topics well.
7. **Very Effective.** I was not awkward, was organized, covered the topics well, and was very engaging.

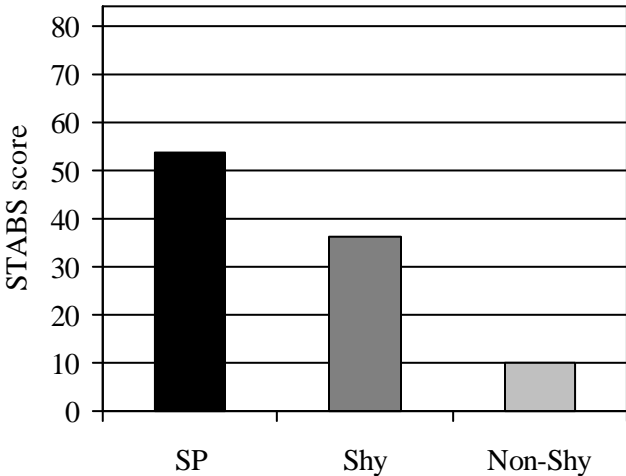
# Appendix C: Study Results in Graphical Format

## Symptomatology

### Fears, Avoidance, and Somatic Symptoms

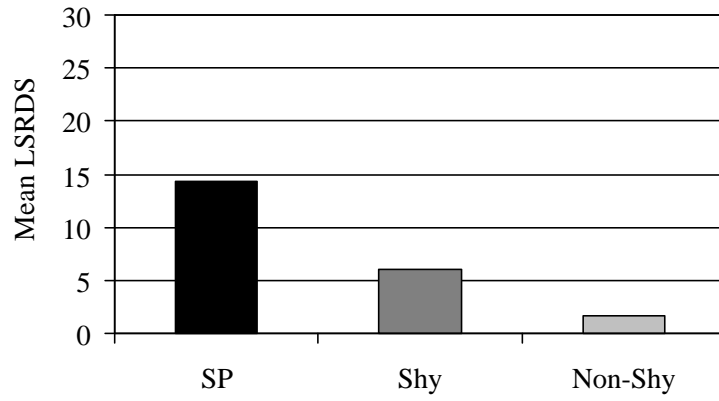


### Cognitive Symptoms

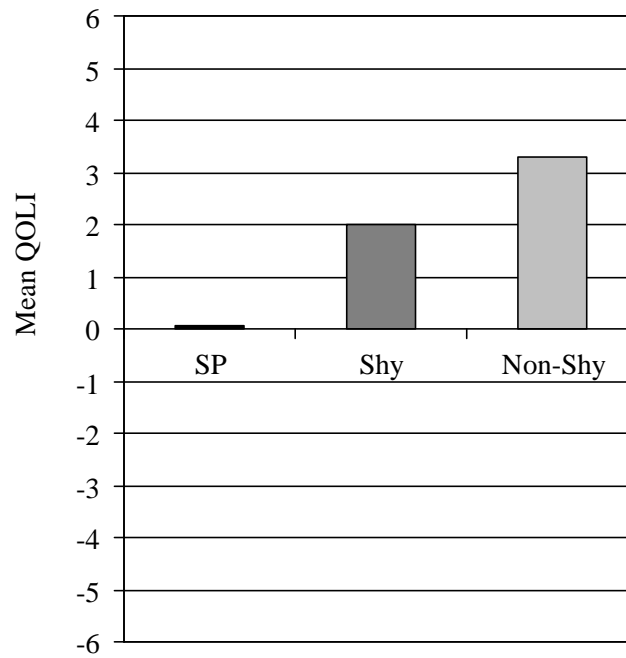


# Functional Impairment and Quality of Life

## Functional Impairment



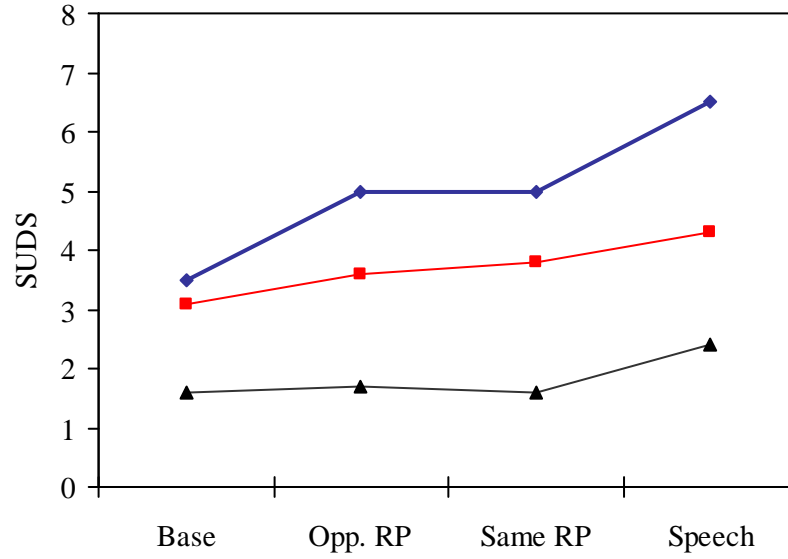
## Quality of Life



# Subjective Units of Distress

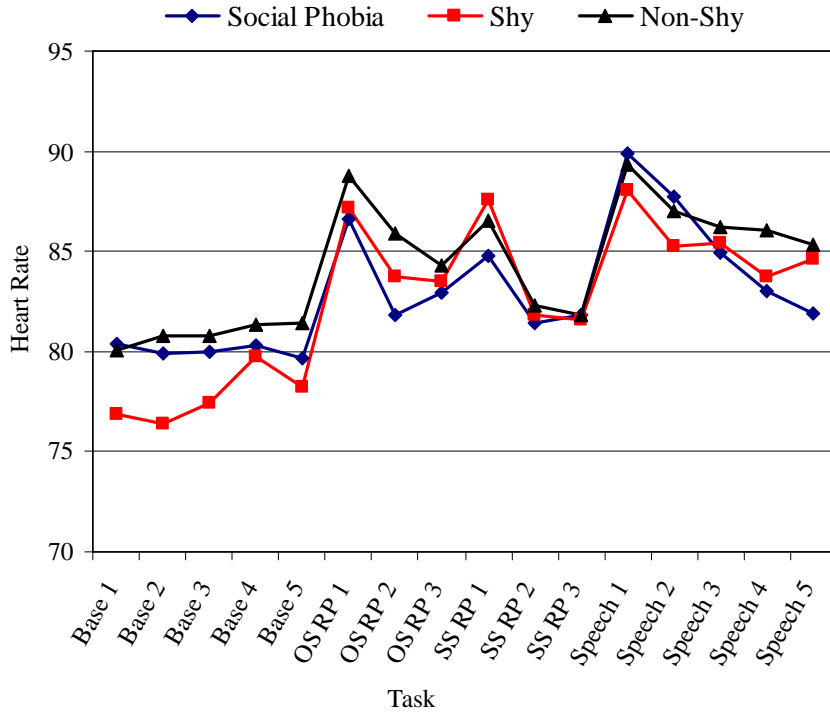
## SUDS Rating by Task

—◆— SP —■— Shy —▲— Non-Shy

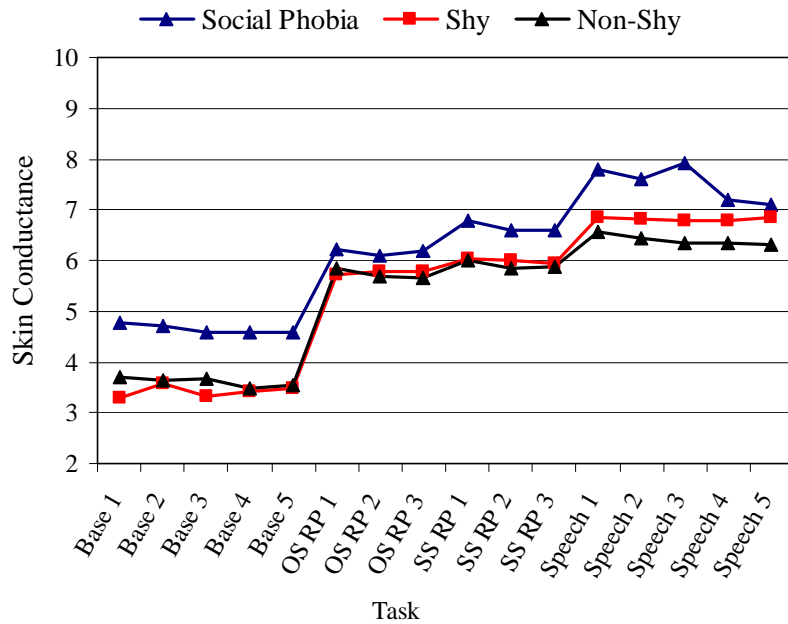


# Psychophysiology

## Heart Rate by Task and Group

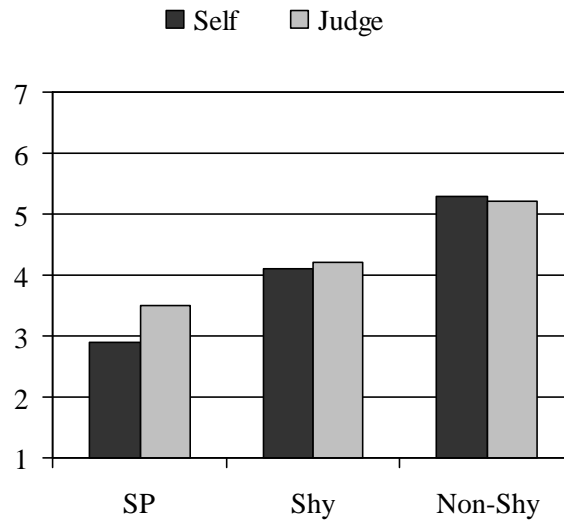


## Skin Conductance by Task and Group

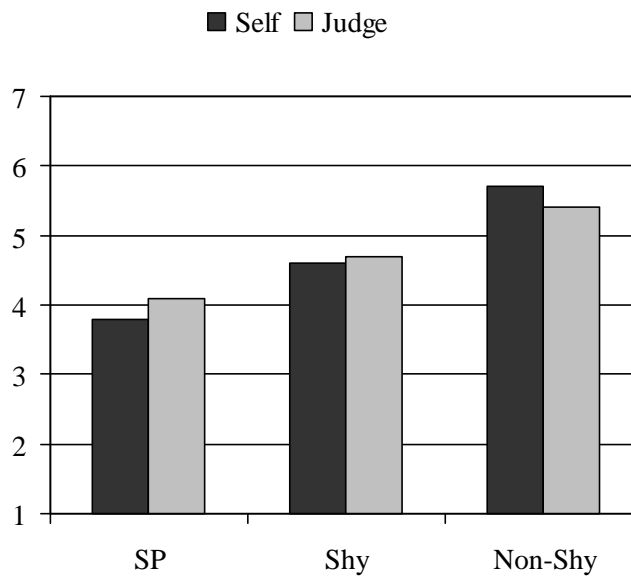


## Anxiety and Effectiveness Ratings for Role Plays

### Anxiety Ratings (higher values=less anxiety)

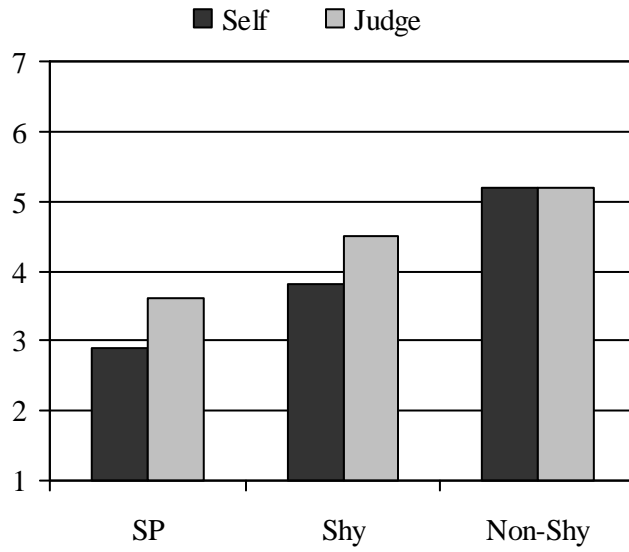


### Effectiveness Ratings

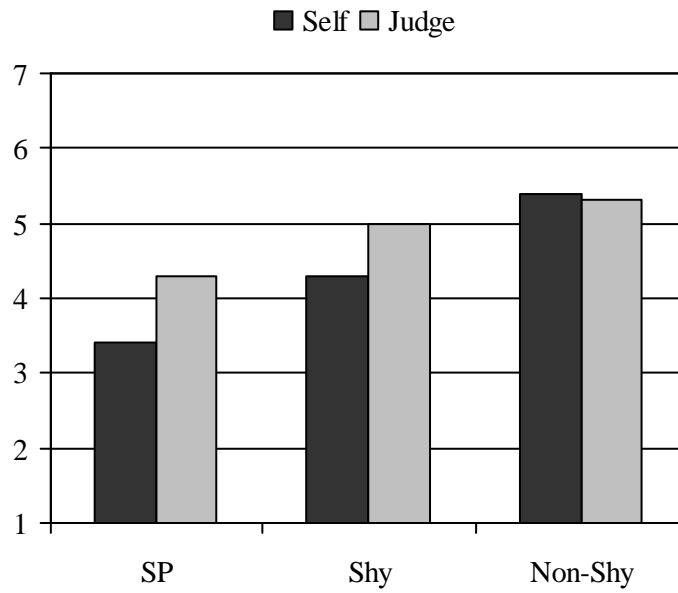


## Anxiety and Effectiveness Ratings for Speech

Anxiety Ratings  
(higher values=less anxiety)



Effectiveness Ratings





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