

University of Nevada, Reno

Investigation of Social Anxiety Prevalence and Anxiety Sensitivity among College Students

A dissertation submitted in partial fulfillment of the requirements for the Degree of Doctor of Philosophy in Clinical Psychology

by

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Abstract

Social anxiety is a prominent problem in the college student population, with most college students reporting anxiety in social situations at some time or another (Purdon, Antony, Monteiro, & Swinson, 1999). Anxiety sensitivity, the fear of anxiety-related symptoms and sensations, is elevated in individuals with anxiety disorders, including social anxiety disorder (Taylor, Koch, & Crockett, 1991). However, it is not clear which anxiety sensitivity components contribute to social anxiety. Furthermore, the nature and prevalence of social anxiety disorder in the college student population is largely unexamined. Study 1 examined archival data collected from 434 undergraduates. The Social Phobia Diagnostic Questionnaire (SPDQ; Newman, Kachin, Zuellig, Constantino, & Cashman, 2003) and the Anxiety Sensitivity Index (ASI; Reiss et al., 1986) were administered to this unselected college student sample. Study 2 aimed to replicate and extend Study 1 by administering the SPDQ as well as the Revised Anxiety Sensitivity Index (ASI-R; Taylor & Cox, 1998) and additional social anxiety related measures to a different unselected college student sample (N = 400). It was predicted that social anxiety disorder would be just as prevalent in college students as reported in the general population and that college students meeting diagnostic criteria for social anxiety disorder would show elevated levels of anxiety sensitivity compared to those who did not meet criteria for the disorder. Finally, it was predicted that students with social anxiety disorder would show elevations on the social and physical concerns ASI and ASI-R subscales and that ASI-R scores would predict social anxiety symptom severity after controlling for trait anxiety, depression, and fear of negative evaluation in a set wise hierarchical multiple linear regression analysis. The results partially supported these

hypotheses. Social anxiety disorder was nearly as prevalent in the college student population as in the general population. The students who met criteria for the disorder scored significantly higher than students without social anxiety disorder on all measures, including rates of fear of public speaking, anxiety sensitivity (ASI and ASI-R total scores and subscales), trait anxiety, fear of negative evaluation, social anxiety symptom severity, and depression. The ASI-R added very little to the predictability of social anxiety symptom severity after controlling for trait anxiety, fear of negative evaluation, and depression. Implications of study findings and directions for future research are discussed.

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Investigation of Social Anxiety Prevalence and Anxiety Sensitivity Among College Students

Introduction

Social anxiety disorder is one of the most prevalent psychological disorders, affecting as many as 13.3% of the general population at any particular time (Kessler et al., 1994). More recent prevalence data replicated this finding, with 12.5% of the population meeting DSM-IV criteria (APA, 1994) at some point during the lifespan. This rate increased to 13.3% for 18-29 year olds (Kessler et al., 2005). Social anxiety most often begins in adolescence and is most prevalent in individuals between the ages of 18 to 29 who are typically undereducated, single, and of low socioeconomic status (Durand & Barlow, 2003). As many as 15 to 20% of the general population have described social anxiety as a distressing problem that they have experienced at one time (Pilkonis, Feldman, Himmelhoch, & Cornes, 1980).

Compared to control samples, individuals with social anxiety disorder experience higher negative affect and judge their quality of life as being lower (Davidson, Hughes, George, & Blazer, 1994; Safren, Heimberg, Brown, & Holle, 1997). Although most college students report having experienced anxiety symptoms in social situations (Purdon et al., 1999), there are no data currently available on the actual prevalence of social anxiety disorder in a college population and more specifically, the types of symptoms students meeting diagnostic criteria are most frequently endorsing. One area that seems to be deficient in the current empirical literature is the nature and severity of social anxiety in the college student population.

The underlying feature of social anxiety is the marked and persistent fear of performance or social situations. This encompasses the fear of public speaking as well as the fear of social interactions. The common factor between these situations is that they involve doing something in the presence of others with the possibility of being evaluated (Durand & Barlow, 2003). Thus, social anxiety is driven by a fear of negative evaluation by others. The diagnostic criteria for social phobia or social anxiety disorder according to the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; American Psychiatric Association, 2000) are comprised of the following:

- A marked and persistent fear of one or more social or performance situations with the fears surrounding the possibility that they may be evaluated negatively by others due to acting in a way that will be embarrassing or humiliating by outwardly displaying signs of anxiety.
- When exposed to the feared social situation, anxiety symptoms are almost always provoked and the individual recognizes that his or her fear is unreasonable and excessive.
- The feared social or performance situations are endured with intense anguish or anxiety or they are avoided all together.
- This avoidance, distress, or anxious anticipation causes substantial interference with the individual's ability to function in his or her daily routine, job, school, relationships, or social activities.
- The fear or avoidance is not better accounted for by another mental disorder such as Panic Disorder with Agoraphobia nor is it due to the direct physiological effects of a substance or general medical condition.

One factor that plays a potential role in the development and manifestation of anxiety disorders is anxiety sensitivity. Anxiety sensitivity is the fear of anxiety related symptoms based on distressing beliefs or thoughts about the negative consequences of the sensations (Scott et al., 2000; Taylor, 1999). Individuals may fear these sensations due to the potential physical, social, or psychological consequences. Anxiety sensitivity has been found to be predictive of anxious responses of college students in a social interaction (Gore, Carter, & Parker, 2002). Reiss and McNally (1995) have hypothesized that anxiety sensitivity is imperative in the development and maintenance of anxiety disorders. Thus, anxiety sensitivity has recently been implicated in the development and maintenance of social anxiety. However, researchers have not yet addressed whether this fear of bodily sensations simply reflects the negative evaluation fears that define the disorder or whether anxiety sensitivity is an important construct that adds to existing etiological models.

This document will be organized as follows: Various models of the etiology of social anxiety will be discussed, followed by a review of the research literature examining social anxiety in college students. Next, anxiety sensitivity will be defined along with a description of measures designed to assess anxiety sensitivity. A detailed review of the role of anxiety sensitivity in the different anxiety disorders, including social anxiety, will follow. Finally, research related to anxiety sensitivity and social anxiety in college students will be discussed, followed by a description of the current study, results, and conclusions.

Social Anxiety: Models of Etiology

Cognitive Model. There have been numerous proposed etiological models of social anxiety. A cognitive model of social phobia proposed by Clark and Wells (1995) suggested that individuals with high levels of social anxiety hold maladaptive beliefs about their behavior and themselves, resulting in a misinterpretation of the social situations that they engage in. In addition, these individuals try to hide or alleviate their anxiety by engaging in various mental operations that are also dysfunctional. A number of processes are believed to interfere with the individual gathering evidence that is contrary to their beliefs. For instance, individuals with high levels of social anxiety shift their attention to self-monitoring when they enter social situations, making them even more aware of any feared anxious responses. This self-focused attention prevents the accurate processing and interpretation of the behavior of others. Individuals with social phobia also tend to rely heavily on their internal feelings or cues as an indication of whether or not a social situation is going well. Thus, individuals assume that if they feel anxious in a social interaction, this is indicative of a poor performance. Other key features of this model propose that individuals with social anxiety engage in safety behaviors and spend more time interpreting and thinking about the various details of social situations. This model also assumes a memory bias for information that is socially threatening (Clark & Wells, 1995).

Information Processing Model. A model incorporating the information processing biases literature has been presented by Heinrichs and Hofmann (2001). They concluded that individuals with low and high levels of social anxiety most likely process information differently, with individuals with high levels of social anxiety paying more

attention to information that is in some way socially threatening. This bias appears to occur in a non-clinical socially anxious sample only if they are in a socially anxious state when retrieval occurs. In addition, this bias seems to be limited to concerns related to how one looks or is perceived by others (Mansell & Clark, 1999; Smith, Ingram, & Brehm, 1983).

The selective memory biases that have been found in some research have not been replicated or supported by additional studies. Heinrichs and Hofmann (2001) concluded that it is possible that specific interactions of memory systems are moderated by various factors. These factors include the social evaluative context when retrieval takes place, trait anxiety, or depressive symptoms, thus resulting in the selective processing of information that is socially threatening being confined to only these conditions. In sum, an attentional as well as a judgmental bias toward socially threatening information appears to be present in individuals who are socially anxious, with little evidence to support a possible memory bias (Heinrichs & Hofmann, 2001). This information processing model is largely consistent with the cognitive model of social phobia presented by Clark and Wells (1995).

Generalized Psychological and Biological Vulnerability Model. Hofmann and Barlow (2002) also proposed an etiological model of social phobia based on the observation that humans seem sensitive to social displeasure in its various forms, such as criticism or anger, for evolutionary reasons. Given this predisposition to social disapproval sensitivity, most individuals will experience fear in a social situation at some time, most likely for the first time in adolescence. However, considering most people will experience anxiety in a social situation at one time or another, few people actually

end up developing social phobia. Hofmann and Barlow proposed that both a generalized psychological and generalized biological vulnerability to anxious apprehension must be present to develop social phobia. These vulnerabilities dictate how people react when faced with social stressors and more direct social experiences such as public speaking (Hofmann & Barlow, 2002).

This particular model assumes that even minor events involving social interactions or performances can lead to feelings of anxiety. This is especially true if an alarm is associated with the event. Alarms in this model can fall under the description of false alarms, true alarms, learned alarms, or no alarm, which is paired with the perception of poor social skills. Hofmann and Barlow (2002) proposed that it is more common for individuals with a non-generalized type of social phobia, such as the fear of public speaking, to develop social phobia through true alarms compared to individuals who have a more generalized fear of social interactions. This supposition is consistent with the idea that individuals with a specific social phobia display fear reactions that are much like the fear reactions exhibited by individuals with specific phobias. On the other hand, a generalized subtype of social phobia is characterized by the occurrence of an anxiety response, which may also include feelings of shame and/or embarrassment. Social phobia that is generalized most likely occurs via the etiological pathways of false alarms or no alarms at all associated with situations that are socially evaluative. All of the alarms associated with this model provide an indirect or direct pathway to the development of anxious apprehension that includes increased self-focused attention. This anxious apprehension results in the specific psychological vulnerability, which is

described more specifically as the belief that social evaluation is in fact dangerous, thus resulting in the development of social phobia (Hofmann & Barlow, 2002).

Cognitive Behavioral Model. Lastly, Rapee and Heimberg (1997) proposed a cognitive-behavioral model of anxiety in social phobia. This model begins with the notion that individuals who are socially anxious are likely to assume that other people will negatively evaluate them in addition to placing substantial merit on the appraisal of others. When individuals with high levels of social anxiety encounter a social situation, they form a mental representation of their own behavior and appearance as they assume others see it. At the same time these individuals are also focusing their attentional resources on any possible threat in the social situation such as scowls, frowns, or indicators of boredom (Rapee & Heimberg, 1997).

This mental representation is an integration of information from long-term memory, external cues, as well as internal cues. Concurrently, socially anxious individuals predict the standards to which the others in the situation are expecting them to perform. Following this prediction, individuals with elevated levels of social anxiety will determine if they are performing in a way that meets the standards of the particular audience in a given situation. The perceived likelihood of negative evaluation is determined by any discrepancies the individual has between how they think they are being appraised by others and the assumed standards of a given audience. Additional anxiety is elicited by the prediction of negative evaluation by others. This anxiety has behavioral, cognitive, as well as physiological components. These components then influence the mental representation of the individual and the cycle starts over (Rapee & Heimberg, 1997).

Limitations of Current Models

All of these models suggest potential vulnerabilities or possible factors that predispose an individual to develop social anxiety disorder. The models described appear to lack a potentially imperative factor in the etiology of social anxiety disorder. More specifically, the models fail to address the fearfulness of bodily sensations associated with anxiety, a construct known as *anxiety sensitivity*. For example, if an individual is experiencing an elevated heart rate, increased perspiration, blushing, etc., how fearful is he or she of these physical symptoms in particular? The experience of blushing and/or sweating profusely will most likely increase how negatively an individual with elevated levels of social anxiety will predict other people are evaluating him or her. The degree to which an individual fears anxiety-related physical sensations may also contribute to the development of social anxiety disorder. Thus, further investigation into the fear of anxiety sensations in the development of social anxiety disorder appears to be warranted.

Social Anxiety in College Students

As reviewed above, social anxiety is often maintained by an individual's extremely high standards for social performance, a predisposition to assume that other people view them as inadequate, and a tendency to think that what others believe about them is true (Clark & Wells, 1995; Rapee & Heimberg, 1997). All of these factors seem quite relevant to the college student population given that college students face numerous situations in which they could potentially feel as if they are being evaluated, either in classes or less formal social gatherings. Indeed, a large number of college students reported that interpersonal relationships are stressful (Santiago-Rivera, Gard, & Bernstein, 1999). Purdon and colleagues (1999) further examined social anxiety in

college students. They investigated the frequency of symptoms associated with social anxiety among a non-clinical college sample as well as how anxiety influenced participants' immediate impressions of others depending on a number of personal characteristics such as attractiveness and intelligence. Lastly, Purdon and colleagues examined the relationship between social anxiety and immediate perceptions of other individuals who appeared anxious.

A total of 81 undergraduate students completed self-report measures of social anxiety and social desirability. Results of the study were consistent with findings from the general population: some of the participants had experienced all of the anxiety symptoms at some point and most college students had experienced anxiety symptoms in social situations. Purdon et al. (1999) suggested that individuals who are highly socially anxious underestimate how often others become anxious as well as how visible the signs of anxiety are in others.

Related to specific personal characteristics of those appearing anxious, most participants indicated that if they noticed someone was anxious, their perception of the other's ambition, intelligence, or mental health would not be influenced. Participants did however indicate that their perception of an individual's leadership abilities and strength of character would be influenced by visible signs of anxiety. Interestingly, participants in the study who themselves were highly socially anxious were more likely to perceive others who show signs of anxiety as having less strength of character and as being less attractive than participants with lower levels of social anxiety. Overall, these results suggested that most college students experience symptoms related to social anxiety now

and then and that negative attitudes towards those with social anxiety are prevalent, even among socially anxious individuals (Purdon et al., 1999).

The Purdon et al. (1999) study provided important information about the frequency of specific anxiety related symptoms such as sweating, shaking, and heart palpitations, in a college student sample. It did not, however, assess the prevalence of students actually meeting diagnostic criteria for social anxiety disorder. Given that most people in college experience anxiety from time to time, it appears worthwhile to gather more information about how many college students suffer from social anxiety that is debilitating and significantly impairs functioning. The nature and severity of social anxiety in the college student population remains unclear.

Dating is a social situation frequently experienced by college students that likely provokes elevated levels of anxious symptoms for many individuals. Lesure-Lester (2001) examined social anxiety, dating competence, and social assertion by collecting self-report questionnaire data from 217 college students of different ethnic groups (African American, Asian American, European American, Mexican American, and Multiracial). Measures included the Dating and Assertion Questionnaire (DAQ; Levenson & Gottman, 1978), the Social Anxiety Thoughts Questionnaire (SAT; Hartman, 1984), and the Social Avoidance and Distress Scale (SADS; Watson & Friend, 1969). Individuals who reported being more competent at dating had a tendency to be more assertive in social situations and less socially anxious. In addition, there were no differences found in reported dating competence and dating assertion among the various ethnic groups (Lesure-Lester, 2001). Thus, dating appears to be a specific social situation

in which college students with elevated levels of social anxiety have greater difficulties than those who are less socially anxious.

Kashdan and Roberts (2004) conducted another study focusing on social anxiety and college students in which they investigated the influence of self-focused attention on affective, cognitive, and motivational disturbances during a reciprocal self-disclosure task. More specifically, the purpose was to determine if high levels of self-focused attention and social threat would have more detrimental effects on the affect, curiosity, and social self-efficacy of individuals with high levels of social anxiety versus low levels of social anxiety. Participants consisted of 91 college students screened for levels of social anxiety prior to their participation in the social interaction. There were two conditions in the study. The first condition required participants to answer questions with a video camera pointed at them and the second condition required participants to ask the question with the camera pointed at a confederate. Individuals with high levels of social anxiety experienced more negative and less positive affect in both conditions compared to those with low levels of social anxiety. These differences were higher in the first condition with the camera pointing at the participants. The level of social threat as well as how much attention is self-focused may contribute to the cognitive and affective difficulties reported by so many socially anxious individuals (Kashdan & Roberts, 2004).

Cognitive and affective difficulties have probably been the most extensively researched as they relate to depression. Given the strong presence of cognitions and misinterpretations in the proposed etiological models of social anxiety, it seems relevant to examine the cognitions of individuals with elevated levels of social anxiety. More specifically, Beck's model of depression proposed that individuals who are depressed

perpetuate their depressed mood by having a large number of cognitions in which negative information is overemphasized. Beck's model of depression was examined in individuals who experienced at least low levels of social anxiety in order to determine if the manifestation of cognitive distortions is similar to those of individuals who are depressed (Johnson, Johnson, & Petzel, 1992). One hundred fourteen college students were administered a number of measures to assess for levels of trait anxiety, cognitive distortions, depression, fear of negative evaluation, and social distress and avoidance.

As predicted, participants who endorsed higher levels of social avoidance and distress or fear of negative evaluation gave a greater percentage of responses that fell into the depressed-distorted category on the Cognitive Distortions Questionnaire (CDQ; Krantz & Hammen, 1979). Participants were classified as low, moderate, or high on measures of social anxiety. Significant differences between high and low group participants were found, but no group differences were found between moderate and low socially anxious individuals on depressed-distorted responses. Individuals in the high social anxiety group engaged in substantially more depressive cognitive distortions than the other two groups. Results suggested that high levels of social anxiety at the developmental stage of those in the college student population may be a precursor to depression (Johnson et al., 1992).

Social anxiety is a crucial mental health issue for college students. However, no data address the prevalence of clinically significant social anxiety disorder in the college student population. In addition, the nature and impact of the symptoms associated with social anxiety remains unclear. Clearly, there are a number of questions not yet addressed within the college student population that warrant further investigation.

For instance, the potential role of anxiety sensitivity remains unclear. Is anxiety sensitivity a crucial factor in the maintenance of the social anxiety experienced by college students? Also, do college students who meet diagnostic criteria for social anxiety disorder display elevated levels of anxiety sensitivity compared to those without social anxiety disorder? Finally, if anxiety sensitivity is elevated in college students reporting clinical levels of social anxiety, could this elevation be accounted for by another concept, such as the fear of negative evaluation?

Anxiety Sensitivity: Definition and Related Theories

Anxiety sensitivity is considered an imperative factor in the maintenance and development of anxiety disorders (Reiss & McNally, 1985). There is much variability in how prone people are to experience anxiety. Some individuals experience anxiety when minimally provoked, and others require much more stressful circumstances. Trait anxiety refers to individual differences in how prone one is to experience anxiety (Taylor, 1999). The tendency to see the world as dangerous or threatening or the tendency to become anxious across situations sums up the broad definition of trait anxiety (Beck & Emery, 1985).

The broad nature of this trait anxiety definition offers little insight into the specific nature of an individual's anxiety. The hierarchical model of trait anxiety offers a fuller conceptualization (Lilienfeld, Turner, & Jacob, 1993). In this model, the construct of anxiety consists of one higher-order factor, the general concept of trait anxiety, and three lower-order factors. The three lower-order factors are anxiety sensitivity, fear of negative evaluation, and fear of illness or injury sensitivity (Gore, Carter, & Parker, 2002). Anxiety sensitivity is a construct that is conceptually different from that of trait

anxiety in that anxiety sensitivity represents the tendency to fear or respond anxiously to arousal symptoms and trait anxiety refers to the tendency to have an anxious response to any stressor or stressors in general (Holloway & McNally, 1987).

A number of theories have been proposed related to anxiety sensitivity. The expectancy theory proposes that the development and severity of a number of fears and a variety of anxiety conditions is determined by three fundamental fears. These include fear of negative evaluation, fear of injury or death, and anxiety sensitivity (Reiss & McNally, 1985; Reiss, 1991). According to the sensitivity theory of motivation, anxiety sensitivity is a genetically based aversion to anxiety that is combined with beliefs about the negative consequences of anxiety (Reiss & Havercamp, 1996). The proposed etiological models for social anxiety lack any specific references to the concept of anxiety sensitivity, which seems to encompass a number of imperative factors related to experiencing anxiety in social situations. For example, the fear of anxiety related symptoms due to potential social consequences is a central feature of social anxiety disorder. Thus, anxiety sensitivity might be important to the etiology of social anxiety disorder.

Similar to how individuals vary in their proneness to experience anxiety, there is also variability in their fear of experiencing anxiety symptoms. The construct of anxiety sensitivity represents the individual differences associated with the fear of anxiety (Reiss & McNally, 1985). Anxiety sensitivity is a pre-dispositional construct that is a stable and trait like characteristic. The construct refers to the fear of anxiety related symptoms that occur based on distressing thoughts or beliefs about the possible negative consequences of the sensations they are experiencing (Scott et al., 2000; Taylor, 1999). For example,

an individual with high anxiety sensitivity may view heart palpitations as an indication that he or she is having a heart attack, while an individual with low anxiety sensitivity would consider the experience to be just uncomfortable or unpleasant (Taylor, 1999). In addition to fearing anxiety related sensations because of a misinterpretation of imminent physical or mental complications, other individuals may fear these sensations based on concerns related to social evaluation.

Assessment of Anxiety Sensitivity: The ASI and ASI-R

Anxiety Sensitivity Index (ASI). The ASI (Reiss et al., 1986; Peterson & Reiss, 1992) was developed to measure and test the theory of anxiety sensitivity. The ASI consists of 16 items that ask about the degree to which an individual finds sensations related to anxiety to be fearful or catastrophic in outcome (Peterson & Reiss, 1992). Individuals must select an answer for each question from one of five choices ranging from *0 very little* to *4 very much*.

The most recent psychometric analysis of the ASI was conducted by Zinbarg, Barlow, and Brown (1997). It suggests that the ASI is made up of a hierarchy of subscales that consist of multifactorial levels. The lowest first order factors assess three specific anxiety sensitivity areas. These include physical concerns, mental incapacitation concerns, and social concerns. Most of the items on the ASI address the fear of the potential consequences related to the physical sensations of anxiety (experiencing a rapid heartbeat, being short of breath, feeling shaky or faint, stomach growling, and unusual body sensations). Questions that address the individual's fear related to mental incapacitation include worrying that they are going crazy due to the inability to concentrate as well as worrying that they are mentally ill when nervous. Questions

related to social consequences include worrying that others will notice that they are nervous or shaky (Taylor, 1999). A number of studies support the construct validity of the ASI (Peterson & Heilbronner, 1987; Reiss et al., 1986). However, some controversy exists about the difference between anxiety sensitivity as measured by the ASI and measures of trait anxiety. Other researchers have questioned the relative importance of anxiety sensitivity and trait anxiety and where they should be placed on the hierarchical model of trait anxiety (Lilienfeld et al., 1993).

There has also been some controversy regarding the social concerns portion of the ASI. Taylor (1995) suggested that the anxiety sensitivity lower-order social concerns component might be conceptualized more appropriately as belonging to the domain of negative evaluation sensitivity versus the domain of anxiety sensitivity. It has also been argued that the anxiety sensitivity social concerns are conceptually different from negative evaluation sensitivity. Zinbarg, Mohlman, and Hong (1999) posited that anxiety sensitivity taps into concerns related to negative evaluation sensitivity that results from publicly displaying observable symptoms of anxiety. They also proposed that negative evaluation sensitivity refers to fears of negative evaluation that come about as a result of a wide variety of behaviors not limited to the display of symptoms indicative of anxiety.

McWilliams, Stewart, and MacPherson (2000) addressed the question of where the social concerns component of the ASI belongs. It is important to note that the sample for this study consisted of 216 undergraduate volunteers, 76.4% of which were female. An exploratory factor-analytic approach was used to determine if the component is better conceptualized as belonging to the domain of negative evaluation sensitivity or to the domain of anxiety sensitivity. Factors were obtained that represented the construct of

negative evaluation sensitivity as well as the three lower-order constructs that make up the ASI (i.e. physical, mental, and social concerns). The results indicated that the subscales derived from these four factors were positively significantly correlated with one another within the ASI and Brief Fear of Negative Evaluation scale (BFNE; Leary, 1983). In addition, contrary to the speculation that anxiety sensitivity social concerns belong to a higher-order anxiety sensitivity factor that is separate from a higher-order negative evaluation sensitivity factor, anxiety sensitivity and negative evaluation sensitivity were positively and significantly correlated with a single higher-order factor that was labeled Threat Sensitivity (McWilliams et al., 2000).

These findings suggest that the social concerns component of the ASI is in fact distinct from the other lower components of anxiety sensitivity (i.e. physical and psychological) as well as from negative evaluation sensitivity. However, a correlation analyses and higher-order principal components analyses suggest that the anxiety sensitivity social concerns factor touches on a blend of anxiety sensitivity and negative evaluation sensitivity in addition to something unique and separate from both global negative evaluation sensitivity and anxiety sensitivity (McWilliams et al., 2000). It remains unclear how social anxiety concerns are best conceptualized and how the various forms of anxiety sensitivity relate to fears of negative evaluation. Only 3 questions on the ASI address social concerns related to being anxious, and little research has examined whether this component of anxiety sensitivity is best accounted for by the fear of negative evaluation.

Anxiety Sensitivity Index-Revised (ASI-R). An expanded version of the ASI, the ASI-R (Taylor & Cox, 1998), was developed as a way to address the concern that the

original ASI might not contain enough items to properly assess the specific lower order factors. The ASI-R consists of 36-items, ten of which are from the original ASI. The instructions and response format are the same as the original. Taylor and Cox (1998) conducted a study to investigate the factor structure of anxiety sensitivity using the ASI-R. The sample for the study consisted of 155 individuals seeking treatment for various anxiety disorders. The sample was mostly female (78%) and comprised of individuals with a primary diagnosis of Panic Disorder with or without Agoraphobia ($n = 91$). Only three participants had a primary diagnosis of Social Phobia. The mean age was 36 years old with a standard deviation of 11 years (Taylor & Cox, 1998).

The ASI-R was designed to measure six domains of anxiety sensitivity. Eight items on the ASI-R correspond to the fear of publicly observable anxiety reactions compared to just three from the original scale. The other five scales included in the ASI-R are fear of cardiovascular symptoms (6 items), fear of respiratory symptoms (7 items), fear of gastrointestinal symptoms (4 items), fear of dissociative and neurological symptoms (6 items), and fear of cognitive dyscontrol (5 items). A principal components analysis (PCA) was conducted along with a parallel analysis, which resulted in four of the six subscales forming distinct factors. Fear of dissociative and neurological symptoms and fear of gastrointestinal symptoms did not form distinct factors and loaded on one or more of the other four. The four distinct factors were moderately correlated with one another. A hierarchical solution was indicated by the results, with the four lower order ASI-R factors loading on a single higher order factor (Taylor & Cox, 1998).

Anxiety Sensitivity in Anxiety Disorders

The ASI-R has not yet been studied within a non-clinical population. All of the studies to date with the exception of Taylor and Cox (1998) have used the original ASI. Anxiety sensitivity as measured by the ASI has generally been found to be elevated in individuals with anxiety disorders when compared with normal controls (Reiss et al., 1986; Taylor, Koch, & Crockett, 1991). Even though a range of anxiety disorders have been related to the ASI, most of the research in anxiety sensitivity has examined the role that it plays in panic disorder. ASI scores are often elevated among individuals with panic disorder compared to individuals with other anxiety disorders (Taylor, Koch, & McNally, 1992). This section will focus on the research that has been conducted in the area of anxiety sensitivity and panic disorder as well as with other anxiety disorders.

Panic Disorder. It has been suggested that anxiety sensitivity is a predisposing variable for the development of panic disorder. Lilienfeld (1997) found that anxiety sensitivity predicts a history of panic attacks above and beyond indicators of more general trait anxiety or negative affect. Anxiety sensitivity has been found to differentiate between individuals who experience panic attacks but do not have panic disorder and those who have never had a panic attack (Norton, Cox, & Malan, 1992). An individual who has an elevated level of anxiety sensitivity is at a greater risk to experience panic attacks and develop panic disorder than an individual with a low level of anxiety sensitivity.

Anxiety sensitivity may arise from a lifetime of experiencing directly aversive events, such as a history of a serious illness or injury. Vicarious observations such as exposure to the serious illness or death of a family member or the influence of a parent

who is overprotective concerning physical well-being are also posited to contribute to an individual's vulnerability to anxiety sensitivity (Craske, 1999). Taylor and Cox (1998) note that an important question for future investigation should surround the nature of the genetic and environmental factors that correspond to the various mechanisms of anxiety sensitivity.

Anxiety sensitivity is associated with a heightened level of attention paid to physical cues. Individuals who experience panic appear to have an elevated awareness or an increased ability to identify and detect bodily sensations associated with arousal. This increased ability to identify and detect bodily sensations may go hand in hand with the degree to which one may think others are negatively evaluating them. In addition to anxiety sensitivity, this increased ability to detect physical cues may predispose an individual for the development of panic disorder (Craske, 1999).

Initial panic attacks occur in a variety of settings. These locations are often outside of the home (Craske, Miller, Rotunda, & Barlow, 1990). These settings include while at work or school, while driving, on a plane or bus, in public in general, or in a situation that is socially evaluative (Craske, 1999). Craske and Rowe (1997) proposed that initial panic attacks are most likely to occur in situations where feared physical sensations are perceived as being especially threatening because of possible impairment. For example when driving, fear of being trapped, fear of negative evaluation, or fear of being in an unfamiliar location. Certain situations or contexts are more likely to be linked with negative personal consequences of experiencing anxiety (Craske, 1999). College setting activities such as attending class, public speaking, dating situations, and parties might reflect situations in which students fear negative evaluation.

There is an intense fear of specific bodily sensations related to panic attacks that develops after an individual experiences an initial panic attack. Due to the experience of a panic attack, one can construe this “fear of fear” as sensitization of the individual’s predisposing trait of anxiety sensitivity. Reiss (1991) suggested a vicious cycle in which anxiety sensitivity increases the risk of panic attacks and panic attacks increase the levels of anxiety sensitivity. There is considerable evidence for the fear of sensations in individuals who experience panic attacks. Individuals with panic disorder have powerful beliefs and fears of mental or physical harm occurring from bodily sensations associated with panic attacks (Craske, 1999).

One study looked specifically at anxiety sensitivity as a predictor of panic attacks (Struzik, Vermani, Duffin, & Katzman, 2004). The authors noted that if anxiety sensitivity is an intrinsic and independent piece of panic development as opposed to a learned fear of earlier panic (Goldstein & Chambless, 1978), then anxiety sensitivity should predict panic that is both provoked and unprovoked (Struzik et al., 2004). One goal of the study conducted by Struzik and colleagues was to test the predictive value of anxiety sensitivity (as measured by the ASI) as a marker of panic induced in the laboratory among individuals with panic disorder as well as healthy volunteers. Experiencing a panic attack was used as the dependent outcome measure. A second goal of the study was to establish which specific item sets on the ASI were responsible for this predictive value.

ASI scores were collected from individuals with panic disorder and controls to determine if panic is accurately predicted by anxiety sensitivity. Only two items on the ASI (item one which states “It is important to me not to appear nervous.” and item five

which states “It is important to me to stay in control of my emotions.”) correlated with panic attacks experienced by the group with panic disorder. Anxiety sensitivity as it was measured by the total score on the ASI, the subscales focusing on social concerns, mental incapacitation, or physical concerns, were not effective in predicting the elicitation of panic in either population. Given this result, the hypothesis that anxiety sensitivity plays a causal role in the elicitation of panic attacks is not supported (Struzik et al., 2004). This does not mean that psychological factors are not involved in the generation of panic. It is possible that anxiety sensitivity is predictive of a number of process variables involved in both physiological and psychological symptoms related to panic as they have been reported in recent literature (Brown, Smits, Powers, & Telch, 2003; Perna, Romano, Caldirola, Cucchi, & Bellodi, 2003; Shipherd, Beck, & Ohtake, 2001; Rassovsky, Kushner, Schwarze, & Wangenstein, 2000), even though the fear of anxiety-related symptoms may not play a critical role in predicting panic attacks (Struzik et al., 2004).

Holloway and McNally (1987) examined the effects of anxiety sensitivity on the response to hyperventilation. It was hypothesized that anxiety sensitivity would increase responses to a biological challenge such as hyperventilation. Individuals were screened and put into two groups, those with low anxiety sensitivity and those with high anxiety sensitivity. This was determined by cutoff scores either one standard deviation above or below the mean in accordance with male and female norms (Reiss et al., 1986). Since the fear of anxiety is confounded with the diagnosis of panic disorder, a non-clinical sample with high anxiety sensitivity in the absence of panic disorder was included.

Individuals with high anxiety sensitivity reported more frequent and intense hyperventilation and anxiety sensations in response to the hyperventilation challenge than

those with low anxiety sensitivity. Interestingly, individuals with high anxiety sensitivity also reported more sensations that were not related to the physiological effects of hyperventilation, thus exhibiting a bias for reporting bodily sensations in general. Anxiety sensitivity may intensify the anxious responses of individuals who experience panic during biological challenge tests (Holloway & McNally, 1987).

Limited research has assessed the predictive ability of anxiety sensitivity among individuals with panic disorder. It is also important to note that among such studies, the majority use total ASI scores as the measure of anxiety sensitivity. This is problematic given the hierarchical nature of the ASI (Zinbarg et al., 1997; Lilienfeld et al., 1993). The lower level factors of the ASI as well as item-level analyses may be more valid ways to test the construct of anxiety sensitivity as it relates to panic (Zinbarg, Mohlman, & Hong, 1999).

Other Anxiety Disorders. Anxiety sensitivity has also been examined in other anxiety disorders, particularly social anxiety. However, the role anxiety sensitivity plays in social anxiety appears to be different than the role it plays in panic disorder. One important difference is related to the pattern of responding on the ASI. For example, the pattern of responding was different in post-traumatic stress disorder (PTSD) individuals, with more people scoring higher on fears of psychological consequences as opposed to fears of physical consequences. A study conducted by Hazen, Walker, and Stein (1995) compared ASI scores of individuals with social phobia to those of individuals with panic disorder. A different manner of responding was found between the two groups, with the social phobia group having significantly higher scores on three items (“Other people

notice when I am shaky”, “It is important to me not to appear nervous”, and “It embarrasses me when my stomach growls”).

Taylor, Koch, and McNally (1992) examined how anxiety sensitivity varies across anxiety disorders as measured by the ASI. The participants for the study consisted of 313 patients recruited from a medical school and hospital, all of which had been diagnosed with an anxiety disorder according to the DSM-III-R (APA, 1987). The diagnostic groups consisted of panic disorder, PTSD, generalized anxiety disorder (GAD), obsessive-compulsive disorder (OCD), social phobia, and simple phobia. Two predictions were tested. First, ASI scores associated with each anxiety disorder were expected to be higher than those of normal controls. The second hypothesis was that panic disorder would be associated with higher ASI item scores as well as total scores compared to the other anxiety disorders (Taylor et al., 1992).

Elevated levels of anxiety sensitivity were found in all of the anxiety disorders when compared to normal controls with the exception of simple phobia. It was noted by the authors that these results are consistent with the expectancy theory, which states that higher levels of anxiety sensitivity are associated with anxiety disorders (Reiss, 1991). Also, it is possible that those with simple phobias did not show elevated levels of anxiety sensitivity because the panic in these disorders is situationally bound and thus more predictable. ASI scores were significantly higher for individuals with panic disorder than those of all other anxiety disorders with the exception of PTSD. However, there was a non-significant trend for the scores of the panic disorder group to be greater than those in the PTSD group. Scores for the panic disorder group were significantly higher compared to the PTSD group on 7 out of 16 items. These items assessed fears surrounding fainting,

palpitations, unusual body sensations, and the subjective experience of anxiety. There were no differences between the groups on items focusing on fears of difficulties concentrating or trembling (Taylor et al., 1992).

In further analyses, the rest of the anxiety disorders were grouped together and then compared to panic disorder. The panic disorder group had scores significantly higher with the exception of two questions. Taylor et al. (1992) concluded that panic disorder is characterized by greater anxiety sensitivity than the other anxiety disorders. They also suggested that this difference is simply a reflection of the amount of distress typically associated with each anxiety disorder (Taylor et al., 1992). It is plausible that the amount of distress that corresponds with each anxiety disorder could vary depending on a number of factors. For example, social anxiety disorder could likely be just as distressing for a college student as panic disorder.

Some researchers view anxiety sensitivity as a risk factor for panic disorder as well as other anxiety disorders. This causal view is taken by Reiss and McNally (1985; Reiss, 1991). Earlier views of anxiety sensitivity suggested that anxiety sensitivity arose as a result of experiencing panic attacks through the process of interoceptive conditioning (Goldstein & Chambless, 1978). Donnell and McNally (1990) found that individuals with high anxiety sensitivity were more likely to report both a personal and family history of panic when compared to individuals with low anxiety sensitivity. It is important to note that two thirds of the individuals with high anxiety sensitivity had never experienced a panic attack. Thus, anxiety sensitivity may not necessarily be a consequence of panic and can precede it in a number of cases (Donnell & McNally, 1990).

Even though anxiety sensitivity has been the focus of research in the various anxiety disorders, questions remain regarding the specific role anxiety sensitivity plays in each disorder. For instance, how important is anxiety sensitivity to the development and maintenance of social anxiety disorder? In addition, it is not clear if anxiety sensitivity is elevated among college students with social anxiety as was found with treatment seeking clinical samples. Thus, the question remains of whether or not the differences in ASI scores between normal and clinical populations can be replicated among college students. The next section focuses on the research examining anxiety sensitivity and social anxiety in the context of the college student population.

Anxiety Sensitivity, Social Anxiety, and the College Student Population

Given that anxiety sensitivity has been elevated in individuals with social anxiety (Taylor et al., 1992), research has examined various aspects of anxiety sensitivity and social anxiety in college student samples. Gore and colleagues (2002) compared the effectiveness of a number of measures developed to assess several separate lower-order factors that make up the construct of trait anxiety. The measures used in the study consisted of the Social Interaction Anxiety Scale and the Social Phobia Scale (SIAS and SPS; Mattick & Clarke, 1998), ASI-Physical Scale (Peterson & Reiss, 1992; Reiss et al., 1986), and the State-Trait Anxiety Inventory (STAI-T; Spielberger, Gorsuch, & Lushene, 1970). The four measures of anxiety in this study were used to predict the anxious response to a social challenge developed to induce social anxiety. It was hypothesized that by measuring specific anxious traits with the SIAS and SPS, a more precise prediction of the response to the social challenge would be made when compared to measures of trait anxiety that are less socially focused (Gore et al., 2002).

Participants for the study consisted of 37 individuals, 19 of which were female and 18 male, who were enrolled in psychology courses at a university. A dating interaction with a confederate was used to increase the state levels of social anxiety in the participants. Participants were instructed to ask the confederate out on a date. Dependent variables used in the study included the Beck Anxiety Inventory (BAI; Beck, Brown, Epstein, & Steer, 1988), the Fear of Physical Sensations Questionnaire (FPSQ) which is a modified version of the Agoraphobic Cognitions Questionnaire (ACQ; Chambless, Caputo, Bright, & Gallagher, 1984), and Social State (SocS) which is a state measure adapted from a version of the Fear of Negative Evaluation scale (Watson & Friend, 1969).

There was some predictive validity in the SIAS and the SPS, given that these measures combined accounted for more variance than either the STAI-T or the ASI-physical scale in predicting all pre and post state measures. In addition, the higher the individual's trait social anxiety scores, the greater the state social anxiety as well as physical symptoms they reported after interacting in the social situation. Related to the ASI, individuals with higher scores did fear the physical sensations they experienced during the social interaction compared to those with lower scores. A surprising finding noted by the authors was that the ASI-physical scale was nearly as good at predicting anxiety responses as the SIAS and SPS combined, significantly predicting all dependent measures (Gore et al., 2002). A limitation of this study is that only the physical scale of the original ASI was used, whereas more conclusions could be drawn from the full ASI-R. It is important to emphasize that the physical scale of the ASI was just as good at

predicting an anxious response as the measures of social anxiety. This finding supports the need for extensive research in the area of social anxiety and anxiety sensitivity.

Other research with college students found that individuals who experienced higher levels of victimization by their peers displayed higher levels of social anxiety (Craig, 1998; Walter & Inderbitzen, 1998) as well as lower levels of social acceptance (Callaghan & Joseph, 1995). Those victimized by bullying also displayed higher scores on measures of depression (Callaghan & Joseph, 1995). It is possible that children who are victimized may start to perceive the world as a dangerous place in which they always need to be on alert thus most likely leading to problems with anxiety, especially in social situations. Children who have a history of being victimized have actually experienced social situations as dangerous. These experiences greatly reinforce the perception that social situations are dangerous and expected to end in failure that is characteristic of social anxiety (Clark & Wells, 1995; Rapee & Heimberg, 1997). This results in avoidance of social situations as a way to avoid anxiety. In addition, this avoidance of social situations prevents individuals from having experiences that disconfirm their beliefs (Francis & Radka, 1995).

Another study of social anxiety and anxiety sensitivity investigated the relationship between memories for childhood teasing and anxiety and depression in college students (Roth, Coles, & Heimberg, 2002). Roth et al. examined numerous domains of anxiety including social anxiety, worry, and anxiety sensitivity in order to investigate the relationship between memory for teasing in childhood and levels of depression and anxiety in early adulthood. A Teasing Questionnaire was developed to measure the extent to which the participants remembered having been teased about 20

different topics during childhood. Positive correlations were predicted between scores on the Teasing Questionnaire and levels of anxiety and depression. In addition, it was hypothesized that social anxiety would have the strongest relationship with memories of teasing. Finally, the authors predicted that the stronger the memories of teasing as a child, the higher the levels of anxiety and depression as an adult (Roth et al., 2002).

Results of the study supported the prediction that the Teasing Questionnaire would correlate with the measures of anxiety and depression. Significant and positive correlations were found between the Teasing Questionnaire and all of the measures. Anxiety sensitivity and social anxiety were more strongly related to teasing than was worry, suggesting that a history of teasing is more strongly related to anxiety sensitivity and fear of negative evaluation than struggles with worry. Roth et al. (2002) noted surprise that the strength of the link between childhood teasing and social anxiety did not differ from that of the association between teasing and anxiety sensitivity, again suggesting that the relationship between social anxiety and anxiety sensitivity is a powerful one.

Research has also examined social anxiety, anxiety sensitivity, and how these may relate to alcohol consumption in college students. The tension reduction hypothesis suggests that individuals often consume or abuse alcohol under the notion that drinking will reduce sensations and cognitions that they view as unpleasant, thus serving as a way of self-medicating anxious feelings (Lewis & Vogeltanz-Holm, 2002). Recently, a number of researchers have investigated individual differences and how one's proneness to anxiety might affect the relationship between alcohol and tension reduction. How susceptible an individual is to anxiety may influence how he or she responds to alcohol.

In addition, the tension reduction effect may differ in individuals with high anxiety sensitivity (Lewis & Vogelanz-Holm, 2002).

One study in particular examined how anxiety sensitivity interacts with the effects of alcohol on stress responses (Stewart & Pihl, 1994). Female participants from a college student sample were grouped into low, moderate, and high anxiety sensitivity based on the ASI (Peterson & Reiss, 1992; Reiss et al., 1986). In order to test the effects of alcohol on anxiety, participants heard a loud burst of noise that served as the stressor when they were sober and again after they had consumed alcohol. All of the participants experienced lower anxiety levels when intoxicated compared to sober. Also, a significantly greater reduction in anxiety was displayed by the participants in the high anxiety sensitivity group when compared to the low anxiety sensitivity group (Stewart & Pihl, 1994). These results support the notion that consuming alcohol functions in a way such that anxiety and anxious responses are reduced, at least in female college undergraduates.

In addition to anxiety sensitivity, social anxiousness and how it may interact with the effects of alcohol on anxiety has been examined. Individuals who are socially anxious are more likely to report problems related to alcohol versus individuals who are not anxious (Kessler, Crum, Warner, Nelson, Schulenberg, & Anthony, 1997; Kushner, Sher, & Beitman, 1990). It may be that individuals who are socially anxious respond differently than non-anxious individuals to social stressors after consuming alcohol (Lewis & Vogelanz-Holm, 2002).

Himle, Abelson, Haghightgou, Hill, Nesse, and Curtis (1999) examined the effects alcohol had on anxiety in individuals diagnosed with social phobia. Participants

in the study conducted two speeches. They received a placebo drink before the first and a drink with alcohol or a placebo before the second. No differences were found between the placebo and alcohol group as measured by subjective ratings of anxiety as well as heart rate. One problem cited by the authors was that the study did not include a control group of non-anxious individuals. In addition, participants could have habituated to the second speech (Himle et al., 1999).

Lewis and Vogeltanz-Holm (2002) examined the interaction between anxiety sensitivity and social anxiety with the effects of alcohol on the self reported anxiety and physiological responses to a social stressor by undergraduate women at a Midwestern university. The ASI (Peterson & Reiss, 1992; Reiss et al., 1986) was completed and individuals were separated into groups of low or moderate anxiety sensitivity. It was hypothesized that individuals in the moderate anxiety sensitivity group who consumed alcohol would experience greater tension reduction as measured by self-reported anxiety. It was also hypothesized that this group would experience lower increases in heart rate. No differences were expected between the groups given alcohol and those individuals with low anxiety sensitivity. The same predictions were made for individuals reporting higher levels of social anxiety in that they would experience lower increases in heart rate and self-report anxiety than participants consuming no alcohol. The social stressor in this study consisted of a body image speech in which the participants were instructed to give a speech about what she liked and disliked about her body in front of a mirror (Lewis & Vogeltanz-Holm, 2002).

Participants in the moderate anxiety sensitivity group who consumed alcohol experienced a greater dampening of heart rate compared to those not consuming alcohol

during the anticipatory phase. This suggests that individuals with elevated levels of anxiety sensitivity are highly responsive to the stress reduction effects of alcohol when anticipating a stressor. In addition, when examining the effects of social anxiety on stress responses, participants who consumed alcohol and who were highly socially anxious experienced a greater increase in heart rate when compared to those low on social anxiety during the stressor phase. This suggests that women who are socially anxious actually experience more anxiety after consuming alcohol as measured by heart rate. Given that women who are highly socially anxious are probably more concerned about their social performance, the low dose of alcohol used in this study could have caused them to be more concerned with being intoxicated which led to greater increases in anxiety (Lewis & Vogeltanz-Holm, 2002). This explanation seems quite logical given that these women were most likely experiencing a great deal of anxiety related to how they were being evaluated by others, including the researchers conducting the experiment.

Results suggested that individuals with high anxiety sensitivity who are socially anxious may respond differently to stressors, alcohol, and the interaction between the two when compared to individuals who are not anxious. Clearly, more research is needed to understand the potentially moderating effects of anxiety sensitivity and social anxiety on the link between anxiety and alcohol. Better etiological models as well as a greater understanding of the tension reduction hypothesis would result from this research (Lewis & Vogeltanz-Holm, 2002).

Burke and Stephens (1999) proposed a social cognitive model to explain the relationship between drinking and social anxiety in college students. Based on the existing literature they concluded that college students with high expectancies that

drinking will reduce social anxiety are much more likely to engage in heavy drinking in social settings. Self-efficacy was also figured into the model. Students with a high sense of self-efficacy related to their ability to avoid heavy drinking are likely to be more confident in their abilities to deal with feeling socially anxious thus leading to more moderate levels of drinking. So even though they hold high expectancies related to alcohol and the facilitation of social interactions and social anxiety reduction, they are able to use other coping strategies due to their high self-efficacy to avoid drinking heavily. On the other hand, those with low self-efficacy related to avoidance and heavy drinking have little confidence in their ability to use other coping skills, thus leading to more problems associated with excessive alcohol consumption. Basically, when drinking is involved in social situations, feeling socially anxious activates alcohol expectancies. This interaction is further moderated by self-efficacy. Burke and Stephens noted that more research is needed to show greater evidence and support for the hypotheses proposed in this model. A possible modification to this social cognitive model could include a number of other factors, including fear of negative evaluation as well as anxiety sensitivity.

Summary of Previous Findings

Clearly social anxiety is a problem experienced by a large portion of the general as well as the college student population. The symptoms of social anxiety disorder can become quite debilitating and potentially interfere with social and occupational functioning. Thus, it is important to understand the underpinnings of social anxiety to provide the most efficient and effective treatments. Most college students report experiencing some form of social anxiety in social situations (Purdon et al., 1999) which

has been found to interfere with assertiveness in dating situations, results in greater negative affect, and is correlated with depressive cognitive distortions (Lesure-Lester, 2001; Kashdan & Roberts, 2004; Johnson et al., 1992). Social anxiety sometimes results in a number of other problems for college students, such as substance use as well as misinterpretations related to the social anxiety experienced by others (Burke & Stephens, 1999; Purdon et al., 1999). High levels of social anxiety in college students also may be a precursor to depression (Johnson et al., 1992). It is possible that all of these factors result in the avoidance of social situations as a way to deal with the negative feelings associated with anxiety. A better understanding of how social anxiety may manifest itself in a college student population, for whom social interactions and social evaluation occur quite frequently, could lead to improved treatment approaches for this particular group of individuals.

Current Study: Goals and Objectives

Given the number of areas that still remain unclear in the area of social anxiety and anxiety sensitivity this study aimed to accomplish a number of objectives. This project examined the nature of social anxiety in a college student sample, and more specifically, the role of anxiety sensitivity. A main objective that guided the current study was to estimate social anxiety disorder prevalence from a large unselected college sample. Another objective was to examine differences between students who met diagnostic criteria for social anxiety disorder and those who did not on a number of different constructs, including the various dimensions of anxiety sensitivity, fear of public speaking, fear of negative evaluation, trait anxiety, and depression. Finally, the

ability of anxiety sensitivity to predict social anxiety symptom severity after controlling for the fear of negative evaluation, trait anxiety, and depression was investigated.

Method

The current investigation consisted of two studies. The first study was an initial investigation of social anxiety prevalence and the role of anxiety sensitivity among college students. The second study replicated and extended Study 1 by examining additional anxiety sensitivity components as well as the ability of the anxiety sensitivity construct to predict social anxiety symptom severity.

Study 1. The first study examined archival data collected for the purpose of screening students for participation in a separate study.

Participants

Data were collected from a sample of 434 adult, undergraduate students enrolled in psychology courses at the University of Nevada, Reno (UNR). Participants were recruited through the undergraduate psychology courses at UNR and were offered extra credit for participation. There were no exclusion criteria. The sample consisted of 31.1% males and 68.9% females. Ages ranged from 18 to 54 ($M = 21.09$, $SD = 5.33$). More than half the sample (71.1%) was Caucasian, followed by Asian American (12.7%), Hispanic (7.4%), Other (2.8%), African American (1.6%), Pacific Islander (1.6%), and American Indian (0.7%). Several participants (1.6%) omitted race/ethnicity information.

Procedure

Course instructors were contacted by the primary researcher seeking permission to conduct the study during approved class time. The investigator or a research assistant read a recruitment script aloud in psychology classes. After hearing the script, those who

were interested in participating completed questionnaire packets under one of two conditions: 1) During approved class time or 2) At a time outside of class, where groups of participants came to a laboratory or classroom to complete questionnaires. Participants read an Informed Consent form that described the purpose of the study, potential risks and benefits, and confidentiality. They were told that if they chose to participate they would complete the screening packet of measures, including questionnaires that asked about various factors related to social anxiety. Participants were told that they would receive 1 hour of research credit for completing the packet of questionnaires. Participants typically completed the questionnaire packet within 15 minutes. When they finished completing the questionnaires they placed their packet in a stack face down. This screening packet consisted of the following questionnaires:

Materials

Demographic Questionnaire. Gender, age, and ethnicity of the sample were collected. Additional information was collected in order to determine eligibility for a larger study. This information was not used in this research project and included: 1) whether or not the individual was in treatment for an anxiety related concern, 2) if the individual was on medication for mental health concerns, and if so, what type of medication, and 3) whether or not English was their native or first language (see Appendix A).

Anxiety Sensitivity Index (ASI; Peterson & Reiss, 1992; Reiss et al., 1986) is a self-report questionnaire designed to measure the tendency to view physical sensations of anxiety as harmful, a construct known as anxiety sensitivity. The ASI includes 16 items, with each item rated on a five-point scale that ranges from 0, indicating very little, to 4,

which indicates very much. A hierarchical model has been supported for the structure of the ASI. The ASI consists of three lower order factors representing physical concerns (8 items), social concerns (3 items), and mental concerns (5 items) (Zinbarg et al., 1997). The factors that comprise each subscale have been shown to differentiate between diagnostic groups. The means and standard deviations reported by Zinbarg et al. for each subscale for a social phobia diagnostic group and a group with no diagnosis are presented in Appendix B. The ASI has been shown to have adequate reliability and validity (Peterson & Heilbronner, 1987). Internal consistency has been demonstrated across a number of studies and appears to range from good to excellent with scores ranging from .82 to .91 (Peterson & Reiss, 1992) (see Appendix C).

Social Phobia Diagnostic Questionnaire (SPDQ; Newman et al., 2003) was designed to assess social phobia according to DSM-IV (APA, 1994) criteria. The SPDQ includes yes/no questions as well as symptom rating scales. A list of 16 social situations is given for individuals to rate fear and avoidance of these situations on a scale ranging from 0 to 4, with 0 indicating no fear or avoidance and 4 indicating very severe fear or consistent avoidance. The SPDQ has been shown to be an effective way to screen for social phobia and has demonstrated a good overall rate of agreement with the Anxiety Disorder Interview Schedule (ADIS-IV; Brown, DiNardo, & Barlow, 1994; Newman et al., 2003). The SPDQ accurately detected social phobia as well as the absence of social phobia. The SPDQ also demonstrated strong internal consistency, good test-retest reliability, as well as strong discriminant and convergent validity. The SPDQ was sensitive when distinguishing between individuals with social phobia, panic disorder, generalized anxiety disorders (GAD), and non-anxious controls. A cutoff point of 7.38

was found to provide optimal balance between sensitivity and specificity. This cutoff led to a sensitivity of 82% and a specificity of 85%. The rate of false positive diagnoses was 15% and the rate of false negative diagnoses was 18% (Newman et al., 2003) (see Appendix D).

In the current study, the SPDQ cutoff score of 7.38 appeared to be very sensitive with poor specificity, resulting in extremely inflated rates of social phobia diagnoses (37.1% of the sample met criteria in Study 1, and 37.7% met criteria in Study 2 according to the published cutoff of 7.38 for the SPDQ). In order to address this concern, DSM-IV categorical criteria were applied to SPDQ responses to determine which participants met categorical diagnostic criteria for social phobia in addition to scoring above the SPDQ published cutoff score. The categorical criteria applied included the following: “Yes” on items 1-3 (if “No” on item 3, one or more of the “Fear” or “Avoidance” items needed to be scored 3 or above), “Yes” on items 20-22, and items 23 and 24 required a score of 2 or above. This procedure resulted in a sub-group of participants who met diagnostic criteria according to the SPDQ published cutoff score, but did not meet DSM-IV diagnostic criteria once these categorical criteria were applied. These participants (n = 141 for Study 1 and n = 126 for Study 2) were omitted from data analyses to allow comparison between participants who met established diagnostic criteria for social phobia and participants who did not.

Fear of Giving a Speech. Two questions asking how fearful participants were of giving a speech as well as how fearful they were of any physical signs of anxiety during a speech were also collected. The first item required the participants to rate their “fear of giving a speech” on a scale from 0-8. This item was extracted from the Fear

Questionnaire (Marks & Mathews, 1979). The second item assessed for fear of heart racing, of sweating, of shaking, or of some other physical sign of anxiety during a speech on a 1-5 point scale. This item was worded and rated in the same manner as items on the Body Sensations Questionnaire (BSQ; Chambless et al., 1984) (see Appendix E).

Data were analyzed to address the following specific empirical questions and hypotheses:

1. How many of the 434 participants who completed the SPDQ met diagnostic criteria for social anxiety disorder? It was predicted that social anxiety disorder would be just as prevalent, if not more so, in an unselected college student sample as previously found in the general population. Social phobia diagnosis within a twelve-month period was found in 6.8% of individuals sampled from the general population (Kessler et al., 2005).
2. Is overall anxiety sensitivity, as measured by the total ASI score, elevated in college students who meet diagnostic criteria for social anxiety disorder when compared to students without social anxiety disorder? As found in clinical treatment-seeking samples, we predicted that individuals meeting diagnostic criteria for social anxiety disorder would score higher on the ASI than college students without social phobia.
3. It was also predicted that socially anxious students would report greater fear of public speaking than students without social phobia.
4. Which ASI subscales are elevated for students reporting clinical levels of social anxiety compared to students without social anxiety disorder? Previous research has found differences in the pattern of responding on the ASI between individuals

with various psychological disorders, such as PTSD, panic disorder, and social phobia. However, there were no differences found between these groups on items focused on fears related to mental concerns (Hazen et al., 1995; Taylor et al., 1992). We predicted that the social and physical concerns subscales would be elevated in the students with social anxiety disorder compared to those not meeting criteria for the disorder.

Study 2. The second study was designed to replicate and extend findings obtained in Study 1.

Participants

Data were collected from a sample of 401 adult, undergraduate students enrolled in psychology courses at the University of Nevada, Reno (UNR). Participants were recruited through the undergraduate psychology courses at UNR and were offered extra credit for participation. There were no exclusion criteria. The sample consisted of 34.7% males and 65.3% females. Ages ranged from 18 to 65 ($M = 21.72$, $SD = 5.56$). More than half the sample (71.1%) was Caucasian, followed by Asian American (10.0%), Hispanic (8.7%), Other (4.0%), African American (3.0%), Pacific Islander (1.5%), and American Indian (0.2%). A few participants (0.2%) omitted race/ethnicity information.

Procedure

The same data collection procedures were used as in Study 1. A Waiver of Informed Consent was obtained from the UNR Office of Human Research Protection because participation in this study was anonymous and posed minimal risk to subjects. Participants were given and asked to read an Information Sheet that described the purpose of the study, potential risks and benefits, and confidentiality. They were told that

if they chose to participate they would complete the battery of measures, including questionnaires that asked about various factors related to social anxiety. Participants were told that they would receive 1 hour of research credit for completing the packet of questionnaires. Participants typically completed the questionnaire packet within 30 minutes. When they finished completing the questionnaires they placed their packet in a stack face down.

Materials

Demographic Questionnaire. Gender, age, and ethnicity of the sample were collected (see Appendix F).

Social Phobia Diagnostic Questionnaire (SPDQ; Newman et al., 2003). This measure was administered again to identify participants meeting DSM-IV diagnostic criteria for social phobia. Once again, the SPDQ cutoff score of 7.38 appeared to be very sensitive with poor specificity in this second sample, resulting in extremely inflated rates of social phobia diagnoses (37.7% met criteria in Study 2 according to the published cutoff of 7.38 for the SPDQ). In order to address this concern, DSM-IV categorical criteria were applied to SPDQ responses to determine which participants met categorical diagnostic criteria for social phobia in addition to scoring above the SPDQ published cutoff score. The same categorical criteria described in Study 1 were used. This procedure resulted in a sub-group of participants who met diagnostic criteria according to the SPDQ published cutoff score, but did not meet DSM-IV diagnostic criteria once these categorical criteria were applied. These participants (n = 126) were omitted from data analyses to allow comparison between participants who met established diagnostic criteria for social phobia and participants who did not (see Appendix D).

Anxiety Sensitivity Index – Revised (ASI-R; Taylor & Cox, 1998). This revised version of the original ASI was developed to obtain a more thorough measurement of the various dimensions underlying anxiety sensitivity. Ten items are the same as the original ASI and the remaining 26 were developed for this revised version. Each item is rated on a five point Likert scale ranging from 0 (very little) to 4 (very much). The ASI-R takes approximately 5 minutes to complete. Normative data currently are not available but the measure did show good internal consistency in a mixed group of individuals with various psychiatric diagnoses, the majority of which were panic disorder with or without agoraphobia. The ASI-R was developed with six subscales to assess the following domains: fear of gastrointestinal symptoms (4 items), fear of respiratory symptoms (7 items), fear of publicly observable anxiety reactions (8 items), fear of dissociative and neurological symptoms (6 items), and fear of cognitive dyscontrol (5 items). Factor analyses indicated that only four of the six subscales were distinct lower order factors that loaded on a single higher order factor. These included (1) fear of respiratory symptoms, (2) fear of cardiovascular symptoms, (3) fear of publicly observable anxiety reactions, and (4) fear of cognitive dyscontrol (Taylor & Cox, 1998) (see Appendix G).

Brief Fear of Negative Evaluation Scale (BFNE; Leary, 1983) assesses the cognitions associated with social scrutiny and has demonstrated adequate reliability and validity. This brief version has been found to be highly correlated with the original Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969). The BFNE also demonstrated very good validity, test-retest reliability, and internal consistency. This measure consists of 12 items that were each rated on a scale ranging from 1 (not at all characteristic) to 5 (extremely characteristic) (see Appendix H).

Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, Dancu, & Stanley, 1989; Turner, Beidel, & Dancu, 1996) was administered to assess for severity of social anxiety and social phobia symptoms. This measure is a 45 item self-report questionnaire that measures the somatic, cognitive, and behavioral features of social anxiety across various settings and situations. There is no specific time period for which respondents must rate the occurrence of symptoms. The frequency for which each item occurs is rated on a 7-point scale ranging from 0 (never) to 6 (always). This measure consists of 2 subscales, agoraphobia and social phobia. Social anxiety severity is computed by taking the difference between scores on the social phobia subscale and the agoraphobia subscale (Difference score), with higher scores indicating higher levels of social anxiety symptoms. A difference score greater or equal to 80 indicates probable social phobia, 60-79 indicates possible social phobia, 34-59 suggests possible mild social phobia, and a score less than 34 indicates that social phobia is unlikely. This difference score is calculated in order to control for socially anxious concerns that may develop from agoraphobic fears. In the current study, this difference score, referred to as the SPAI final score, was used for data analysis. The SPAI has shown strong internal consistency for both scales in addition to good internal and discriminant validity (Osman, Barrios, Haupt, King, et al., 1996; Turner et al., 1989) (see Appendix I).

State-Trait Anxiety Inventory (STAI-T; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) was administered to assess trait anxiety. This measure consists of a state version in which each question reflects how the respondent is feeling at the given moment, and a trait version, which assesses for how the individual generally feels. Only the trait version was included in this study. The STAI-Trait consists of 20 questions, and

the respondents indicate how much each statement reflects how they generally feel on a 4-point Likert scale. Both scales have displayed good to excellent internal consistency as well as convergent validity (Spielberger et al., 1983) (see Appendix J).

Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) is a 20-item self-report measure designed to assess the current level of depressive symptoms within a general population. It was not designed to diagnose depression or measure symptom severity. Each item consists of a statement that represents a symptom characteristic of depression that must be rated on a 4-point Likert scale ranging from “rarely or none of the time” (less than 1 day) to “most of the time” (5-7 days). This measure displays strong internal consistency and as well as discriminant and concurrent validity (Radloff, 1977) (see Appendix K).

Social Cognitions Questionnaire (SCQ; unpublished, Developed by Wells, Stopa, & Clark, 1993) is a 22-item self-report measure developed to assess cognitions associated with social phobia and social anxiety. It was designed to examine three dimensions: fear of negative evaluation, fear of performance failure, and negative self-beliefs. Preliminary research has shown good convergent validity, adequate discriminant validity, and excellent internal consistency (see Appendix L).

Data were analyzed to address the following specific empirical questions and hypotheses:

5. How many of the 401 participants who completed the SPDQ met diagnostic criteria for social anxiety disorder? We again predicted that social anxiety disorder would be just as or more prevalent in an unselected college sample as found among the general population.

6. Is social phobia among college students associated with increased general distress, as reflected by trait anxiety and depression? It was predicted that college students who met criteria for social anxiety disorder would score higher on both the STAI-T and the CES-D than students who did not meet criteria.
7. Is overall anxiety sensitivity again elevated in college students who meet diagnostic criteria for social anxiety disorder compared to students without social anxiety disorder when measured with the ASI-R in place of the original ASI? We predicted that individuals meeting diagnostic criteria for social anxiety disorder would score higher on the ASI-R than college students who did not.
8. Which subscales on the ASI-R are elevated for students reporting social anxiety disorder diagnostic criteria compared to students without social anxiety disorder? Based on research with a treatment-seeking clinical sample (Taylor & Cox, 1998), we predicted to find elevations for the students with social anxiety disorder on the subscales measuring fear of publicly observable symptoms, fear of respiratory symptoms, and fear of cardiac symptoms. No differences were predicted between groups on the fear of cognitive dyscontrol.
9. Does anxiety sensitivity predict social anxiety symptom severity (as measured by the SPAI) in college students while controlling for trait anxiety (STAI-T), depression (CES-D), and fear of negative evaluation (BFNE)? Even though these constructs have overlapping features, they are believed to be distinct. It was predicted that anxiety sensitivity (ASI-R) would predict social anxiety symptom severity (SPAI) in a college student population while controlling for general

distress, as measured by the STAI-T and CES-D, as well as fear of negative evaluation, measured by the BFNE.

10. If anxiety sensitivity does indeed predict social anxiety symptom severity after controlling for these other constructs, which subscales on the ASI-R are the best predictors of social anxiety in college students? Due to the increased number of questions on the ASI-R designed to assess for social concerns of anxiety, it was predicted that this subscale would be the best predictor of social anxiety symptom severity, as measured by the SPAI.

Data Management

A database for all questionnaires was created on SPSS 15.0 for Windows. Trained undergraduate research assistants, who were under the supervision of the researcher, were responsible for entering the data throughout the study. The researcher was responsible for monitoring and supervising all aspects of data collection and data entry. Double entry verification was used for data entry from the paper form questionnaires. Missing data were replaced with the mean for that particular subscale, if applicable, or the mean for the entire scale if that measure had no subscales. If 50% or more of a participant's scale items were missing, the participant was excluded from the relevant analysis. The researcher performed routine data backup and archiving procedures.

Data Analyses

All analyses were conducted using SPSS 15.0 for Windows. Independent sample t-tests were conducted in both studies to determine if there were significant group differences on the total scores of the ASI, ASI-R, BFNE, SPAI, STAI, and CES-D. T-

tests were also conducted to examine group differences on the fear of giving a speech and fear of physical sensations questions from Study 1. In order to control for Type 1 error the Bonferroni correction was used to adjust alpha levels. The SCQ was not included in data analyses due to a large amount of missing data. Multivariate analyses of variance (MANOVAs) were performed on the subscales of the ASI in Study 1 and the ASI-R in Study 2. Finally, a set wise hierarchical multiple linear regression was conducted to examine the relationship between social anxiety symptom severity (SPAI) while controlling for trait anxiety (STAI-T), fear of negative evaluation (BFNE), and depression (CES-D).

In order to identify multivariate outliers a preliminary regression was run to calculate Mahalanobis distance. The chi square (χ^2) critical value for $\alpha = 0.001$ for 4 df (degrees of freedom equal to the number of IVs) was determined (18.467) and all of the outliers that exceeded critical χ^2 were deleted. Four cases were considered outliers. Examinations of the residuals scatterplots were conducted in order to test for assumptions of normality, linearity, and homoscedasticity between predicted DV scores and errors of prediction. All assumptions were met.

Results

Study 1

Hypothesis 1: Prevalence of Social Anxiety Disorder

Participants were divided into two groups, those meeting diagnostic criteria for social anxiety disorder and those who did not. Again, a subgroup ($n = 283$) of the whole sample ($n = 434$) was used given the inflated diagnostic rates of social anxiety disorder

according to the published cutoffs for the SPDQ. The data for 141 participants were not included in analyses given that these individuals met criteria for social anxiety disorder according to the SPDQ cutoff score but failed to meet criteria once the more stringent DSM-IV categorical criteria were applied. Two hundred sixty-three (60.6%) participants who did not meet criteria for social anxiety disorder (No Diagnosis) were compared to 20 participants (4.6%) who did (Social Anxiety Disorder). Table 1 shows the demographic characteristics of the sample. Chi-square analyses indicated no differences between the groups in ethnicity or gender. A t-test indicated no difference between the groups in age in an examination of the means. It was hypothesized that Social Anxiety Disorder would be just as or more prevalent in an unselected college student population as in the general population (6.8%) (Kessler et al., 2005).

The means and standard deviations for the fear of public speaking questions as well as the ASI total score and subscales for both groups are presented in Table 2.

Table 1*Demographic Characteristics of Sample by Group: Study 1*

	No Diagnosis		Social Anxiety Disorder			
	%	n	%	n		
Male	34.2	90	35.0	7		
Female	65.8	173	65.0	13		
Caucasian	77.2	203	65.0	13		
Asian	8.4	22	15.0	3		
Hispanic	5.7	15	15.0	3		
African						
American	2.3	6				
Pacific Islander	0.8	2				
American						
Indian	1.1	3				
Other	2.7	7	5.0	1		
Blank	1.9	5				
	<u>M</u>	<u>SD</u>	<u>Range</u>	<u>M</u>	<u>SD</u>	<u>Range</u>
Age	20.97	5.01	18-54	21.95	4.47	18-36

Table 2*Descriptive Statistics for measures in Study 1: No Diagnosis and Social Anxiety Disorder*

	No Diagnosis			Social Anxiety Disorder		
	M	SD	n	M	SD	n
Fear of Giving a Speech*	3.18	2.24	254	6.80	2.28	20
Fear of Physical Sensations*	2.21	1.10	258	4.00	1.38	20
ASI Total*	13.99	7.64	263	35.80	11.53	20
ASI Physical Symptoms*	6.40	4.74	263	16.75	7.48	20

ASI Social Concerns*	2.55	1.65	263	6.35	2.13	20
ASI Mental Concerns*	1.76	2.21	263	8.05	3.55	20

Note. The n varies due to missing data. Ratings for fear of giving a speech were made on a 9-point scale (0 = not at all fearful, 8 = extremely fearful). Ratings for fear of physical sensations were made on a 5-point scale (0 = not at all frightening, 5 = extremely frightening). *All groups differ at $p < 0.001$.

Hypotheses 2 & 3: Group Differences on Anxiety Sensitivity and Public Speaking

Three t-tests were conducted comparing the group who met criteria for Social Anxiety Disorder and the No Diagnosis group on total ASI scores, rating of fear of giving a speech, and rating of fear of physical sensations. It was hypothesized that the Social Anxiety Disorder group would score significantly higher on the ASI and would have higher rates of fear related to public speaking as measured by the two ratings. The Social Anxiety Disorder had significantly higher scores on the ASI than did the No Diagnosis group [$t(1, 281) = -11.80, p < 0.001$]. The socially anxious group also had significantly higher scores on the question rating fear of giving a speech [$t(1, 272) = -6.95, p < 0.001$], as well as the question rating fear of the physical sensations associated with public speaking [$t(1, 276) = -6.86, p < 0.001$]. A Bonferroni correction was applied, resulting in a critical alpha of $p < 0.025$.

Hypothesis 4: Group Differences on ASI Subscales

Multivariate analysis of variance (MANOVA) on the three subscales of the ASI (fear of physical symptoms, social concerns, and mental concerns) were performed with Social Anxiety Disorder diagnostic status as the between-subjects factor. It was predicted that the physical and social concerns subscales would be significantly higher in

the diagnostic group. Results indicated a significant multivariate effect, $F(3, 279) = 52.96, p < 0.001$. Univariate analyses revealed that this effect reflects a statistically significant difference between Social Anxiety Disorder diagnostic group and the No Diagnosis group on each of the three subscales in the predicted direction. These univariate tests are as follows: Physical Subscale, $F(1, 282) = 80.25, p < 0.001$; Social Subscale, $F(1, 282) = 93.84, p < 0.001$; Mental Subscale, $F(1, 282) = 135.61, p < 0.001$.

Study 2

Hypothesis 5: Prevalence of Social Anxiety Disorder

Participants were again divided into two groups, those meeting diagnostic criteria for social anxiety disorder and those who did not. A subgroup ($n = 264$) of the whole sample ($n = 401$) was used, given the inflated diagnostic rates of social anxiety disorder according to the SPDQ published cutoff scores. The data for 126 participants were not included in analyses because these individuals met criteria for social anxiety disorder according to the SPDQ published cutoff but failed to meet criteria once DSM-IV categorical criteria were applied. Two hundred thirty-nine (59.6%) participants who did not meet criteria for social anxiety disorder (No Diagnosis) were compared to 25 participants (6.2%) who did (Social Anxiety Disorder). Table 3 shows the demographic characteristics of the sample. Chi-square analyses indicated no differences between the groups in ethnicity or gender. A t-test indicated no difference between the groups in age in an examination of the means. We hypothesized that Social Anxiety Disorder would be just as or more prevalent in this second unselected sample of college students as reported for the general population (6.8%; Kessler et al., 2005).

The means and standard deviations for the ASI-R total score and the four subscales found to represent distinct lower-order factors, BFNE, STAI-T, CES-D, as well as the SPAI Final Score for both groups are presented in Table 4.

Table 3

Demographic Characteristics of Sample by Group: Study 2

	No Diagnosis			Social Anxiety Disorder		
	%	n		%	n	
Male	36.8	88		44.0	11	
Female	63.2	151		56.0	14	
Caucasian	74.9	179		80.0	20	
Asian	5.9	14		15.0	3	
Hispanic	6.7	16				
African				4.0	1	
American	3.3	8				
Pacific Islander	2.5	6				
American Indian						
Other	4.6	11		4.0	1	
Blank	0.4	1				
	<u>M</u>	<u>SD</u>	<u>Range</u>	<u>M</u>	<u>SD</u>	<u>Range</u>
Age	21.93	6.18	18-65	21.48	3.39	18-33

Table 4

Descriptive Statistics for measures in Study 2: No Diagnosis and Social Anxiety Disorder

	No Diagnosis			Social Anxiety Disorder		
	M	SD	n	M	SD	n
ASI-R Total*	20.84	14.12	238	60.96	26.72	24
ASI-R Cardio Symptoms*	2.75	2.37	239	10.81	4.88	24
ASI-R Social Concerns*	4.13	4.05	239	12.32	6.41	24

ASI-R Respiratory Symptoms*	6.64	4.40	239	14.83	6.20	24
ASI-R Cognitive Concerns*	1.81	2.02	238	6.46	4.58	24
BFNE*	28.90	7.91	239	48.31	8.11	25
STAI-T*	36.44	8.04	237	56.40	11.06	25
CES-D*	19.43	6.17	235	28.84	9.27	24
SPAI Final Score*	28.64	22.15	236	90.24	24.93	25

Note. The n varies due to missing data. BFNE: Brief Fear of Negative Evaluation. STAI-T: State Trait Anxiety Inventory. CES-D: Center for Epidemiological Studies Depression Scale. SPAI: Social Phobia and Anxiety Inventory. *All groups differ at $p < .0001$.

Hypotheses 6 & 7: Group Differences on Anxiety Sensitivity, Fear of Negative Evaluation, Trait Anxiety, Social Anxiety Symptom Severity, and Depression

T-tests were conducted comparing the group who met criteria for Social Anxiety Disorder and the No Diagnosis group on total ASI-R score, total BFNE, CES-D, SPAI, and STAI-T. It was hypothesized that the diagnostic group would score higher on all of the measures. To control for Type I error, a Bonferonni correction resulted in a critical alpha of $p < 0.01$. The group who met criteria for Social Anxiety Disorder had significantly higher scores on the ASI-R than the group who did not meet diagnostic criteria [$t(1, 260) = -11.97, p < 0.001$]. The socially anxious group also had significantly higher scores on total BFNE [$t(1, 262) = -11.64, p < 0.001$], total STAI-T [$t(1, 260) = -11.35, p < 0.001$], SPAI Final Score [$t(1, 260) = -13.06, p < 0.001$], as well as total CES-D [$t(1, 257) = -6.74, p < 0.001$].

Hypothesis 8: Group Differences on ASI-R Subscales

Multivariate analysis of variance (MANOVA) on the four subscales of the ASI-R (fear cardiovascular symptoms, fear of respiratory symptoms, social concerns, and mental concerns) were performed with Social Anxiety Disorder diagnostic status as the between-subjects factor. Results indicated a significant multivariate effect, $F(4, 257) = 48.45, p < 0.001$. Univariate analyses revealed that this effect reflects a statistically significant difference between Social Anxiety Disorder diagnostic group and the No Diagnosis group on each of the four subscales in the predicted direction. These univariate tests are as follows: Cardiovascular, $F(1, 261) = 194.47, p < 0.001$; Respiratory, $F(1, 261) = 69.19, p < 0.001$; Social, $F(1, 261) = 78.14, p < 0.001$; and Mental, $F(1, 261) = 84.74, p < 0.001$.

Hypothesis 9: ASI-R as Predictor of Social Anxiety Symptom Severity

A set wise hierarchical multiple regression, shown in Table 5, was conducted to examine the ability of the ASI-R to predict social anxiety symptom severity while controlling for trait anxiety, fear of negative evaluation, and depression. It was hypothesized that the ASI-R would predict social anxiety symptom severity after the variance from the other variables had been partialled out. In order to test this hypothesis social anxiety symptom severity (SPAI Final Score) was the dependent variable. Fear of negative evaluation (BFNE), trait anxiety (STAI-T), and depression (CES-D) were entered in the first set and contributed significantly $F(3, 377) = 93.19, p < 0.001$, accounting for 42.6% (adjusted $R^2 = .421$) of the variance associated with social anxiety symptom severity. In set two the measure of anxiety sensitivity (ASI-R) was entered into

the regression equation. The ASI-R accounted only for an additional 1.4% of the variance. While this contribution was statistically significant $F(1, 376) = 9.57, p < 0.05$, this effect merely reflects the large sample size. In combination, 44% of the variability in social anxiety symptom severity as measured by the SPAI was explained by the BFNE, STAI-T, CES-D, and ASI-R.

Table 5

Summary of Set Wise Multiple Hierarchical Regression Analysis Predicting Social Anxiety Symptom Severity

Variable	B	SE B	β
Set 1			
BFNE	1.42	.15	.482**
STAI	.750	.16	.265**
CES-D	-.256	.20	-.060
Set 2			
BFNE	1.28	.15	.433**
STAI	.652	.16	.230**
CES-D	-.343	.20	-.080
ASI-R	.207	.07	.148*

Note. $R^2 = .43^{**}$ for Set 1; $R^2 = .44$ and $\Delta R^2 = .014^*$ for Set 2.

* $p < .05$

** $p < .01$

Hypothesis 10: ASI-R Subscales as Predictors of Social Anxiety Symptom Severity

Given that the ASI-R accounted for such a small portion of the variance in the predictability of social anxiety symptom severity after controlling for fear of negative

evaluation, trait anxiety, and depression, no further regression analyses involving the ASI-R subscales were conducted.

Discussion

The current investigation examined social anxiety in a college student population. More specifically, the role of anxiety sensitivity was examined. The focus on social anxiety in a college student population is relevant given that prevalence data is currently not available and the nature and severity of social anxiety in this population remains unclear. Social anxiety has been found to be the most prevalent in individuals between the ages of 18-29 years old (13.3% of individuals have met criteria at some point in their life) (Kessler et al., 2005). According to the DSM-IV-TR (APA, 2000) epidemiological and community based samples have reported a lifetime prevalence of social anxiety disorder ranging from 3-13%. A large portion of the population has described social anxiety as a distressing problem that they have experienced (Pilkonis et al., 1980). Given the large number of socially evaluative situations that most college students face (public speaking, dating, group projects, etc.), we examined rates of students suffering from social anxiety that is clinically significant.

This study contributed to the literature by examining the prevalence of social anxiety in college students. In Study 1 social anxiety disorder was slightly less prevalent than in the general population (4.6% compared to a 12-month prevalence of 6.8-7.1% (Kessler et al., 2005; Ruscio, Brown, Chiu, Sareen, Stein, & Kessler, 2007). However it falls in the range of lifetime prevalence rates of 3-13% reported by the DSM-IV-TR (APA, 2000). In Study 2 social anxiety was nearly as prevalent as in the general population (6.2%). It is important to point out that even though the prevalence went up in

Study 2, there was only a difference of 5 people who met diagnostic criteria (20 people met criteria in Study 1 and 25 in Study 2). These prevalence estimates from the samples in the current study suggest that social anxiety disorder is nearly as prevalent in a college student population as it is in the general population. It is important to note that the prevalence data reported in Kessler et al. (2005) and Ruscio et al. (2007) were based on a substantially larger sample size. It is likely that the prevalence of social anxiety disorder in college students would have been found to be just as or more prevalent if a larger sample were used in the current study.

Clearly, social anxiety and its various symptoms are experienced by a large number of college students. Given that socially anxious individuals underestimate how often others become anxious (Purdon et al., 1999), it may be important to inform new students about the fact that it is not uncommon to feel anxious in social situations and to provide them with possible strategies or skills to cope with their anxiety. It has also been found that college students often have negative attitudes towards those with social anxiety (Purdon et al., 1999). It is possible that with information focused on the frequency in which others experience similar feelings of anxiousness in social situations, individuals may be less judgmental when interacting with someone displaying signs of anxiety.

Anxiety sensitivity is a construct that is considered imperative in the maintenance and development of anxiety disorders (Reiss & McNally, 1985). Anxiety sensitivity refers to the tendency to fear or respond anxiously to arousal symptoms (Holloway & McNally, 1987) and represents the individual differences associated with the fear of anxiety (Reiss & McNally, 1985). Anxiety sensitivity as measured by the ASI (Peterson

& Reiss, 1992) has been found to be elevated in individuals with anxiety disorders (Reiss et al., 1986; Taylor et al., 1991). The ASI is comprised of a hierarchy of subscales designed to assess three specific anxiety sensitivity areas: Physical Concerns, Social Concerns, and Mental Incapacitation Concerns (Zinbarg et al., 1997). There is some controversy regarding the social concerns portion of the ASI. It has been suggested that the social concerns component may be conceptualized more appropriately as belonging to the domain of negative evaluation sensitivity (Taylor, 1995). Whether or not the social concerns portion of the ASI or if anxiety sensitivity in general is best accounted for by the fear of negative evaluation remained unclear given the current literature.

In Study 1, the group who met diagnostic criteria for social anxiety disorder scored significantly higher on all measures compared to the group who scored below the SPDQ cutoff score of 7.38. The diagnostic group had higher scores on the ASI total score as well as all of the subscales. In addition, they reported higher rates of fear of public speaking as well as higher rates of fear of the physical sensations associated with public speaking. Clearly, the criteria that were applied to determine whether or not an individual suffered from social anxiety disorder was an effective way to make such a determination. The finding that anxiety sensitivity as measured by the ASI was elevated in individuals from a clinical sample with anxiety disorders (Peterson & Reiss, 1992; Reiss et al., 1986; Taylor et al., 1991) was replicated with an unselected college student sample. All of these findings are consistent with what was hypothesized. Given that the groups differed on all measures, it made sense to expand on these results by adding additional constructs related to social anxiety.

In Study 2, the diagnostic group again scored significantly higher on all of the measures compared to the group with no diagnosis. They scored significantly higher on the measure of anxiety sensitivity (ASI-R total score) as well as all four subscales, fear of negative evaluation (BFNE), trait anxiety (STAI-T), depression (CES-D), and social anxiety symptom severity (SPAI Final Score). Again, the application of the diagnostic criteria appeared to be effective at identifying individuals meeting criteria for social anxiety disorder. Like in Study 1, these findings were consistent with what was hypothesized.

These findings are also consistent with what has been found in previous research. Again, individuals with social anxiety disorder scored higher on the measure of anxiety sensitivity as well as depression. These findings are consistent with the finding that individuals with high levels of social anxiety engage in more depressive cognitive distortions (Johnson et al., 1992). In addition, individuals who reported high levels of social avoidance as well as high levels of fear of negative evaluation have been found to report more responses that fall into the depressed-distorted category on the Cognitive Distortions Questionnaire (Krantz & Hammen, 1979). Like in previous research, the group who met criteria for social anxiety disorder in our sample displayed higher levels of fear of negative evaluation, anxiety sensitivity, and depression.

Given that the groups differed on all measures the next step was to examine whether or not anxiety sensitivity added anything to the predictability of social anxiety symptom severity. The results of the set wise hierarchical multiple linear regression showed that the ASI-R did not add substantially to the predictability of social anxiety symptom severity after controlling for fear of negative evaluation, depression, and trait

anxiety. This finding suggests that anxiety sensitivity contributes little to the model once the related variables are partialled out. This implies that the ASI-R is essentially measuring the same construct as the BFNE, STAI-T, and/or CES-D. It is suggested by this finding that the ASI-R does not measure a unique construct and that it is possible that anxiety sensitivity is essentially the same as the fear of negative evaluation. Given this finding it does not appear that the construct of anxiety sensitivity significantly adds to existing etiological models of social anxiety disorder.

This finding has important treatment implications. Even though anxiety sensitivity is elevated in individuals with social anxiety disorder as in panic disorder, it appears as if individuals with social anxiety disorder fear the sensations associated with feeling anxious due to the potential consequences of being negatively evaluated, thus the fear of negative evaluation. This finding suggests that it is not necessary to focus treatment for social anxiety disorder around an individual's fear of physical sensations due to their belief that the sensations are an indication of physical harm. It is quite possible that the reason individual's who met criteria for social anxiety disorder had higher scores on all scales of the ASI and ASI-R is due to the potential negative social consequences.

This research is limited by the self-report nature of all measures. Given the large sample size it was not plausible to conduct in person diagnostic interviews due to time constraints. For the purpose of this study the focus was on collecting as much information as possible from a large number of people. In the future it would be interesting if similar prevalence rates would be reported in research using an in person diagnostic interview to determine diagnostic criteria. Also, given that that current study

focused only on an unselected college student sample it is not possible to generalize the findings to other clinical or community samples.

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Appendix A

Demographics

1. Are you currently using any medications for mental health concerns? Yes___ No___

If Yes, what is the name or type of medication._____

2. Are you currently seeing a counselor or therapist for anxiety related difficulties?

Yes_____No_____

3. Gender: Male_____ Female_____

4. Age_____

5. Ethnicity_____

6. Is English your native or first language? Yes_____ No_____

Appendix B

Descriptive Statistics for ASI Subscales: No Diagnosis and Social Anxiety Disorder

	No Diagnosis			Social Anxiety Disorder		
	M	SD	n	M	SD	n
Physical*	2.88	3.11	32	8.92	6.62	71
Social*	3.94	2.00	32	9.51	3.21	71
Mental*	0.41	0.91	32	4.28	3.62	71

Note. *All groups differ at $p < 0.05$.

Appendix C

Anxiety Sensitivity Index (ASI)

Circle the one number that best represents the extent to which you agree with the item. If any of the items concern something that is not part of your experience (e.g., “It scares me when I feel shaky” for someone who has never trembled or had the “shakes”), answer on the basis of how you might feel *if you had* such an experience. Otherwise, answer all the items on the basis of your own experience.

	Very Little	A Little	Moderate	Much	Very Much
1. It is important to me not to appear nervous.	0	1	2	3	4
2. When I cannot keep my mind on a task, I worry that I might be going crazy.	0	1	2	3	4
3. It scares me when I feel “shaky” (trembling).	0	1	2	3	4
4. It scares me when I feel faint.	0	1	2	3	4
5. It is important to me to stay in control of my emotions.	0	1	2	3	4
6. It scares me when my heart beats rapidly.	0	1	2	3	4
7. It embarrasses me when my stomach growls.	0	1	2	3	4
8. It scares me when I am nauseous.	0	1	2	3	4
9. When I notice my heart is beating rapidly, I worry that I might have a heart attack.	0	1	2	3	4
10. It scares me when I become short of breath.	0	1	2	3	4
11. When my stomach is upset, I worry that I might be seriously ill.	0	1	2	3	4
12. It scares me when I am unable to keep my mind on a task.	0	1	2	3	4
13. Other people notice when I feel shaky.	0	1	2	3	4
14. Unusual body sensations scare me.	0	1	2	3	4
15. When I am nervous, I worry that I might be mentally ill.	0	1	2	3	4
16. It scares me when I am nervous.	0	1	2	3	4

Peterson, R. A., & Reiss, S. (1993). *Anxiety Sensitivity Index Revised test manual*. Worthington, OH: IDS Publishing Corporation.
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Appendix D

SPDQ

1. In social situations where it is possible that you will be noticed or evaluated by other people, do you feel excessively nervous, fearful or uncomfortable?

Yes_____ No_____

2. Do you tend to be *overly* worried that you may act in a way that might embarrass or humiliate yourself in front of other people, or that others may not think well of you?

Yes_____ No_____

3. Do you try to avoid social situations?

Yes_____ No_____

Below is a list of some situations that are fear provoking for some people. Rate the severity of your anxiety and avoidance on the following scales:

0 = No fear

1 = Mild fear

2 = Moderate fear

3 = Severe fear

4 = Very severe fear

0 = Never avoid

1 = Rarely avoid

2 = Sometimes avoid

3 = Often avoid

4 = Always avoid

	(a) Fear					(b) Avoidance				
	0	1	2	3	4	0	1	2	3	4
4. Parties										
5. Meetings										
6. Becoming the focus of attention										
7. Dating circumstances										
8. Meeting people in authority										
9. Speaking with people in authority										
10. Saying "no" to unreasonable requests										
11. A first date										
12. Asking others to do something differently										
13. Being introduced										
14. Initiating a conversation										
15. Keeping a conversation going										
16. Giving a speech										

Appendix E

Fear of Giving a Speech

Please answer the following questions related to your fear of giving a speech. Circle the number on the rating scale that best represents the level of fear you experience associated with each statement.

1. Fear of giving a speech.

0

(not at all fearful)

4

(moderately fearful)

8

(extremely fearful)

2. Fear of heart racing, of sweating, of shaking, or of some other physical sign of anxiety during a speech

1

(not at all frightening)

3

(moderately frightening)

5

(extremely frightening)

Chambless, D. L., Caputo, G. C., Bright, P., & Gallagher, R. (1984). Assessment of fear of fear in agoraphobics: the Body Sensations Questionnaire and the Agoraphobic Cognitions Questionnaire. *Journal of Consulting and Clinical Psychology*, 52, 1090-1097.

Marks, I. M. & Mathews, A. M. (1979). Brief standard self-rating for phobic patients. *Behaviour Research & Therapy*, 17, 263-267.

Appendix F

Demographic Questionnaire

1. Gender: Male _____ Female _____
2. Age: _____
3. Ethnicity: _____

Appendix G

Anxiety Sensitivity Index-Revised 36 (ASI-R-36)

Please circle the number that best corresponds to how much you agree with each item. If any of the items concern something that is not part of your experience (for example, “It scares me when I feel shaky” for someone who has never trembled or felt shaky) answer on the basis of how you expect you might feel if you had such an experience. Otherwise, answer all items on the basis of your own experience. Be careful to circle only one number for each item and please answer all items.

	Very Little	A Little	Moderate	Much	Very Much
1. It is important to me not to appear nervous.	0	1	2	3	4
2. When I cannot keep my mind on a task, I worry that I might be going crazy.	0	1	2	3	4
3. It scares me when I feel “shaky” (trembling).	0	1	2	3	4
4. It scares me when I feel faint.	0	1	2	3	4
5. It scares me when my heart beats rapidly.	0	1	2	3	4
6. It scares me when I am nauseous.	0	1	2	3	4
7. When I notice my heart is beating rapidly I worry that I might have a heart attack.	0	1	2	3	4
8. It scares me when I become short of breath.	0	1	2	3	4
9. When my stomach is upset, I worry that I might be seriously ill.	0	1	2	3	4
10. It scares me when I am unable to keep my mind on a task.	0	1	2	3	4
11. When my head is pounding, I worry I could have a stroke.	0	1	2	3	4
12. When I tremble in the presence of others, I fear what people might think of me.	0	1	2	3	4
13. When I feel like I’m not getting enough air, I get scared that I might suffocate.	0	1	2	3	4
14. When I get diarrhea, I worry that I might have something wrong with me.	0	1	2	3	4
15. When my chest feels tight, I get scared that I won’t be able to breathe properly.	0	1	2	3	4
16. When my breathing becomes irregular, I fear that something bad will happen.	0	1	2	3	4
17. It frightens me when my surroundings seem strange or unreal.	0	1	2	3	4
18. Smothering sensations scare me.	0	1	2	3	4
19. When I feel pain in my chest, I worry that I’m having a heart attack.	0	1	2	3	4
20. I believe it would be awful to vomit in public.	0	1	2	3	4
21. It scares me when my body feels strange or different in some way.	0	1	2	3	4

	Very Little	A Little	Moderate	Much	Very Much
22. I worry that other people will notice my anxiety.	0	1	2	3	4
23. When I feel “spacey” or spaced out, I worry that I may be mentally ill.	0	1	2	3	4
24. It scares me when I blush in front of people.	0	1	2	3	4
25. When I feel a strong pain in my stomach, I worry that it could be cancer.	0	1	2	3	4
26. When I have trouble swallowing, I worry that I could choke.	0	1	2	3	4
27. When I notice my heart skipping a beat, I worry that there is something seriously wrong with me.	0	1	2	3	4
28. It scares me when I feel tingling or pricking sensations in my hands.	0	1	2	3	4
29. When I feel dizzy, I worry there is something wrong with me.	0	1	2	3	4
30. When I begin to sweat in social situations, I fear people will think negatively of me.	0	1	2	3	4
31. When my thoughts seem to speed up, I worry that I might be going crazy.	0	1	2	3	4
32. When my throat feels tight, I worry that I could choke to death.	0	1	2	3	4
33. When my face feels numb, I worry that I might be having a stroke.	0	1	2	3	4
34. When I have trouble thinking clearly, I worry that there is something wrong with me.	0	1	2	3	4
35. I think it would be horrible for me to faint in public.	0	1	2	3	4
36. When my mind goes blank, I worry that there is something terribly wrong with me.	0	1	2	3	4

Appendix H

Brief Fear of Negative Evaluation (BFNE)

Read each of the following statements carefully and indicate how characteristic it is of you according to the following scale:

- 1 = Not at all characteristic of me**
2 = Slightly characteristic of me
3 = Moderately characteristic of me
4 = Very characteristic of me
5 = Extremely characteristic of me

1. I worry about what other people will think of me even when I know it doesn't make any difference.

1 2 3 4 5

2. I am unconcerned even if I know people are forming an unfavorable impression of me.

1 2 3 4 5

3. I am frequently afraid of other people noticing my shortcomings.

1 2 3 4 5

4. I rarely worry about what kind of impression I am making on someone.

1 2 3 4 5

5. I am afraid that others will not approve of me.

1 2 3 4 5

6. I am afraid that people will find fault with me.

1 2 3 4 5

7. Other people's opinions of me do not bother me.

1 2 3 4 5

8. When I am talking to someone, I worry about what they may be thinking about me.

1 2 3 4 5

9. I am usually worried about what kind of impression I make.

1 2 3 4 5

10. If I know someone is judging me, it has little effect on me.

1 2 3 4 5

11. Sometimes I think I am too concerned with what other people think of me.

1 2 3 4 5

12. I often worry that I will say or do the wrong things.

1 2 3 4 5

Appendix I

Social Phobia and Anxiety Inventory (SPAI)

Here is a list of behaviors that may or may not be relevant for you. Based on your personal experience, please indicate how frequently you experience these feelings and thoughts in social situations. A social situation is a gathering of two or more people (e.g., a meeting; a lecture; a party; bar or restaurant; conversing with one other person or group of people). *Feeling anxious is a measure of how tense, nervous, or uncomfortable you are during social encounters.*

Please use the scale listed opposite and circle the number which best reflects how frequently you experience these responses.

**0 = Never
1 = Very Infrequent
2 = Infrequent
3 = Sometimes**

**4 = Frequent
5 = Very Frequent
6 = Always**

1. I feel anxious when entering social situations where there is a small group.....	0	1	2	3	4	5	6
2. I feel anxious when entering social situations where there is a large group.....	0	1	2	3	4	5	6
3. I feel anxious when I am in a social situation and I become the center of attention...	0	1	2	3	4	5	6
4. I feel anxious when I am in a social situation and I am expected to engage in some activity.....	0	1	2	3	4	5	6
5. I feel anxious when making a speech in front of an audience.....	0	1	2	3	4	5	6
6. I feel anxious when speaking in a small informal meeting.....	0	1	2	3	4	5	6
7. I feel so anxious about attending social gatherings that I avoid these situations....	0	1	2	3	4	5	6
8. I feel so anxious in social situations that I leave the social gathering.....	0	1	2	3	4	5	6
9. I feel anxious when in a small gathering with:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
10. I feel anxious in a large gathering with:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
11. I feel anxious when in a bar or restaurant with:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
12. I feel anxious and I do not know what to do when in a new situation with:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
13. I feel anxious and I do not know what to do when in a situation involving confrontation with:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
14. I feel anxious and I do not know what to do when in an embarrassing situation with:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
15. I feel anxious when discussing intimate feelings with:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6

16. I feel anxious when stating an opinion to:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
17. I feel anxious when talking about business with:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
18. I feel anxious when approaching and/or initiating a conversation with:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
19. I feel anxious when having to interact for longer than a few minutes with:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
20. I feel anxious when drinking (any type of beverage) and/or eating in front of:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
21. I feel anxious when writing or typing in front of:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
22. I feel anxious when speaking in front of:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
23. I feel anxious when being criticized or rejected by:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
24. I attempt to avoid social situations where there are:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
25. I leave social situations where there are:							
strangers.....	0	1	2	3	4	5	6
authority figures.....	0	1	2	3	4	5	6
opposite sex.....	0	1	2	3	4	5	6
people in general.....	0	1	2	3	4	5	6
26. Before entering a social situation I think about all the things that can go wrong.	0	1	2	3	4	5	6
The types of thoughts I experience are:							
Will I be properly dressed?.....	0	1	2	3	4	5	6
I will probably make a mistake and look foolish.....	0	1	2	3	4	5	6
What will I do if no one speaks to me?.....	0	1	2	3	4	5	6
If there is a lag in the conversation what can I talk about?.....	0	1	2	3	4	5	6
People will notice how anxious I am.....	0	1	2	3	4	5	6
27. I feel anxious before entering a social situation.....	0	1	2	3	4	5	6
28. My voice leaves me or changes when I am talking in a social situation.....	0	1	2	3	4	5	6
29. I am not likely to speak to people until they speak to me.....	0	1	2	3	4	5	6
30. I experience troubling thoughts when I am in a social setting. For example:							
I wish I could leave and avoid the whole situation.....	0	1	2	3	4	5	6
If I mess up again I will really lose my confidence.....	0	1	2	3	4	5	6
What kind of impression am I making?.....	0	1	2	3	4	5	6
Whatever I say it will probably sound stupid.....	0	1	2	3	4	5	6

31. I experience the following prior to entering a social situation:							
Sweating.....	0	1	2	3	4	5	6
Frequent urge to urinate.....	0	1	2	3	4	5	6
Heart palpitations.....	0	1	2	3	4	5	6
32. I experience the following in a social situation:							
Sweating.....	0	1	2	3	4	5	6
Blushing.....	0	1	2	3	4	5	6
Shaking.....	0	1	2	3	4	5	6
Frequent urge to urinate.....	0	1	2	3	4	5	6
Heart palpitations.....	0	1	2	3	4	5	6
33. I feel anxious when I am home alone.....	0	1	2	3	4	5	6
34. I feel anxious when I am in a strange place.....	0	1	2	3	4	5	6
35. I feel anxious when I am on any form of public transportation (e.g., bus, train, airplane).....							
36. I feel anxious when crossing streets.....	0	1	2	3	4	5	6
37. I feel anxious when I am in crowded public places (e.g., stores, church, movies, restaurants, etc.).....							
38. Being in large open spaces makes me feel anxious.....	0	1	2	3	4	5	6
39. I feel anxious when I am enclosed in places (e.g., elevators, tunnels, etc.).....	0	1	2	3	4	5	6
40. Being in high places makes me feel anxious (e.g., tall buildings).....	0	1	2	3	4	5	6
41. I feel anxious when waiting in a long line.....	0	1	2	3	4	5	6
42. There are times when I feel like I have to hold on to things because I am afraid I will fall.....							
43. When I leave home and go to various places, I go with a family member or a friend.....	0	1	2	3	4	5	6
44. I feel anxious when riding in a car.....	0	1	2	3	4	5	6
45. There are certain places I do not go to because I may feel trapped.....	0	1	2	3	4	5	6

Appendix J

State-Trait Anxiety Inventory (STAI-T)

STAI-T

DIRECTIONS: A number of statements that people used to describe themselves are given below. Read each statement and then circle the appropriate number below the statement to indicate HOW YOU GENERALLY FEEL. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer that seems to describe how you generally feel.

21. I feel pleasant.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

22. I feel nervous and restless.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

23. I feel satisfied with myself.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

24. I wish I could be as happy as others seem to be.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

25. I feel like a failure.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

26. I feel rested.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

27. I am calm, cool, and collected.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

28. I feel that difficulties are piling up so that I cannot overcome them.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

29. I worry too much over something that really doesn't matter.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

30. I am happy.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

31. I have disturbing thoughts.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

32. I lack self-confidence.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

33. I feel secure.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

34. I make decisions easily.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

35. I feel inadequate.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

36. I am content.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

37. Some unimportant thought runs through my mind and bothers me.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

38. I take disappointments so keenly that I can't put them out of my mind.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

39. I am a steady person.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

40. I get in a state of tension or turmoil as I think over my recent concerns and interests.

1-Not at all 2-Somewhat 3-Moderately 4-Very much so

Appendix K

Center for Epidemiological Studies Depression Scale (CES-D)

Circle the number for each statement which best describes how often you felt or behaved this way—
DURING THE PAST WEEK.

	Rarely or None of The Time (Less than 1 Day)	Some or a Little of the Time (1-2 Days)	Occasionally or a Moderate Amount of Time (3-4 Days)	Most or All of the Time (5-7 Days)
DURING THE PAST WEEK:				
1. I was bothered by things that usually don't bother me	0	1	2	3
2. I did not feel like eating; my appetite was poor	0	1	2	3
3. I felt that I could not shake off the blues even with help from my family and friends	0	1	2	3
4. I felt that I was just as good as other people	0	1	2	3
5. I had trouble keeping my mind on what I was doing	0	1	2	3
6. I felt depressed	0	1	2	3
7. I felt that everything I did was an effort	0	1	2	3
8. I felt hopeful about the future	0	1	2	3
9. I thought my life had been a failure	0	1	2	3
10. I felt fearful	0	1	2	3
11. My sleep was restless	0	1	2	3
12. I was happy	0	1	2	3
13. I talked less than usual	0	1	2	3
14. I felt lonely	0	1	2	3
15. People were unfriendly	0	1	2	3
16. I enjoyed life	0	1	2	3
17. I had crying spells	0	1	2	3
18. I felt sad	0	1	2	3
19. I felt that people disliked me	0	1	2	3
20. I could not get "going"	0	1	2	3

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385-401.

Appendix L

Social Cognitions Questionnaire (SCQ)

Listed below are some thoughts that go through people's minds when they are nervous or frightened. Indicate, on the LEFT hand side of the form, how often in the last week each thought has occurred; rate each thought from 1-5 using the following scale:

1. Thought never occurs
 2. Thought rarely occurs
 3. Thought occurs during half of the times when I am nervous
 4. Thoughts usually occurs
 5. Thought always occurs when I am nervous
-
- | | | |
|-------|---|-------|
| _____ | I will be unable to speak | ..... |
| _____ | I am unlikeable | ..... |
| _____ | I am going to tremble or shake uncontrollably | ..... |
| _____ | People will stare at me | ..... |
| _____ | I am foolish | ..... |
| _____ | People will reject me | ..... |
| _____ | I will be paralysed with fear | ..... |
| _____ | I will drop or spill things | ..... |
| _____ | I am going to be sick | ..... |
| _____ | I am inadequate | ..... |
| _____ | I will babble or talk funny | ..... |
| _____ | I am inferior | ..... |
| _____ | I will be unable to concentrate | ..... |
| _____ | I will be unable to write properly | ..... |
| _____ | People are not interested in me | ..... |
| _____ | People won't like me | ..... |
| _____ | I am vulnerable | ..... |
| _____ | I will sweat/perspire | ..... |
| _____ | I am going red | ..... |
| _____ | I am weird/different | ..... |
| _____ | People will see I am nervous | ..... |
| _____ | People think I am boring | ..... |
| | Other thoughts not listed (please specify) | |

_____
 _____

When you feel anxious, how much do you believe each thought to be true. Please rate each thought by choosing a number from the scale below, and put the number which applies on the dotted line on the RIGHT hand side of the form

0	10	20	30	40	50	60	70	80	90	100
I do not believe					I am completely					
this thought					convinced this					
					thought is true					