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DISPOSITIONAL AND SITUATIONAL FACTORS AFFECTING BEHAVIOURAL INHIBITION AND AVOIDANCE IN SOCIALLY ANXIOUS INDIVIDUALS

by

David John Eveleigh

M.Sc., Acadia University, 1989

DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

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of

PSYCHOLOGY

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Dispositional and Situational Factors Affecting Behavioural Inhibition and Avoidance in Socially Anxious Individuals

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Abstract

In order to understand the phenomenon of social anxiety it is useful to explore both dispositional and situational factors. The first purpose of this study was to separate the affective experience of social anxiety from the behaviours that often accompany it. The second purpose was to examine affective and behavioural factors, explore how these factors relate to other variables of interest, and determine how they respond to a situational stressor. In the first study, 251 subjects completed measures of social anxiety, behavioural inhibition, social avoidance, anxiety sensitivity, and impostor feelings. Correlational and multiple regression analyses revealed the variables to be strongly associated with one another. Eighty of the original subjects took part in the second study. Subjects were divided into groups of high and low social anxiety and engaged in a short interaction with a research assistant, discussing a selected topic. Half of the subjects interacted with a partner who demonstrated high expertise on the topic and half interacted with a partner who demonstrated limited expertise. Analyses of variance revealed that, for many variables, high social anxiety subjects reacted differently than did low social anxiety subjects. Also, subjects who interacted with a high expertise partner reacted differently than did those who interacted with a low expertise partner. However, the manipulation of partner expertise failed to differentiate high social anxiety subjects from low social anxiety subjects. Specific physiological, behavioural, and self-report reactions to the interaction are discussed along with interpretations and recommendations for further research.

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Dispositional and Situational Factors Affecting Behavioural Inhibition and Avoidance in Socially Anxious Individuals

Although often referred to in the literature, the topic of social anxiety has undergone serious examination only in the last 15 or so years. Beginning with the work of Zimbardo (1977), social anxiety and shyness have been identified as widespread and potentially serious problems that affect individuals in all levels of our society.

In 1977, Zimbardo completed what became known as the Stanford Shyness Survey. In this survey, he found that 90% of respondents reported feeling socially anxious at least occasionally and over 50% acknowledged that social anxiety sometimes constituted a significant problem for them. Cheek and Melchior (1990) estimated that distressing shyness affects 25 to 33% of Americans.

Wallace, Wallechinsky and Wallace (1977) surveyed 3000 American inhabitants regarding their worst fears. Forty-one percent of the respondents chose "public speaking" as their worst fear and this fear ranked first amongst the choices. More recently, Stein and Walker (1994) surveyed social anxiety among over 500 randomly selected respondents in a Canadian city. Approximately 61% of the subjects reported being "much" or "somewhat more" anxious than other people in at least one of the seven social situations assessed. The most frequently endorsed feared situation was "speaking to a large audience".

The majority of individuals identified in research studies as socially anxious report their condition to be a negative one. Pilkonis (1977a) found that 86% of the socially anxious people he examined did not like being socially anxious and the majority (63%) considered it to be "a problem". In a study of eleven different cultures, Pilkonis and Zimbardo (1979) found that 42% of their shy subjects reported that shyness created problems for them.

Leitenberg (1990) notes that social anxiety can have a disruptive

effect on performance in a variety of settings. It can inhibit the development of close friendships and intimate relationships. It can also hinder the reaching of goals at school and at the workplace. At its most extreme, it can develop into an anxiety disorder (social phobia) or a personality disorder (avoidant personality disorder).

The social implications of social anxiety can be widespread and serious. Other people tend to react in a negative manner to socially anxious individuals (Zimbardo, 1977). In controlled settings, socially anxious subjects are consistently rated less favourably by observers than are non-socially anxious subjects (Mandel & Shrauger, 1980; Pilkonis, 1977a). Also, socially anxious people are judged to be less socially and interpersonally attractive (Burgoon & Koper, 1984), more tense, inhibited, and unfriendly (Cheek & Buss, 1981), and more detached and submissive (Burgoon & Koper, 1984).

Social anxiety has been found to correlate with lower grades in junior high school (Hurt & Preiss, 1978), lower grades in college (McCroskey & Anderson, 1976), and difficulties in work situations (Pilkonis & Zimbardo, 1979). These findings exist despite the fact that social anxiety has consistently been found to be unrelated to intelligence (e.g., McCroskey, Daly, & Sorensen, 1976).

As previously noted, in extreme cases, social anxiety can develop into more serious clinical disorders (Leitenberg, 1990). When comparing diagnostic criteria for social phobia and avoidant personality disorder (American Psychiatric Association, 1994) to common definitions for social anxiety (see below) the main differences appear to involve intensity of the symptoms and the degree to which fear or avoidance interferes with normal functioning. In addition, numerous researchers have found that socially anxious individuals are more likely to suffer from other mental health problems such as anxiety disorders (e.g., generalized anxiety disorder, panic disorder), mood disorders (e.g., depression), or psychoactive substance use disorders (e.g., alcohol

abuse) than are non-socially anxious individuals (Amies, Gelder, & Shaw, 1983; Cheek & Melchior, 1990; Daly & Stafford, 1984; Marks, 1987; Zimbardo, 1977).

It should be noted, however, that not all consequences of social anxiety are negative. Zimbardo (1977) reports that between 10 and 20 percent of shy individuals enjoy being shy. Shyness (especially in its milder forms) is often seen by others as an endearing attribute. Snyder, Smith, Augelli, and Ingram (1985) found that socially anxious individuals will, at times, use their symptoms as a strategy to control attributions made about their performances in social-evaluative settings. In other words, they adopt a kind of self-handicapping strategy where their anxiety becomes an acceptable excuse for poor performance.

Gough and Thorne (1986) note that the way in which others respond to shy individuals is largely dependent on how the "shyness" is manifested. If the qualities of reserve, sensitivity, and prudence are emphasized, the shy person will tend to make a good impression. If, however, the qualities more closely resemble timidity, anxiety, and self-doubt, the impression will be more negative.

On the whole, however, it does appear that the most common interpretation of social anxiety (both by those who suffer from it and those who observe it) is that it is a negative attribute. Gough and Thorne (1986) conclude that, on first encounter, observers tend to be more affected by the quality of social anxiety and its related behaviours than by other underlying qualities. Also, socially anxious people tend to be less well liked, on initial acquaintance, than are non-socially anxious people.

Affect and Behaviour

Traditionally, socially anxious persons have been studied in terms that have included both subjective affect as well as overt behaviour. Certainly, there is little doubt that social anxiety is often

accompanied by behavioural signs of anxiety. However, this is not the case for all people in all instances. For whatever reasons, some individuals appear to be able to conceal their subjective discomfort while others cannot.

Most research in this area begins with the assumption that subjects can be divided into shy versus non-shy groups. One consequence of maintaining such a dichotomy, however, is that groups may be treated as homogeneous when, in fact, they are quite different. This phenomenon was referred to by Kiesler (1971) as the "uniformity myth". In terms of the present investigation, this study proposes that by treating all people who obtain a high score on traditional measures of shyness as representing an homogeneous group, one loses valuable information.

Turner, Beidel, Dancu, and Keys (1986) attempted to separate affect from behaviour by studying individuals who suffered either from social phobia or from avoidant personality disorder. Amongst other findings, they found that patients meeting diagnostic criteria for social phobia possessed adequate social skills while those meeting criteria for avoidant personality disorder did not. The authors concluded that, despite overlapping characteristics, the two diagnoses were quite different and they argued that previous studies of social phobia may have inadvertently included avoidant personality disorder.

The notion that people possess a sense of self that they hold private as well as a self that is visible to others has existed for over a century. As early as 1890, James separated the inner or subjective self from the social self. Festinger (1957) noted this same separation and argued that people are motivated to attain and maintain consistency. When people become aware of themselves behaving in a way that is not consistent with their private sense of self, they experience conflict. However, despite this and similar claims, over the years it has become increasingly clear that inner experiences do not always match outward behaviours and this mismatch does not always lead to distress.

Goffman (1959) contends that there is nothing inherently abnormal or conflict-arousing about taking on different roles in different situations. He views social encounters as performances in which each person plays the parts and recites the lines that are likely to maximize personal rewards. Gergen (1977) states that people expand their identities when they perceive that their behaviour in some situations differs from their behaviour in others. Rather than leading to conflict, these discrepancies are viewed as potential signposts that lead toward personal growth and change.

Snyder (1974, 1979) has written extensively on this issue from the viewpoint of self-monitoring and impression management. Snyder contends that some people tend to remain consistent across situations (low self-monitors) while others vary their behaviour considerably, depending on the situations they find themselves in (high self-monitors). In either case, both a public and a private self exist, the difference being the degree to which each is similar to the other. Again, according to Snyder, there is nothing inherently abnormal about being either a low or high self-monitor.

With respect to social anxiety, Fenigstein, Scheier, and Buss (1975) note that the majority of socially anxious individuals are excessively preoccupied with themselves and they suggest that this self-consciousness has both a public and private dimension. Public self-consciousness reveals itself as an increase in concern over the effect that one is having on others. Private self-consciousness, on the other hand, is characterized by an egocentric focus. In other words, attention is turned inward and concern over subjective feelings increases.

Pilkonis (1977b) extended this notion and identified two basic types of socially anxious people, those who are "publicly shy" and those who are "privately shy". Publicly shy individuals are concerned about their behaviour in social situations while privately shy individuals are

more focused on their subjective feelings of discomfort.

Zimbardo (1977) also studied the differences between publicly shy and privately shy individuals and extended the findings to the observable behaviour of the individuals involved. Those who are publicly shy are unable to hide their shyness and are highly uncomfortable about their feelings. Privately shy individuals, on the other hand, are capable of hiding their difficulties in social situations. This latter group can often escape public detection. Zimbardo suggests that they conceal their shyness with social skills or by actively avoiding situations in which they are unable to maintain control.

Zimbardo (1977) contends that publicly shy individuals suffer more than do privately shy individuals. The constant preoccupation with their social performance leads those who are publicly shy towards active avoidance of many social encounters and leads to inhibited behaviour in those situations that the individual cannot avoid. Inadequate performance leads to negative reactions from others and, generally, to lowered self-esteem.

Privately shy individuals, on the other hand, are fortunate in that they are able to conceal their anxiety and may be quite competent or successful in given areas. Although they generally enjoy more positive reactions from others, these "shy extroverts" (as Zimbardo labels them) are not without their own difficulties as they invest a tremendous amount of nervous energy in the anticipation of social events (1977).

Phillips (1991) notes that there is no necessary connection between the way people feel and how they behave. Ost, Jerremalm, and Johansson (1981) argue that multimodal assessment should be routinely adopted in the assessment of social anxiety and social phobia. Likewise, Glass and Arnkoff (1989) state that a thorough assessment of social anxiety requires the measurement of both the experience of

anxiety as well as any inhibited behaviours that may accompany those feelings. An understanding of both of these factors is an important first step not only in matching possible treatments to clients but also in monitoring the progress of such treatment.

One aim of the current study is to assess a number of the factors that accompany the experiences of social anxiety and/or behavioural inhibition and avoidance. The hope is that a thorough examination of dispositional and situational issues will lead to a greater understanding of the phenomenon of social anxiety.

Disposition and Situation

In 1957, Cronbach argued that the common practice of separating experimental psychology from the study of individual differences has had a negative impact on the progress of research in psychology. He urged researchers to move away from the traditional reliance on examining main effects and, instead, show a greater appreciation of the fact that not all people react to the same conditions in the same manner. He referred to this new field as "Aptitude x Treatment interactions".

Cronbach (1975) notes that, for him, "aptitude" refers to any characteristic of the person that has an effect on how that person responds to the treatment (e.g., personal characteristics, beliefs, social conditions). Likewise, "treatment" refers to characteristics of the situation that may affect the individual's response (e.g., instruction methods, psychotherapy, medications). Cronbach states that, as the study of interactions gains more acceptance in psychological research, the emphasis for researchers will move away from pursuing generalizations and will focus more on interpretation within context.

The assessment of individual differences may have particular relevance in the area of psychological treatment. Numerous authors have argued that proper matching of treatment to patient is a key ingredient in helping to ensure successful outcome (Lehrer & Woolfolk, 1984; McCann, Woolfolk, & Lehrer, 1987; Ost, Jerramalm, & Johansson, 1981).

Treatment outcome studies have started examining interactions between patient qualities and types of treatment. Efforts are increasingly made to systematically take individual differences into account when evaluating psychotherapy. Appropriate matching of patients with treatment can often result in better therapeutic outcomes (Smith & Sechrest, 1991).

This notion of Aptitude x Treatment interactions addresses the disposition by situation interaction that is investigated in the present study. With regard to social anxiety, Leary (1983a) noted that the tendency to experience social anxiety depends on the structure of the situation in which an individual becomes engaged. Part of what makes social anxiety an interesting topic to examine is that different people react quite differently in different situations. The mere fact that so many different terms have been coined over the years to describe anxiety in social situations (see below) lends support to this notion. It has already been argued that developing measures to assess different aspects of shyness (i.e., affective and behavioural components) helps to increase precision of measurement. Likewise, identifying relevant situations can help to increase situational specificity and, thus, also increase precision of measurement.

Russell, Cutrona, and Jones (1986) found from their studies that the experience of social anxiety is determined both by properties of the person and by properties of the situation. Likewise, Phillips (1991) argues that distress in social situations varies not only from person to person but also from situation to situation. Briggs, Cheek, and Jones (1986) note that social anxiety can be regarded as largely a response to situational factors (i.e., a "state") or as a relatively enduring personality characteristic (i.e., a "trait"). They also note that evidence exists to support both of these conceptualizations.

Certainly, there does appear to be at least some stability to the experience of social anxiety as some individuals are more chronic

sufferers than are others. Social anxiety has been found to influence behaviour across both situations and time. Backteman and Magnusson (1981), for example, found considerable agreement between observers who rated children in shyness independently at one point in time and then, again, three years later. There has also been some argument that a genetic component may exist (Plomin & Rowe, 1979).

Still, situational variables play an important role in determining when and how social anxiety is manifested. Gough and Thorne (1986) concluded that socially anxious people are perceived and described differently by observers whose interactions with them are in different contexts. Most people who suffer from social anxiety would readily agree that some situations are much more likely to elicit their social anxiety than others.

While Russell, Cutrona, and Jones (1986) argued that social anxiety develops from an interaction between individual and situational variables, they also noted that the situations that lead to social anxiety are not well understood. They suggested that two issues need to be addressed in order to correct this deficiency. First, more work should be directed towards identifying the situations that lead to the experience of social anxiety. Second, the interaction between these situations and dispositional factors and how they affect social anxiety needs to be better understood. The present study has attempted to address these issues by examining both dispositional and situational factors and their roles in the experience of social anxiety.

Dispositional Factors

As previously stated, one important issue with regard to the study of social anxiety concerns its stability both from one situation to another and over time. If there is a dispositional aspect (and the evidence suggests there is) then an examination of personality correlates of social anxiety would aid in the understanding of this phenomenon. Whether in the realm of psychotherapy or the basic

understanding of the phenomenon, various dispositional factors appear to be associated with social anxiety. The following section addresses specific factors of interest in the present study.

Shyness

The discrepancy between affect and behaviour first becomes evident when one attempts to establish a working definition of "shyness". A review of the literature reveals that no generally agreed upon definition of the construct appears to exist. This problem is due, in part, to the fact that the label has been used quite loosely both by laypersons and by professionals in the field (Asendorpf, 1986) and a number of terms have been used interchangeably in the literature to describe what is often essentially the same concept. These terms include, amongst others: shyness, social anxiety, social reticence, social phobia, interpersonal inhibition, bashfulness, communication apprehension, public-speaking anxiety, and dating anxiety.

Fenigstein, Scheier, & Buss (1975) included a wide focus in emphasizing the cognitive, affective, and behavioural aspects of shyness. Both public and private self-consciousness as well as difficulty talking to strangers were included in their definition of shyness. Pilkonis (1977b) was more interested in the behavioural aspect when he defined shyness as "a tendency to avoid social interactions and to fail to participate appropriately in social situations" (p. 596).

Eysenck (1956) draws a distinction between two types of shyness: "introverted shyness" and "neurotic shyness". Introverted shyness refers to people who are low in sociability and prefer solitude but who are capable of effective interactions. Neurotic shyness, on the other hand, refers to people who experience anxiety when interacting with others and who are inept at these encounters, despite their own desires to socialize.

Cheek and Buss (1981) also studied this distinction between anxiety and sociability and noted that the literature often equates

shyness with low sociability. They argued that the two concepts were not opposite extremes of the same continuum and they attempted to create factorially pure, or independent, measures of shyness and sociability. On the basis of their research, they concluded that while shyness involves tension and inhibition in the presence of others, sociability refers to a preference for being with others as opposed to being alone.

Leary (1986) considered shyness from the viewpoint of individual self-presentation styles, defining shyness as an "affective-behavioural syndrome characterized by social anxiety and interpersonal inhibition that results from the prospect or presence of interpersonal evaluation" (p. 30). This response occurs in social encounters where people have a desire to make a favourable impression on others but harbour some doubt as to their ability to do so effectively. The response includes both subjective anxiety and inhibited behaviour.

By allowing the label "shyness" to refer to both an affective experience as well as a behavioural reaction, it becomes possible to address the possible separate contributions of the two factors. As a result, some resolution of the affect/behaviour controversy becomes possible. In addition, it acknowledges that shyness and social anxiety are not one and the same and it provides a testable means of separating and organizing the two constructs. For this reason, the above-noted definition by Leary (1986) has been adopted for the present study.

Social Anxiety

Just as the research literature has been unable to find a generally accepted definition of shyness, the same applies for the concept of "social anxiety." Certainly, it seems clear that whatever definition is adopted, it must include some reference to anxiety. Disagreements begin to arise, however, when one questions what else, if anything, should be included.

For a number of authors, social anxiety and shyness are considered to be synonymous (e.g., Pilkonis, 1977b; Snyder, Smith, Augelli, &

Ingram, 1985). Others separate the two terms but disagree on the type or direction of the relationship between them. Buss (1984), for example, argued that shyness should be regarded as a subcategory of social anxiety. Leary (1986) took the opposite view and maintained that social anxiety is one component of shyness.

Leary (1983a) defines social anxiety as a "state of anxiety resulting from the prospect or presence of interpersonal evaluation in real or imagined social settings" (p. 67). The individual desires to make a good impression on others but doubts his or her ability to successfully acquire and maintain this favourable impression. It is this resulting anxiety, independent from any somatic or behavioural reaction, that is critical in the definition of social anxiety. Leary's definition is consistent with the affect/behaviour distinction addressed in this study. In addition, it is consistent with the definition of shyness previously stated. For these reasons, it has been adopted for use in the present study.

Behavioural Inhibition and Avoidance

Few people would argue against the notion that there exists a group of behaviours (e.g. reticence, hesitation, and avoidance) that often accompany the subjective experience of social anxiety. However, simply because certain behaviours often occur in conjunction with social anxiety does not mean that the two are causally related. In addition, Butler (1989) states that, for some individuals, social behaviour and habits that appear competent to others (i.e., no active avoidance is involved) may act as superficial masks for more deeply-ingrained feelings of anxiety as well as subtle avoidance behaviours.

Cheek and Buss (1981) found that overt signs of anxiety were most evident when subjects reported anxiety in social situations but also reported a desire to engage in social interactions. Subjects scoring high on both shyness and sociability were found to talk less, engage in more self-manipulation, and exhibit more gaze aversion than did subjects

scoring low on shyness alone or sociability alone. In addition, the high shyness, high sociability subjects were rated by judges as more tense, inhibited, and unfriendly during a 5-minute dyadic interaction (i.e., were more interpersonally impaired).

The matter, then, appears to be a complicated one. Beidel, Turner, and Dancu (1985) note that highly socially anxious individuals are not all consistent in their avoidance of social situations. However, most do report difficulty in successfully interacting in such encounters.

The notion of avoidant or inhibited behaviour within social situations has also been explored within the context of interpersonal theory. The results of a number of studies (e.g., Kiesler, 1986; Wiggins, 1982) have indicated that interpersonal behaviour can be conceptualized best in terms of two orthogonal dimensions: Dominance (versus Submission) and Nurturance (versus Coldness). Individuals are described by locating a point within the circumplex that allows both dimensions to be considered simultaneously.

Recent studies (e.g., Alden, Wiggins, & Pincus, 1990) have suggested that this model can also be applied to the realm of interpersonal problems. Because, in this context, interpersonal problems become the focus, the two dimensions are labelled somewhat differently: Domineering (versus Nonassertive) and Overly-Nurturant (versus Cold). Alden and Capreol (1993) note that socially avoidant individuals tend to score towards the Nonassertive extreme of one scale and the Cold extreme of the other.

A number of mechanisms might underlie the tendency to be inhibited in social situations or to avoid participating in these encounters. In his description of self-presentation styles, Arkin (1981) focused on expectancy for social success. He argued that in those social encounters where an individual places a high value on claiming a positive image and believes that he or she will be successful in

claiming that image, the tendency to be inhibited and to avoid such encounters will be minimized. On the other hand, in those circumstances where the expectancy for success is low, behavioural inhibition and avoidance are more likely to result.

Other possible explanations for behavioural inhibition and avoidance include: unsatisfactory social encounters in the past, unrealistically high standards, and overconcern about interpersonal encounters (Schlenker & Leary, 1982). Beidel, Turner, and Dancu (1985) suggest two additional explanations: a maladaptive cognitive style or a social skills deficit.

Whatever specific factors may be present, for present purposes it is important to acknowledge that certain socially anxious individuals do behave in an inhibited and avoidant manner while others do not. By failing to isolate the two components of shyness, it may be that traditional measures of shyness have tended to include non-anxious but inhibited individuals together with socially anxious individuals.

In their study of the behavioural concomitants of social anxiety, Leary, Atherton, Hill, and Hur (1986) provided definitions for both behavioural inhibition and social avoidance. Behavioural inhibition was defined as the "tendency to be inhibited in social encounters" (p. 708) and social avoidance was defined as the degree to which people "avoid participating in social encounters and interacting with others" (p. 708). Again, because these two definitions are consistent with the affect/behaviour distinction this study is attempting to address, they have been adopted for the present study.

Anxiety Sensitivity

Many individuals who report experiencing anxiety also report being fearful of experiencing anxiety. This fear may, in many cases, represent a significant aspect of the individual's presenting problem. However, it has only been recently that any formal investigation of this issue has occurred.

Beck, Emery, and Greenberg (1985) note that the autonomic and behavioural reactions produced by fear can, over time, become fear-producing cues in themselves, producing a fear-of-fear cycle. Any reactions that are publicly obvious can become candidates for this cycle (e.g., writing, lifting cups, eating, public speaking). Reiss, Peterson, Gursky, and McNally (1986) coined the term "anxiety sensitivity" to refer to this fear of anxiety. It represents a tendency to respond in a fearful manner to anxiety symptoms because of a belief that these symptoms bring with them various unwanted consequences (e.g., greater anxiety, loss of control, public embarrassment).

Recently, Taylor (1995) provided a comprehensive review of a number of the issues and controversies surrounding anxiety sensitivity. He noted that some disagreement exists whether anxiety sensitivity is unifactorial in nature or whether it is composed of two or three factors.

Reiss (1991) considered anxiety sensitivity to be one of three fundamental fears, along with injury/illness sensitivity and fear of negative evaluation. Fundamental fears involve fears of stimuli that are inherently aversive for the majority of people. Because these fears cannot be reduced to more basic units, Reiss argued that anxiety sensitivity is unidimensional in nature. Alternatively, Telch, Shermis, and Lucas (1989) argued that anxiety sensitivity is multidimensional. Different dimensions correspond to different types of symptoms (e.g., fear of cardiopulmonary sensations, fear of gastrointestinal sensations, etc.).

To further address this question, Taylor (1995) reviewed a number of factor analysis studies (e.g., Hoffart, Friis, & Martinsen, 1992; Taylor, Koch, McNally, & Crockett, 1992). He concluded that anxiety sensitivity may be multifactorial at the level of first-order factors. These dimensions correspond to three feared consequences of anxiety; somatic harm, psychological harm, and social harm. Taylor further

suggested that these first-order factors may then load on a single second-order factor.

Anxiety sensitivity has been suggested as a possible predisposing factor for a number of anxiety disorders (Reiss, et al., 1986). Research in this area has found that anxiety sensitivity is an important factor in distinguishing panic disorder from other anxiety disorders (McNally, 1990; Reiss, 1987, 1991). Stewart, Knize, and Pihl (1991) failed to find differences in anxiety sensitivity in a college sample of subjects suffering from panic attacks but did find that a clinical sample of agoraphobic patients scored higher on both anxiety sensitivity and dependency. Likewise, McNally and Lorenz (1987) found that anxiety sensitivity scores declined with successful cognitive-behavioural treatment of agoraphobia.

There are indications that socially anxious individuals may be particularly sensitive to the overt signs of their anxiety. Leary (1983b) notes that, for some individuals, the anxiety that results from concerns with appearing nervous exceeds the anxiety that arises from their initial social concerns. He goes on to suggest that concern over one's ability to control the observable symptoms of anxiety can, in itself, heighten both anxiety and physiological responses.

Beidel, Turner, and Dancu (1985) found that subjects scoring high on social anxiety rated themselves as more anxious during laboratory social interactions than did subjects scoring low on social anxiety, despite the fact that both groups showed similar increases in physiological arousal. The authors suggest that the higher rating by the high social anxiety group may be indicative of their heightened sensitivity to arousal. Alternatively, it may be that the low social anxiety group minimizes the importance of these reactions. Stewart, Knize, and Pihl (1991) suggest that individuals who experience anxiety sensitivity also tend to lack self-confidence in social situations.

The present study proposes that individuals high in both social

anxiety and behavioural inhibition and avoidance may be particularly sensitive to their somatic reactions to anxiety in comparison to individuals who are high in one construct but not the other. They exhibit greater inhibition in social situations because they are unable to cover up or mask their anxiety and are concerned that the impression they make on others will suffer. Individuals who are high in only one construct may be less reluctant to enter social situations and less likely to act inhibited in those situations because they believe their anxiety will be less noticed by other individuals. By examining social anxiety and behavioural inhibition and avoidance, both together and separately, a greater understanding may be gained of how both constructs relate to anxiety sensitivity.

Impostor Feelings

In 1978, Clance and Imes identified a group of individuals who present a competent self to others in public but harbour strong feelings of self-doubt in private. The term "impostor phenomenon" was coined and was applied to describe successful and high-achieving women who believe that they are less competent than they appear. Despite their outward success, they retain a belief that they have somehow managed to fool other people. Although this phenomenon was originally applied to academically accomplished women, it has since been expanded to include both men and women in academic, professional, as well as social settings (Harvey, 1982).

Harvey and Katz (1984) defined the impostor phenomenon as a psychological syndrome or pattern based on "intense, secret feelings of fraudulence in the face of success and achievement" (p. 2). In addition to feelings of fraudulence, affected individuals fear that each new success may reveal them as impostors. Harvey and Katz argue that as many as 70% of all people who are successful in the workplace have experienced feelings of being impostors at some point in their careers.

Harvey and Katz (1984) contend that the notion of impostor

phenomenon can be generalized outside of the workplace or school environment (where it has traditionally been studied) to people's personal lives as well. Most people adopt a number of different roles in their day-to-day lives (e.g., parent, friend, sibling) and most people exper ence no difficulties in assuming these different roles. Problems arise, however, when an individual begins to doubt the sincerity with which he or she is playing a personal role. Achieved successes may be attributed to putting on a good front, and affected individuals believe that they are acting in a way that contradicts who they are "on the inside".

The notion of an impostor phenomenon is tied closely to the notion of private self and public self discussed earlier. Over the years a number of authors have investigated the notion of a private self and public self and the discrepancies that may exist between them. In 1941, Fromm described a group of people whom he believed were peculiar to North American culture (a group he described as exhibiting a "marketing personality"). These individuals, because of career choices that necessitated frequent relocations, become skilled at making initial good impressions upon others. However, the resulting relationships are short-lived and remain shallow. As a result, these people are unable to relate meaningfully to other people and experience great difficulty in achieving a real and concrete sense of themselves.

Writing from a psychodynamic view, Winnicott (1965) proposed that all people possess a notion of both a true self as well as a false self. Winnicott links these two selves to Freud's notion that the self can be divided into that which is central and is powered by instincts and that which is turned outward and is related to the world. According to Winnicott, any anxiety or fear that a person may experience over having his or her true self discovered can be accounted for by accompanying feelings that there is something shameful about that self (i.e., it is weak or incompetent in some way). The false self serves to protect the

true self by presenting an image to others that is more likely to be accepted.

Harvey and Katz (1984) note that social situations can activate impostor feelings. In situations where one believes one is playing a part in public that does not accurately reflect who one is on the inside, impostor feelings can arise. In fact, the authors suggest it may be that the most typical way in which people feel like social impostors is when they are uneasy in social encounters and attempt to conceal their discomfort through attempts at appearing at ease.

Topping (1983) studied the relationship between impostor feelings and anxiety and found that the two are strongly related. In addition, this anxiety generally intensifies when an event is approaching that has been interpreted as having the potential of exposing the person as a fraud. Harvey and Katz (1984) draw a parallel between the notion of impostor phenomenon and a similar notion proposed by Zimbardo (1977) that socially anxious people are often overconcerned with whether or not their actions reflect their real selves. Likewise, Clance (1985) states that many individuals suffering from impostor feelings also report being shy and anxious.

With relation to social anxiety, the present study suggests that individuals high in social anxiety but low in behavioural inhibition and avoidance may be particularly susceptible to impostor feelings. They exhibit little or no social avoidance but experience considerable anxiety in social situations. Perhaps these individuals have created a public face that they display to the world but they remain convinced that this face is foreign to them and not a part of who they really are. In social situations they feel anxious that they will not be able to perform successfully. Again, by examining social anxiety and behavioural inhibition and avoidance, both together and apart, a greater understanding may be gained of how both constructs relate to impostor feelings.

Situational Factors

As previously stated, a number of dispositional factors likely exist that predispose some socially anxious individuals towards behavioural inhibition and avoidance in social situations. In addition, there are various situational factors that give rise to, exacerbate or, alternatively, reduce this tendency.

Buss (1980) suggests that situations that provoke social anxiety involve (a) novelty, (b) the presence of others, and (c) certain actions of others (e.g., excessive attention). Other elements in the situation that have been proposed as increasing social anxiety are: formality, subordinate status, conspicuousness, unfamiliarity, dissimilarity, and degree of attention from others (Buss, 1980; Russell, Cutrona, & Jones, 1986: Zimbardo, 1977). Situations in which one is the centre of attention and is among strangers appear to be particularly strong predictors of social anxiety (Zimbardo, 1977).

Of this multitude of factors, one situational variable has been chosen for the present study that includes some combination of a number of these issues, the perceived expertise of one's social partner. In the present study, the hope was to investigate behavioural inhibition within the confines of a relatively common social encounter. Selection of an appropriate behavioural event involves consideration of a number of factors.

One of the first factors of consideration is the type of interaction that is observed. The interaction can either involve an *in vivo* (natural setting) observation or can be artificially created (e.g., a role-play). The practical difficulties with observing subjects in their natural environment has meant that many researchers have relied on observation of waiting-room behaviours as a means of gathering information on natural environment interactions (Glass & Arnkoff, 1989). The other alternative, and the one chosen most often by researchers in this area, involves the use of role-play interactions.

Role-play studies have been criticized for failing to approximate naturalistic behaviours (Bellack, Hersen, & Lamparski, 1979). However, external validity can be greatly improved by ensuring that the role-play is as realistic as possible (Bellack, 1983) and that enough time is provided to allow for a "normal" conversational interaction (Glass & Arnkoff, 1989). The present study attempted to deal with these concerns by providing a semi-structured task to the subject in which he or she would discuss and defend a view on a selected topic with a person with "high" or "low" expertise, a confederate in the study.

Perceived Expertise

Daly and Buss (1984) note that a number of characteristics of one's audience can affect the amount of anxiety that is experienced within that situation. One important characteristic is the status of the audience relative to that of the individual of interest. This issue is particularly important within evaluative settings.

Whenever an individual is involved in a social encounter, other people are involved that can perceive and potentially evaluate the actions of that individual. When this encounter involves a "performance" of some kind, it becomes likely that some evaluation of that performance may occur by other individuals partaking in the interaction. In such instances, the skill or expertise of the interactants will be judged.

For the purposes of the present study, status and perceived expertise are considered to be virtually identical concepts. It could be argued that status refers to characteristics of the individual that are particularly valued while perceived expertise refers more to attained knowledge or skills, with relatively less evaluative emphasis. In other words, a person could know a great deal about a particular topic but (i.e., holds high expertise) would carry little in the way of status if knowledge of that topic was not valued by the other person. However, because of the way the interaction partner was described in the

present study (see "Study 2: Procedure) this distinction did not prove to be an important one. For present purposes, "perceived expertise" will involve the assumptions made by an individual regarding the abilities, skills, or knowledge of another person in the encounter with regard to the activity or topic at hand.

There is evidence that people tend to feel anxious when they are interacting with people they believe are highly competent or highly skilled (Jones & Russell, 1982; Zimbardo, 1977). A number of possibilities have been suggested to account for this observation. One involves a higher motivation to make a favourable impression on people that are held in high esteem. A second possibility involves less certainty that one can make a favourable impression on audiences that are held in high regard (Leary, 1983b).

Schlenker and Leary (1982) draw a distinction between what they refer to as "noncontingent" social encounters and "contingent" social encounters. In noncontingent social encounters, behaviour is affected relatively little by the responses of other people and is guided, for the most part, by preplanned behaviours. The most common example of a noncontingent encounter would be a prepared speech where the encounter is scripted and there exists little necessity or opportunity for an individual to react to the audience. Leary (1983b) suggests that people who feel anxious in noncontingent social encounters are experiencing "audience anxiety".

Contingent social encounters, on the other hand, involve responses that rely to a greater extent upon the responses of other participants in the social encounter. The best example of a contingent encounter would be a normal conversation where the interactants must monitor each other and fit their own responses to that which has immediately preceded (Schlenker & Leary, 1982). Leary (1983b) suggests that people who feel anxious in contingent social encounters are experiencing "interaction anxiety". Support for this distinction can be found in research

findings that indicate that individuals suffering from speech anxiety do not necessarily report social anxiety but individuals whose main complaint involves social anxiety generally do also report speech anxiety (Leary, 1983a).

Research in the area of perceived expertise has, to date, focused mainly on noncontingent encounters (e.g., public speaking or singing). Brown and Garland (1971) found that people sang in front of an audience for a shorter period of time when they believed their audience consisted of good, as opposed to poor, singers. This effect was found despite a cash incentive to sing for a long period of time. Likewise, Knight and Borden (1978) reported that people experienced greater anxiety when they sang before an audience with high, rather than low, musical ability.

It appears that few studies have been conducted that examine how people respond to perceived expertise in contingent social encounters. For the present study, a number of specific constructs that relate to behavioural inhibition and avoidance were examined in order to gain as complete an understanding of the behavioural reactions to the perceived expertise of one's interaction partner as possible. These included a single physiological measure (heart rate), a number of behavioural measures (time talking, eye contact, and protective self-presentation behaviours) as well as self-reported self-presentation style.

The Experience of Shyness

As just stated, the present study obtained measures of physiological arousal, overt behaviour, and self-report during and after an interpersonal encounter. It should be noted that, if measures of arousal, behaviour, and self-report are all measuring the same thing (in this case, anxiety) then one would expect these different measurement channels would be highly interrelated. Interestingly, however, research studies have shown that responses on these three systems are often only loosely correlated. Rachman and Hodgson (1974) noted that fear and avoidance can co-vary, vary inversely, or can vary independently. The

terms "synchrony" and "desynchrony" have been applied to describe the relative absence or presence of discrepancies amongst these systems of measurement. Hodgson and Rachman (1974) argued that synchrony between response systems is generally increased during strong emotional arousal and during lower levels of demand.

Within the domain of social phobia, Ost, Jerremalm, and Johansson (1981) videotaped phobic patients during a social interaction task. Based on their reactions to the test situation, patients were classified as behavioural or physiological reactors. Patients then received either behavioural (social skills training) or physiological (applied relaxation) treatment. Results supported the notion that greater effects are achieved when treatment type is matched to patient response patterns. In other words, patients showing behavioural deficits during the test situation benefited more from social skills training and patients showing physiological difficulties during the test situation benefited more from applied relaxation treatment.

While the degree of concordance amongst the systems of measurement was not a specific focus of the present study, knowledge of these issues does appear to have particular relevance in the realm of psychological treatment planning.

Physiological Factors

Leary (1983b) notes that anxiety is, by definition, always accompanied by some degree of arousal of the sympathetic nervous system. This arousal may reveal itself by changes (generally, increases) in specific physiological symptoms (e.g., blood pressure, perspiration, blushing, difficulty breathing, muscle tension, and dizziness). It has been well-established that socially anxious individuals are more physiologically aroused, generally, than are non-socially anxious individuals (Brodt & Zimbardo, 1981; Twentyman & McFall, 1975).

While some individuals are able to conceal their anxiety by successfully performing "non-anxious" behaviours, it is much more

difficult to counteract or obscure physiological reactions. Taylor and Arnow (1988) note that most social phobics avoid anxiety-provoking situations but others continue to enter such situations with no remittance in their symptoms. For this reason, it is important to find a physiological indicator of anxiety that will reveal itself, independent of outward appearances.

In a comprehensive study of agoraphobic and socially phobic subjects, Amies, Gelder, and Shaw (1983) found considerable overlap in the reported symptoms between the two groups. Differences were also reported, however, with the socially phobic group reporting a significantly higher incidence of blushing and twitching of muscles. Agoraphobic subjects, on the other hand, reported a significantly higher incidence of limb weakness, breathing problems, dizziness, and ringing in the ears. Taylor and Arnow (1988) interpreted these results as suggesting that social phobics report a higher incidence of symptoms that are visible to other people.

Research in this area has made use of a wide range of devices to gain a measure of the physiological indicators of anxiety. These have included, amongst others, measures of: heart rate, blood pressure, galvanic skin response, respiration rate, and dizziness. The present study focused on heart rate as a measure of physiological (sympathetic) arousal.

Heart Rate. Studies of heart rate have found that socially anxious subjects display greater heart rate increases than do non-socially anxious subjects during opposite-sex interactions (e.g., Twentyman & McFall, 1975). Beidel, Turner, and Dancu (1985) examined the differences between socially anxious and non-socially anxious individuals involved in three separate tasks: a role play with an opposite-sex confederate, a role play with a same-sex confederate, and an impromptu speech. Heart rate and blood pressure were both recorded and the socially anxious subjects were found to show greater

physiological reactivity during the opposite-sex encounter and the impromptu speech.

To date, research addressing the physiological reactivity among socially anxious individuals has been limited. By including such a measure it becomes possible to attain an indication of anxiety separate from behavioural or cognitive factors that may confuse the results. For the present study, predictions were made as to how socially anxious individuals would differ (in terms of heart rate) from non-socially anxious individuals in their reaction to the expertise level of their partners.

Behavioural Factors

Leary and Schlenker (1981) state that the two most commonly reported behaviours associated with social anxiety are reticence (or inhibition) and avoidance of certain social situations. Since subjects included in any study have clearly not avoided the situation, what remains of interest is to assess their reticent or inhibited behaviours. The question then arises, out of the vast array of potential behaviours, what will be assessed?

One important issue involves the decision as to whether molar or molecular behaviours will be assessed. Research in the area of social anxiety has generally relied on global ratings of observable constructs such as social skill, anxiety, and assertiveness. However, there is evidence that the measurement of various molecular behaviours (e.g., hand gestures, squirming, self-manipulation) may allow for greater specificity and precision of assessment.

In a comprehensive study of the behavioural components of heterosexual social skills, Conger and Farrell (1981) investigated a number of specific behaviours during role-plays and waiting periods using undergraduate male students. Of those behaviours that were examined, two have been selected for inclusion in the present study: total time talking and amount of eye contact. Conger and Farrell found

that these two factors were most predictive of more global ratings of anxiety. Total time talking correlated negatively with anxiety ratings during the role play and during the waiting period. Amount of eye contact also correlated negatively with anxiety ratings both during the role play and the waiting period.

Time talking. Zimbardo (1977) argues that the single most accepted behavioural indicator of social anxiety involves the amount of talking an individual engages in during a social encounter. Numerous studies have shown clearly that people who are feeling socially anxious initiate fewer conversations, speak less often in conversations once started, speak for shorter durations, and are less likely to break silences in the conversation (Arkowitz, Lichtenstein, McGovern, & Hines, 1975; Borkovec, Fleischmann, & Caputo, 1973; Cheek & Buss, 1981; Glasgow & Arkowitz, 1975; Pilkonis, 1977a; Watson & Friend, 1969).

Verbal output has been found to be sensitive to situational factors (Brown & Garland, 1971; Knight & Borden, 1978; Leitenberg, 1990). Situations that generate concerns over potential negative evaluations (e.g., the presence of highly skilled, knowledgeable, or critical audiences) are particularly likely to reduce the talking behaviour of socially anxious individuals (Leary, 1983b). Murray (1971) argues that verbal quantity first rises and then falls as situational stress increases, indicating a U-curve relationship between anxiety and verbal output. It is because of this sensitivity to situational cues that the amount of time talking has been included in the present study.

Eye contact. In North American society, eye contact is generally regarded as an important indicator of the desire to affiliate with another person. Similarly, a key sign that an individual is feeling socially anxious involves a reluctance to engage in eye contact. Pilkonis (1977a) found that highly socially anxious males engaged in less eye contact than did those low in social anxiety. He found no differences in females. Conger and Farrell (1981) found significant

correlations between eye contact and global ratings of social anxiety.

Leary (1983b) suggests that reduced eye contact serves at least two functions for the socially anxious individual. First, it reduces some amount of threatening stimulation by allowing the individual to engage in emotional withdrawal. Second, reduced eye contact discourages other people from initiating social exchanges, exchanges that may be threatening to the individual involved.

As was the case for talking behaviours, eye contact has also been found to be sensitive to situational cues (Cheek & Buss, 1981; Leitenberg, 1990; Pilkonis 1977a; Zimbardo, 1977). Modigliani (1971) found that situations that produce embarrassment also reduce amount of eye contact in female subjects. Again, this sensitivity to situational variables makes amount of eye contact an appropriate variable for inclusion in the present study.

Protective self-presentations. Schlenker and Leary (1982) have written extensively about social anxiety from a self-presentation point of view. As previously stated, the self-presentation model suggests that socially anxious individuals are more likely to adopt a protective as opposed to an acquisitive self-presentation style. A protective self-presentation style involves attempts to avoid losses in social approval and/or avoid gaining social disapproval. A number of behavioural methods have been suggested (Leary, 1983b) as means to accomplish this goal, two of which were included in the present study: innocuous sociability and disclaimers.

Innocuous sociability involves attempts to garner social approval that carry little in the way of social risk. The technique involves behaviours that indicate interest in and agreement with what others are saying (Leary, 1983b). Specific behaviours include; smiling, nodding the head, and verbal utterances such as "uh-huh", "yes", etc. These responses present an image of politeness, friendliness, and attentiveness. Although these behaviours are appropriate social skills

that most people use from time to time during conversations, they can become problematic if taken to an extreme and used as a substitute for, rather than an accompaniment to, other more genuinely engaged behaviours.

Hewitt and Stokes (1975) described disclaimers as statements that people make prior to performing actions or making statements that might be interpreted in a negative light. The desire for the individual involved is to avoid or block negative opinions that might be elicited. People who are feeling socially anxious often hedge their opinions with such statements as "I'm not an expert on this but..." or "I could be wrong about this...". The hope is that, by softening their positions, they can reduce or eliminate potential negative evaluations (Leary, 1983b).

Innocuous sociability and disclaimers have undergone little in the way of experimental examination. Some authors have found the constructs to be more evident in socially anxious than in non-socially anxious individuals (Natale, Entin, & Jaffe, 1979; Pilkonis, 1977a). However, the sensitivity of these constructs to situational factors has not been evaluated.

In addition to time talking and eye contact, the present study also assessed protective self-presentation behaviours (innocuous sociability and disclaimers). For each construct, various predictions were made as to how socially anxious individuals would differ (in terms of talking, eye contact, and protective self-presentations) from non-socially anxious individuals in their reactions to the expertise level of their partners. By choosing these three constructs the hope was that a reasonably inclusive sample of various "anxious behaviours" would be assessed.

Self-Presentation Style

According to Arkin (1981), the vast majority of all interpersonal relations involve some degree of social risk. While this risk exists

across most social encounters, people differ greatly in their reactions as well as in their appraisal of the likelihood of achieving favourable outcomes. Arkin proposed two concepts to describe how different individuals approach social situations: acquisitive and protective self-presentation styles.

Individuals who display an acquisitive self-presentation style treat the presentation of the self as a challenge. They approach the risks and attempt to present an image that is as favourable as possible. In contrast to this group, are those who display a protective self-presentation style. For these people, social encounters involve unacceptable risk and their approach is to present an impression of the self that is merely safe. The motivation is twofold: to protect against losses in social approval that has already been attained and to avoid gaining social disapproval (Arkin, 1981).

Arkin, Appelman, and Burger (1980) examined this issue from the viewpoint of the "self-serving bias" that states that individuals tend to attribute success to internal causes (e.g., skill) and failure to external causes (e.g., luck). Zelen (1987) argued that a reversal of this self-serving bias may underlie a group of "performance neuroses" that includes social anxiety. According to this view, non-socially anxious individuals tend to adopt a "reward" orientation that stresses claiming responsibility for success while socially anxious individuals tend to adopt a "cost" orientation that sees them accepting more responsibility for failure.

Schlenker and Leary (1982) proposed the self-presentation model as a possible means of explaining social anxiety. The model suggests that people become socially anxious when they are concerned about how they are being perceived and evaluated by others. They attempt to control potential social disapproval by communicating as little about themselves as possible. The authors contend that non-socially anxious individuals tend to adopt an acquisitive self-presentation style. Because their

expectation of positive outcome is high, they approach social encounters expecting positive results. Socially anxious persons, on the other hand, while they also wish to form a favourable impression, harbour doubts about their ability to do so successfully. As a result, they tend to adopt a protective self-presentation style.

A number of explanations for these doubts have been suggested. It may be that socially anxious individuals lack basic knowledge of behaviours that are appropriate in various social contexts. This explanation introduces the notion of skills deficit and suggests that some individuals are unable to interact with others in a manner likely to result in approval because they do not know how to behave (Schlenker & Leary, 1982).

A second explanation suggests that socially anxious individuals are, in fact, aware of the necessary behaviours but, for whatever reason, are unable to implement them. In this explanation, the individual knows what responses are appropriate but, because of high anxiety, low self-confidence, etc., he or she is unable to produce them (Curran, Wallander, & Fischetti, 1980).

Self-presentation style, in addition to being regarded as a dispositional construct, is also sensitive to situational factors. Relative acquisitive versus protective self-presentation concerns can be drastically affected by the day-to-day conditions in which high and low social anxiety individuals find themselves. For the present study, various predictions were made as to how socially anxious individuals would differ (in terms of self-presentation style) from non-socially anxious individuals in their reactions to the expertise level of their partners in a dyadic interaction involving contradictory points of view.

In the following section, the issues introduced in this present section are discussed again in terms of how they have been operationalized for inclusion in this study.

The Present Studies

Two studies were designed to consider, in turn, relations between different facets of self-reported anxiety and the effect of varying levels of social anxiety in an experimental manipulation with two levels of stress.

Study 1

Purpose of Study 1

The purpose of Study 1 was to examine a number of variables that were predicted to accompany the experience of shyness, as defined in terms of social anxiety, behavioural inhibition, and avoidance. By doing so the purpose was to test the notion that both social anxiety and behavioural inhibition and avoidance are important factors and need to be measured separately in order to gain a more complete understanding of social anxiety and shyness. No variables were manipulated in this study, thus the design was passive-observational in nature and relied on self-report measures of the relevant constructs.

Statement of Hypotheses

The hypotheses for Study 1 were grouped into two sets, with each focusing on one of two constructs of interest: anxiety sensitivity and impostor feelings. The purpose of testing these hypotheses was twofold, the first being to examine the direction of the correlations involved in these relationships. The second purpose was to demonstrate that both affective and behavioural factors should be considered when examining individuals suffering from shyness. In other words, it is suggested that each factor accounts for unique variance and will not be absorbed by the other factor.

Anxiety sensitivity. The first set of hypotheses examined anxiety sensitivity as it relates to social anxiety and behavioural inhibition and avoidance, and includes all the subjects in the sample.

Hypothesis 1. Anxiety sensitivity will correlate positively with social anxiety.

Hypothesis 2. Anxiety sensitivity will correlate positively with behavioural inhibition and avoidance.

Hypothesis 3. Anxiety sensitivity will be determined better by social anxiety and behavioural inhibition and avoidance together than by either alone.

Impostor feelings. The second set of hypotheses examined impostor feelings as they relate to social anxiety and behavioural inhibition and avoidance, and includes all the subjects in the sample.

Hypothesis 4. Impostor feelings will correlate positively with social anxiety.

Hypothesis 5. Impostor feelings will correlate negatively with behavioural inhibition and avoidance.

Hypothesis 6. Impostor feelings will be determined better by social anxiety and behavioural inhibition and avoidance together than by either alone.

Statistical Analysis

Two different statistical methods were used to test the hypotheses in Study 1, preparatory to classifying subjects for participation in an experimental treatment in Study 2. The first involved the calculation of a correlation matrix among the variables of interest (Pearson *r*). This analysis made it possible to examine both the direction (i.e., positive or negative) and the strength (i.e., magnitude) of the associations amongst the variables. Hypotheses 1, 2, 4, and 5 were tested through this procedure.

The second statistical method involved the calculation of a number of multiple regression equations. This analysis made it possible to assess the relative contributions of social anxiety and behavioural inhibition and avoidance in accounting for the variance of both anxiety sensitivity and impostor feelings. Hypotheses 3 and 6 were tested through this procedure.

Once all 6 hypotheses were tested it became possible to gain a

clearer understanding of exactly how social anxiety and behavioural inhibition and avoidance work, either in conjunction or separately, in the experiences of anxiety sensitivity and impostor feelings. By identifying which multiple regression equation accounts for the greatest amount of variance, it became possible to identify what factors, and to what degree, are important to consider in an experimental treatment applying two levels of social stress to subjects identified in terms of their level of social anxiety.

Method

Subjects. Two hundred and fifty-one undergraduate students registered at Simon Fraser University participated in Study 1. The majority of these subjects participated in return for course credit while a portion were recruited directly out of tutorials and no course credit was provided.

Procedure. Study 1 involved asking the subjects to complete a number of self-report inventories. The Interaction Anxiousness Scale (IAS, Leary, 1983a) was administered to all subjects to provide an indication of the degree to which the subjects feel anxious in social situations. The entire Cheek and Buss (1981) Shyness Scale was administered, although only the five items concerning behavioural inhibition were scored, as was the Avoidance subscale of the Social Avoidance and Distress Scale (Watson & Friend, 1969). Based on the scores attained on these latter two measures, values were attained that indicated the degree to which the subjects tended to be inhibited and avoidant in social situations.

Two other measures were also administered with the intention of identifying possible dispositional factors that were predicted to correlate either positively or negatively with social anxiety and/or behavioural inhibition and avoidance. These measures included the Anxiety Sensitivity Index (Reiss, et al., 1986), and the Harvey Impostor Phenomenon Inventory (Harvey, 1982).

Study 2

Purpose of the Study

The second aim of this project was to examine how subjects of differing levels of social anxiety would react to an experimental manipulation in which two levels of a stressor were used. The purpose of Study 2 was to introduce a specific situational variable (perceived expertise of one's interaction partner) that might cause individuals who feel anxious in social situations to interact/perform in an inhibited manner. Subjects were asked to discuss and defend an opinion under one of two conditions and a number of behaviours associated with behavioural inhibition and avoidance were measured. The aim was to determine whether the manipulation would affect subjects high in social anxiety differently than it would subjects low in social anxiety. A number of outcome variables were assessed. The design of this portion of the study was experimental in nature.

Statement of Hypotheses

In Study 2, three further sets of hypotheses were tested. These hypotheses were based on subject response to the manipulated variable (perceived expertise), and examined: a) heart rate response before and during the interaction, b) overt behavioural reactions, and c) self-presentation style.

Heart rate. The first set of hypotheses in Study 2 were concerned with the physiological reaction (heart rate) of subjects before and during the interaction.

Hypothesis 7. Subjects high in social anxiety who are exposed to an interaction with a high expertise partner will exhibit greater elevations in their heart rates (heart rate will increase more from their baseline) than will those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety will not differ in their heart rate elevations, regardless of whether they are

exposed to an interaction with a high expertise or low expertise partner.

Hypothesis 8. Subjects high in social anxiety who are exposed to an interaction with a high expertise partner will habituate less (heart rate will decrease less over the interaction period) than will those exposed to an interaction with a low expertise partner, whereas subjects who are low in social anxiety will not differ in the degree they habituate, regardless of whether they are exposed to an interaction with a high expertise or low expertise partner.

Behavioural reactions. The second set of hypotheses were tested using ratings of actual behavioural responses in terms of amount of time talking, amount of direct eye contact, and use of protective self-presentations (i.e., innocuous sociability and disclaimers) during the social encounter.

Hypothesis 9. Subjects high in social anxiety who are exposed to an interaction with a high expertise partner will talk for a lesser amount of time than will those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety will not differ in the amount of time they talk, regardless of whether they are exposed to an interaction with a high expertise or low expertise partner.

Hypothesis 10. Subjects high in social anxiety who are exposed to an interaction with a high expertise partner will engage in a lesser amount of direct eye contact with their partners than will those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety will not differ in the amount of direct eye contact, regardless of whether they are exposed to an interaction with a high expertise or low expertise partner.

Hypothesis 11. Subjects high in social anxiety who are exposed to

an interaction with a high expertise partner will engage in more innocuous sociability than will those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety will not differ in the amount of innocuous sociability they engage in, regardless of whether they are exposed to an interaction with a high expertise or low expertise partner.

Hypothesis 12. Subjects high in social anxiety who are exposed to an interaction with a high expertise partner will make more disclaimer statements than will those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety will not differ the amount of disclaimer statements they make, regardless of whether they are exposed to an interaction with a high expertise or low expertise partner.

Self-presentation style. The third set of hypotheses were based on self-reported recall of self-presentation style during the interaction, comparing acquisitive and protective styles.

Hypothesis 13. Subjects high in social anxiety who are exposed to an interaction with a high expertise partner will report less acquisitive self-presentations than will those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety will not differ in the acquisitive self-presentations they report, regardless of whether they are exposed to an interaction with a high expertise or low expertise partner.

Hypothesis 14. Subjects high in social anxiety who are exposed to an interaction with a high expertise partner will report more protective self-presentations than will those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety will not differ in the

protective self-presentations they report, regardless of whether they are exposed to an interaction with a high expertise or low expertise partner.

Statistical Analysis

The design for Study 2 involved a 2 (High vs. Low Social Anxiety) x 2 (High vs. Low Expertise) factorial design, thus two-way analysis of variance (ANOVA) was used for analyzing the data. However, because the hypotheses are stated in a manner that focuses on interaction effects, significant interactions were further investigated by calculating one-way ANOVAs. By doing so, the two social anxiety groups could be separated from one another and how each group (High and Low Social Anxiety) reacted to the experimental manipulation (High and Low Expertise) could be examined along a number of dimensions.

The specific dimensions investigated included: a) heart rate response during the interaction, b) observable behavioural reactions, and c) self-presentation style. The responses of High Social Anxiety subjects exposed to an interaction with a High Expertise partner were compared to those exposed to an interaction with a Low Expertise partner. Responses of Low Social Anxiety subjects exposed to an interaction with a High Expertise partner were then compared to those exposed to an interaction with a Low Expertise partner, resulting in four separate cells of subjects.

Each cell contained 20 subjects. This number was chosen because the number is consistent with previous studies that have investigated individual differences within interaction dyads. A survey of recently publications reveals that, while March and Peterson (1993) used 30 subjects per cell, most researchers have used far fewer. Jones (1992), for example, used two groups of only nine subjects each. Other cell sizes in recent studies have included; 21 subjects (McCloskey & Coleman, 1992), 12 subjects (Nohara, 1992), and 10 subjects (Hendrick & Strange, 1991). Cell sizes of 20 subjects were chosen for the present study,

based on previous research, because this number appeared to offer sufficient power (i.e., ability to identify differences between groups that truly exist) to test the predictions.

Method

Subjects. Eighty-four undergraduate students registered at Simon Fraser University participated in Study 2. These subjects were drawn from the pool of subjects who participated in Study 1. A number participated in return for additional course credit while those who were recruited directly out of tutorials were not provided with course credit.

Procedure. For Study 2, subjects were divided according to their social anxiety (IAS) scores; High Social Anxiety subjects were defined as those occupying the top one-third of the sample and Low Social Anxiety subjects were defined as those occupying the bottom one-third of the sample. Once social anxiety scores had been calculated, potential subjects were contacted by telephone in order to recruit their participation in Study 2.

Subjects were run on an individual basis and a video camera recorded the portion of the procedure during which the interaction task took place. Subjects were fitted with a sports-type device to monitor their heart rate. They wore the heart-monitoring device throughout the procedure with the hope that, by the time the procedure reached the point where actual measures were recorded, the subjects would have had a chance to accommodate to the device. The entire procedure took approximately 30 minutes to complete.

Once they arrived, subjects were randomly assigned (through a coin toss) to either Condition A or Condition B (see below). All subjects were given a choice between two topics that were being currently reported on in the media. The specific topics were: "free trade" and "logging". These topics were selected with the expectation that every subject would almost certainly have an opinion on at least one of the

topics. In addition, the topics were designed so as to not be so controversial that some subjects might become upset, offended, or personally threatened by their being asked to present an opinion on that topic.

The subjects were asked to write a short essay that described their opinions regarding the topic that they had chosen. They were given three minutes to complete this task and essays were gathered up at the expiration of that time. After the essays had been completed a short rest of three minutes followed during which a baseline of the subject's heart rate was recorded. After the break, the second portion of the study was explained to the subject.

Those assigned to Condition A were told that they would be discussing their topic with an undergraduate student for a short period of time (five minutes). The instructions stressed that the other person had relatively little knowledge on the selected topic. Those assigned to Condition B were told that they would be discussing their topic with a Research Assistant who had been prepared beforehand and who had considerable expertise on that particular topic. The instructions stressed that the Assistant had been prepared so that she could discuss the topic with a high degree of expertise and knowledge. As a result of these instructions, those subjects assigned to Condition A expected to interact with a Low Expertise partner while those assigned to Condition B expected to interact with a High Expertise partner.

All subjects then underwent one of the two interaction conditions. As stated above, those assigned to Condition A discussed their topic with an "unprepared fellow student" while those assigned to Condition B discussed the topic with a "Research Assistant" who had received considerable prior information and coaching in the area. The interaction partner in each encounter was a confederate who was appropriately prepared for the discussion. Two female undergraduate students acted as research Assistants and each was trained so that she

could adopt either role (high expertise or low expertise). For every social interaction, the confederate took a position that was opposite to that stated by the subject, regardless of the type of subject or the experimental condition.

Following the interaction, subjects were asked to complete the Self-Presentation Style Scale (Meleshko & Alden, 1993) and the Self-Appraisal Survey. Following completion of these two instruments, subjects were completely debriefed, were given an opportunity to ask questions of the experimenter, and were told where and when they could obtain results from the experiment. They were then thanked for their participation and were excused.

Measures

Social Anxiety

Interaction Anxiousness Scale. Leary (1983a) developed a 15-item self-report inventory called the Interaction Anxiousness Scale (IAS) that he argued was a pure measure of social anxiety with all behavioural aspects removed. Items consist of statements such as: "I often feel nervous even in casual get-togethers", "Parties often make me feel anxious and uncomfortable", and "I get nervous when I speak to someone in a position of authority". Statements are rated on a Likert-type scale ranging from "not at all characteristic" to "extremely characteristic.

Leary evaluated the psychometric qualities of this measure by subjecting it to a range of reliability and validity checks. Cronbach's alpha was calculated on the items, revealing an interitem reliability of .90. In addition, test-retest reliability (over an 8 week period) was found to be .80.

Construct validity was established by correlating the IAS with nine other measures of social anxiety [e.g., the Fear of Negative Evaluation scale (Watson & Friend, 1969) and the Social Anxiety scale (Fenigstein, Scheier, & Buss, 1975)]. Positive correlations were

uncovered with the expected scales (i.e., those measuring social anxiety) and negative correlations were found with the Sociability scale (Cheek & Buss, 1981) and the Self-Esteem scale (Rosenberg, 1965). Significance levels were better than $p < .05$ for eight of the nine scales and five reached the $p < .001$ level (Leary, 1983a).

Leary (1983a) used a criterion groups analysis to establish concurrent validity. Three groups of university students were recruited who were expected to differ greatly on scores obtained on the IAS: speech majors (low anxiety), psychology majors (moderate anxiety), and students seeking counselling for interpersonal problems (high anxiety). A one-way ANOVA revealed highly significant differences amongst groups in the expected directions [$F(2, 39) = 15.99$, $p < .0001$].

Subsequent studies have examined the IAS and compared obtained scores with a number of other related factors. Maddux, Norton, and Leary (1988) found high scores on the IAS were negatively correlated with self-reported expectancy to be able to perform social behaviours. Negative correlations were also found with self-reported expectancy that interpersonal behaviours will produce desired effects.

More recently, Leary and Kowalski (1993) assessed the reliability and validity of the IAS by examining the responses of 1,864 respondents between the years 1980 and 1992. Interitem reliability was well demonstrated with alpha values consistently exceeding .85.

Construct validity was established by correlating IAS scores and scores on the Social Avoidance and Distress Scale (Watson & Friend, 1969), the Shyness Scale (Cheek & Buss, 1981), and the Social Anxiety subscale of the Self-Consciousness Scale (Fenigstein, Scheier, & Buss, 1975). Correlations reached .71, .88, and .78, respectively. Discriminant validity was established by demonstrating that correlations between IAS scores and measures of neuroticism and general trait anxiety are consistently correlated lower than correlations among measures of neuroticism and trait anxiety. In other words, individuals who score

high on the IAS tend to be more generally anxious than those who score low, but the IAS appears to measure something other than neuroticism or general anxiousness (Leary & Kowalski, 1993).

Finally, Leary and Kowalski (1993) examined criterion-related validity. They found that IAS scores correlated with self-reported anxiety of subjects both while waiting for and during an interpersonal encounter. Also, IAS scores were positively correlated with judges' ratings of subject nervousness and negatively correlated with judges' ratings of subject confidence.

The present study adopted the IAS as a pure measure of social anxiety that removes all behavioural aspects.

Behavioural Inhibition and Avoidance

At present, no single self-report instrument of behavioural inhibition and avoidance exists in the literature that measures these tendencies independent of other, possibly confounding, factors. Leary et al. (1986) dealt with this problem by administering selected items from the Cheek and Buss (1981) Shyness Scale as well as the Avoidance subscale of the Social Avoidance and Distress Scale (Watson & Friend, 1969). By doing this, Leary et al. were able to attain pure measures of behavioural inhibition and avoidance with all affective and cognitive aspects removed.

There are a number of reasons why people may avoid social situations or behave in an inhibited manner once in them. These include disinterest, introversion, lack of assertiveness, or low expectancy for social success. The problem with adopting instruments that tap these constructs as measures of behavioural inhibition and avoidance is that each is assumed to also be a measure of social interest, introversion, etc. By adopting stricter measures, Leary et al. (1986) were able to ignore the factors that were not of interest and focus directly on the tendency to avoid social situations and the tendency to act in an inhibited manner once in such situations.

Cheek and Buss Shyness Scale. The Cheek and Buss (1981) Shyness Scale (CBSS) was originally developed in order to investigate the relationship between sociability and shyness. There had been some suggestion up to that time that shyness could be equated with low sociability. In other words, shyness and sociability were conceived as being located at opposite ends of the same continuum. Cheek and Buss disputed this contention and created a single measure with two subscales in order to obtain separate measures of the two constructs (the Shyness and the Sociability subscales). Items consist of statements such as: "I am socially somewhat awkward", "I feel inhibited in social situations", and "I have trouble looking someone right in the eye". Statements are rated on a Likert-type scale ranging from "extremely uncharacteristic" to "extremely characteristic. The authors found that shyness and sociability represented different constructs, although they did share some common variance.

A factor analysis was calculated on all 14 items for the two relevant factors: shyness and sociability. All of the items loaded above .40 on the appropriate factor (ranging from .44 to .76). Loadings on the other factor ranged from .00 to .32, with all but one loading below .15. In addition, the two factors correlated negatively (r = -.30) with one another, suggesting that shy people tend to be unsociable and nonshy tend to be sociable (Cheek & Buss, 1981).

Reliability estimates revealed alpha coefficients (interitem consistency) of .79 for the Shyness subscale and .70 for the Sociability subscale. Both values are adequate for short measures. Test-retest reliability for the Shyness subscale was calculated over a 90-day period at .74 (Cheek & Buss, 1981).

Construct validity has been assessed by a number of different investigators. Johnson (1980, cited in Cheek & Buss, 1981) found that the Shyness subscale correlated .81 (n = 102) with self-ratings of degree of shyness on a 7-point scale and the Sociability subscale

correlated .65 (n = 102) with self-ratings of "solitary" versus "sociable", also on a 7-point scale. The scales have also been demonstrated to correlate significantly with other measures of shyness, social anxiety, and fearfulness (Cheek & Buss, 1981; Jones, Briggs, & Smith, 1986).

In order to measure the tendency to be inhibited in social encounters, Leary et al. (1986) drew five items from the CBSS (items 1, 2, 7, 8, and 9). The interitem reliability of this subscale was calculated at .74. In their study of attribution styles, Leary et al. found that the tendency to attribute one's nervousness in social situations to internal factors was strongly related to scores on this subscale. Partial correlations (with the variance attributable to social anxiety partialled out) between inhibition scores and internal attributions for nervousness (personality or ability) were both positive (r = .36, p < .001 and r = .36, p < .001, respectively). In addition, the tendency to attribute one's relaxation in social situations to internal factors was related to scores on this subscale. Partial correlations between inhibition scores and internal attributions for relaxation (personality or ability) were both negative (r = -.27, p < .001 and r = -.28, p < .001, respectively).

Innes and Thomas (1989) examined attributions for social success and failure, assessing the self-efficacy expectations of 15 - 17 year old high-school students. The authors used the same five items drawn from the CBSS to measure behavioural inhibition as did Leary et al. (1986). They found that self-efficacy formed a strongly significant negative correlation with inhibition (r = -.38, p < .001). Correlations were also calculated between six attributional dimensions and inhibition. Of these, high inhibition scores were associated with low attributions for success to both ability (r = -.32, p < .01) and personality (r = -.29, p < .01). In contrast, when examining attributions for failure, high inhibition scores were associated with

high attributions to ability (r = .40, p < .01), personality, (r = .34, p < .01), and strategy (r = .25, p < .01).

In addition, Innes and Thomas (1989) used multiple regression analysis to identify the predictors of inhibition. Self-efficacy attribution for success was the only significant predictor of inhibition (F = 14.55, p < .009). In contrast, three attributions for failure proved to be significant predictors of inhibition, attribution to ability (F = 16.48, p < .03), attribution to self-efficacy (F = 11.84, p < .02), and attribution to situation (F = 9.31, p < .02). Overall, the authors found that inhibition was negatively associated attributions to stable, internal factors (ability and personality) for social success, while they were positively associated with attribution to such factors for social failures.

The present study used the same five items as did Leary et al. (1986) to gain a pure measure of behavioural inhibition with all affective and cognitive components removed. To help differentiate this shortened 5-item scale from the overall CBSS measure, the acronym CBI has been adopted.

Social Avoidance and Distress Scale. The Social Avoidance and Distress Scale (SADS) was developed by Watson and Friend (1969) as a general measure both of anxiety in social situations as well as the tendency to avoid social encounters. Glass and Arnkoff (1989) note that the SADS, along with the Fear of Negative Evaluation Scale (Watson & Friend, 1969), are two of the most frequently employed self-report inventories for both clinical and research purposes. Although the overall scale is often used in its entirety, Watson and Friend did identify both a Distress subscale and an Avoidance subscale of 11 items. The distress items assess anxiety or discomfort in social situations and the avoidance items assess both active avoidance and the desire to avoid others. To attain a low score on the avoidance factor, subjects merely lack the motive to avoid others, it is not necessary for them to

actively wish to affiliate. Items consist of statements such as: "I try to avoid situations which force me to be very sociable", "I would avoid walking up and joining a large group of people", and "I tend to withdraw from people". Responses are shown by dichotomous "true/false" choices.

Watson and Friend (1969) assessed the homogeneity of the scale as a whole, attaining a mean biserial correlation of .77. In addition, KR-20 was calculated (a test of homogeneity where the scale uses dichotomous items) at .94. Test-retest reliability was calculated over a period of four weeks at .68 for one sample (n = 154) and .79 for a second sample (n = 29).

Watson and Friend (1969) investigated construct validity and found that the overall scale correlated negatively with social affiliation as measured by the Affiliation subscale of Jackson's (1966) Personality Research Form. In addition, subjects scoring high on the scale reported significantly less interest in returning for a social task and more interest in working alone than did subjects scoring low on the scale. Finally, they reported and less talking during a two-person cognitive task.

Patterson and Strauss (1972) conducted a factor analysis of the SADS and confirmed that a two-factor solution was optimal. One factor was described as "approach-avoidance" (the Avoidance subscale) and the other as "social anxiety" (the Distress subscale). The approach-avoidance factor correlated significantly with measures of affiliation and extraversion (r averaging .70). Leary, Knight, & Johnson (1987) assessed interitem reliability using Cronbach's alpha. Values of .68 were attained for the full scale, .87 for the Avoidance subscale, and .85 for the Distress subscale.

Leary et al. (1986) wished to measure the desire to avoid social encounters. They accomplished this aim by using the Avoidance subscale of the SADS. The interitem reliability of this subscale was calculated at .80. As was the case for behavioural inhibition, the tendency to

attribute one's nervousness in social situations to internal factors was strongly related to scores on this subscale. Partial correlations between avoidance scores and internal attributions for nervousness (personality or ability) were both positive ($r = .25$, $p < .001$ and $r = .22$, $p < .01$, respectively). The tendency to attribute one's relaxation in social situations to internal factors was also related to scores on this subscale. Partial correlations between avoidance scores and internal attributions for relaxation (personality or ability) were both negative ($r = -.14$, *n.s.* and $r = -.23$, $p < .01$, respectively).

In their study of attribution for social success and failure, Innes and Thomas (1989) also used the same Avoidance subscale of the SADS to measure behavioural avoidance as did Leary et al. (1986). Self-efficacy formed a strong negative correlation with avoidance ($r = -.34$, $p < .002$). As was the case with behavioural inhibition, correlations were calculated between six attributional dimensions and avoidance. High avoidance scores were associated with low attributions for success to ability ($r = -.48$, $p < .01$) and personality ($r = -.43$, $p < .01$) as well as effort ($r = -.26$, $p < .01$) and strategy ($r = -.26$, $p < .40$). When examining attributions for failure, high inhibition scores were associated with high attributions to ability ($r = .36$, $p < .01$) and personality ($r = .32$, $p < .01$).

In the multiple regression analysis, Innes and Thomas (1989) attempted to identify the predictors of avoidance. Self-efficacy attribution for success was the only significant predictor of avoidance ($F = 25.20$, $p < .001$). Two attributions for failure proved to be significant predictors of inhibition, attribution to ability ($F = 12.58$, $p < .02$) and attribution to self-efficacy ($F = 8.99$, $p < .04$). Overall, as was the case for behavioural inhibition, the authors found that avoidance was negatively associated with attributions to internal factors (ability and personality) for social success, while they were positively associated with attribution to such factors for social

failures.

The present study used the same Avoidance subscale to gain a pure measure of social avoidance with all the affective and cognitive components removed. To help differentiate this social avoidance subscale from the overall SADS measure, the acronym SAS has been adopted.

To summarize, the present study made use of all 15 items from the IAS to gain a pure measure of social anxiety. Five items from the CBSS provided a measure of behavioural inhibition and all 11 items from the Avoidance subscale of the SADS provided a measure of behavioural avoidance. In their study of attribution styles of socially anxious individuals, Leary et al. (1986) used these same three instruments. As stated above, the measures were found to have adequate interitem reliabilities. Also, the three scales were found to correlate amongst themselves: IAS with SAS (r = .52), IAS with CBI (r = .69), and SAS with CBI (r = .70).

In their analysis of five self-report measures of shyness (including the three measures used in the present study) Jones, Briggs and Smith (1986) concluded that the measures showed exceptional internal consistency in their items as well as excellent test-retest correlations. They related well to measures of social behaviour, measures of relational satisfaction, and to peer ratings of shyness.

Anxiety Sensitivity

Anxiety Sensitivity Index. Reiss, Peterson, Gursky, and McNally (1986) developed the Anxiety Sensitivity Index (ASI) to assess sensitivity to anxiety symptoms. The ASI is a 16-item self-report scale that purports to measure fear of the social consequences of anxiety. Items consist of statements such as: "It is important for me not to appear nervous", "Other people notice when I feel shaky", and "Unusual body sensations scare me". Subjects are asked to rate how characteristic each statement is of them on a Likert-type scale ranging

from "very little" to "very much".

In a series of studies, Reiss et al. (1986) subjected the ASI to a number of tests to assess the psychometric qualities of the scale. Interitem correlations were calculated over two samples and the mean statistically significant correlations were found to be .42 for the first sample (n = 49) and .35 for the second (n = 98). Test-retest reliability was calculated at .75 (average of the two samples) over a 2-week period, a figure that is adequate for a short measure.

Reiss et al. (1986) performed a principal component factor analysis on the items. This procedure revealed a single factor structure in which 13 of the 16 items loaded at .4 or greater on that factor.

Reiss et al. (1986) also assessed concurrent validity by submitting the scale to a criterion groups analysis. Two separate predictions regarding the relevance of the ASI to psychopathology were tested. The prediction that ASI scores should be higher for agoraphobic patients than for patients with other anxiety disorders (based on the observation that agoraphobia is particularly associated with fear of fear) was supported [$F(2, 109) = 25.4$, $p < .001$]. The prediction that ASI scores should be higher for patients with anxiety disorders than for university students (based on the assumption that anxiety sensitivity can predispose individuals towards anxiety disorders) was also supported [$F(1, 197) = 23.94$, $p < .001$].

Construct validity was established by correlating the ASI with a number of other scales predicted to correlate positively with the ASI. Significant positive correlations were found with all three of the scales [the Fear Survey Schedule (Geer, 1965), the Taylor Manifest Anxiety Scale (Taylor, 1953), and the Anxiety Frequency Checklist (Reiss et al., 1986)]. The question of whether the ASI was a true measure of anxiety sensitivity and not just an anxiety scale was tested by examining two specific correlations. The correlations between anxiety

sensitivity and fearfulness was found to be considerably larger than those between anxiety frequency and fearfulness, a finding that was interpreted as supporting the distinction between anxiety sensitivity and anxiety (Reiss et al., 1986).

Taylor, Koch, and Crockett (1991) were able to replicate the results of the original investigation by Reiss et al. (1986) in finding that the ASI can be best considered as unifactorial in nature. However, while Reiss et al. concluded that the scale assessed fear of the social consequences of anxiety, Taylor, Koch, and Crockett found that the key dimension (the single factor) could be best described as the "fear of bodily sensations". Because of this specificity the authors argued that the ASI is particularly suited for differentiating panic disordered patients from patients suffering from other anxiety disorders.

Maller and Reiss (1987) found that, relative to subjects with low ASI scores, those with high scores reacted with more anxiety to anxiety-relevant questions than anxiety-irrelevant questions. Maller and Reiss (1992) tested 151 college students for anxiety sensitivity, panic attacks, state-trait anxiety, and anxiety disorder history at two different points in time, once in 1984 and, again, in 1987. Test-retest reliability of ASI scores over the three year period was .71. Also, ASI scores in 1984 predicted both the frequency and intensity of panic attacks in 1987. Finally, subjects with high ASI scores in 1984 were five times more likely to have an anxiety disorder during the period of 1984 to 1987 than were subjects with low ASI scores. The authors argued that anxiety sensitivity is stable over time and should be considered a personality variable.

The present study adopted the ASI as a measure of sensitivity to anxiety symptoms.

Impostor Feelings

Harvey Impostor Phenomenon Inventory. Harvey (1982) developed a 14-item self-report inventory to assess the impostor phenomenon

construct. This scale, called the Harvey Impostor Phenomenon Inventory (HIPI) contains statements that the subject is asked to rate on a Likert-type scale ranging from "not at all true" to "very true". Items consist of statements such as: "In general, people tend to believe that I am more competent than I really am", "My personality or charm often makes a strong impression on people in authority", and "My public and private self are the same person".

The resulting score gives a measure of the degree to which individuals feel like "fakes" or "phonies" in their day-to-day lives. These feelings involve a general pathological belief system and is not restricted to high functioning individuals. Langford and Clance (1993) note that the items assess five separate issues: fear of failure, attribution of success to external factors (e.g., luck or charm), the desire to stand out, the feeling of having given others a false impression, and the discounting of positive feedback.

In her original creation and evaluation of the instrument, Harvey (1982) found the HIPI to have substantial reliability, with standardized interitem alpha calculated at .85 (n = 72). Topping and Kimmel (1985) calculated Cronbach's alpha values of .73 for men and .76 for women (.75 overall).

Evidence was also found for convergent and discriminant validity. Using a known groups procedure, Harvey (1982) found that HIPI scores were higher amongst high achieving honours students than among more typical students. In addition, using an extreme groups procedure, Harvey found that honours students in the high HIPI category attributed more of their scholastic success to their interpersonal skills and assets than did those in the low HIPI category.

Harvey (1982) calculated correlations between HIPI scores and a number of other constructs. High HIPI scores correlated with high self-monitoring and with low self-esteem. Topping and Kimmel (1985) found that HIPI scores correlated negatively with internal attributions for

success (i.e., ability) but the tendency only achieved statistical significance with the male subjects [*tau*(36) = .26, $p < .05$]. Replicating Harvey's findings, Topping and Kimmel also found HIPI scores to be related to self-monitoring [*tau*(82) = .18, $p < .05$] and self-esteem [*tau*(88) = -.41, $p < .001$] as well as trait anxiety [*tau*(259) = .42, $p < .001$]. Situational factors were also examined and Harvey (1982) found that first year graduate students who found themselves in unfamiliar roles scored higher on the inventory than did more experienced students. Similarly, Topping and Kimmel (1985) found that HIPI scores decreased as faculty rank increased [$F(2, 125) = 3.20$, $p < .05$ and $F(2, 154) = 3.21$, $p < .05$ for men and women, respectively].

The present study adopted the HIPI as a measure of subjective feelings of being an impostor.

Physiological Measures

Heart Rate. In the present study, subjects were fitted with heart monitoring devices as soon as they completed the short essays that made up the first task of Study 2. Although no values were recorded until later in the procedure, by attaching the monitoring devices at an early stage in the procedure, it was expected that any anxiety resulting from merely wearing the devices would be minimized by the time that meaningful heart rates were recorded. The exact measure of "heart rate" involved a number of separate measures.

The heart-monitoring device that was adopted for the present study is capable of recording an ongoing, beat-by-beat reading of heart rate. In other words, the time period between beats is noted and extrapolated to produce a beats per minute value for that single point in time. While this single value is extremely accurate, it was judged to be too sensitive for the requirements of the present study where a more general value was needed. To overcome the potential problem of undue sensitivity, for each point in time where a heart rate value was required, an average value was calculated over a 10-second period that

spanned that point in time. In other words, the individual heart rate values were added together and averaged for the four seconds prior to the time point, the time point itself, and the five seconds following the time point. This averaged score reduced the possibility that any value might have been unduly affected by a single aberrant heart rate.

The first measures of relevant heart rates were noted at three time periods during the three minute rest period prior to receiving instructions regarding the social interaction. The first measure was noted at the 15 second mark, the second at the one minute and 15 second mark, the third at the two minute and 15 second mark. The last of these measures was used as a measure of baseline heart rate. By waiting for almost three minutes to elapse, it was expected that the subject would have had sufficient time to relax and get used to the equipment. The calculated baseline value involved noting the values for the ten readings that spanned the last measure (2 minutes, 15 seconds). The resulting average was accepted as the baseline heart rate value for that subject.

The next measure did not occur until the experimental manipulation had begun. A set of heart rates was noted at five different periods during the social interaction task in the same manner as recorded during the baseline period (i.e., the first measure at the 15 second mark, the second at the one minute and 15 second mark, the third, fourth, and fifth at 15 seconds following minutes two, three, and four). As was the case during the baseline period, an average was calculated over a 10 second period and that averaged value represented the heart rate for the relevant time mark. Five values resulted (i.e., 0 minutes, 15 seconds; 1 minute, 15 seconds; 2 minutes, 15 seconds; 3 minutes, 15 seconds; 4 minutes, 15 seconds).

Examination of these heart rate values made it possible to gain an idea of the progress of heart rate change during both the baseline and interaction periods. Two values were of particular interest in testing

two of the hypotheses. The first involved the increase in heart rate from the end of the baseline period to the start of the interaction period. Specifically, change scores were calculated by subtracting the value recorded at the 0 minute, 15 second mark of the interaction period from the value recorded at the 2 minute, 15 second mark of the baseline period. The resulting values were compared across subjects and were used to test Hypothesis 7. The second involved the extent of habituation from the start of the interaction period to the end of the interaction period. Specifically, change scores were again calculated by subtracting the value recorded at the 0 minute, 15 second mark from the value recorded at the 4 minute, 15 second mark. The resulting values were used to test Hypothesis 8.

Behavioural Measures

Time talking. In the present study, videotapes of the five-minute social interaction that took place between the subject and a research confederate were viewed and scored. The exact measure of "time talking" was obtained by summing the total amount of time that the subject spent talking during the interaction. A stop watch was used to obtain this value. All verbal utterances were included although very short responses (e.g., a single word) clearly contributed very little to the final total.

Eye contact. In the present study, the videotapes of the social interaction between the subject and the research confederate were viewed. The exact measure of "eye contact" was obtained by summing the total time that subjects directed their gaze towards their partner during the interaction. Again, a stop watch was used. Any eye contact that the subject engaged in with his or her partner was included in the total score although, as was the case with total time talking, brief glances contributed little to the final total.

Protective self-presentations. As defined for the purposes of the present study, protective self-presentations involve both innocuous

sociability behaviours and disclaimers. Innocuous sociability involves various behavioural and verbal responses that indicate politeness and friendliness and include such specific behaviours as; smiling, head-nodding, and various encouraging or accepting verbal utterances (e.g., "uh-huh", "yes", "good point"). Disclaimers involve statements made prior to performing actions or making statements that might be interpreted in a negative light (e.g., "I'm not an expert on the field...", "It's only my opinion...").

As was the case with the two behavioural indicators of performance previously discussed (i.e., time talking and eye contact) the videotapes of the social interactions were viewed. The score for innocuous sociability was based simply on totalling up the number of behaviours and utterances by the subject during the interaction that were judged to correspond to the relevant notion of innocuous sociability. A list of expected behaviours was constructed beforehand to aid in the scoring but, due to the nature of the construct, it was unlikely that an exhaustive list could be attained. Any behaviour that was not on the list but appeared to fit the concept of innocuous sociability adequately was judged separately and was or was not included based on that separate appraisal. Subjects who emitted a large number of such behaviours were judged to score high on innocuous sociability while subjects who emitted a small number were judged to score low.

The score for disclaimers was based on adding up the number of utterances by the subject that were judged to correspond to the relevant notion of "disclaimers". Such phrases could either precede or follow the particular stated opinion or position. As was the case with scoring innocuous sociability, a list of likely phrases was used to aid in the scoring but, again, it was unlikely that a complete list would be constructed. Any utterance that was not on the list but appeared to adequately fit the concept was separately judged and was or was not included depending on that appraisal. Subject who made a large number

of such utterances were be judged to score high on "disclaimers" while subjects who made a small number of these utterances were judged to score low.

The two resulting values provided information that was interesting in its own right, and each was separately examined. Separate hypotheses were constructed for both of the constructs and, since the ratings are not standardized, it was not possible to combine the scores in order to gain an overall measure of "protective self-presentation". Instead, each was examined separately and the self-presentation styles of the subjects were inferred from that examination.

Self-Presentation Style

Despite the fact that the self-presentation model of social anxiety (Schlenker & Leary, 1982) has been in existence for over ten years and has enjoyed reasonable acceptance in the literature, only recently has a self-report measure of self-presentation style come into existence. A number of means of assessing self-presentation style have been tried over the years but none have gained widespread acceptance.

Greenberg, Pyszczynski, and Stine (1985) asked subjects to write down self-descriptive statements that were subsequently scored by trained raters in terms of favourableness of self-presentation. This method, and similar variations, is likely the single most popular means of assessing self-presentation style that has existed to date. However, because no consistent items exist, it is difficult to gain indications of reliability or validity.

Self-Presentation Style Scale. Meleshko (1989) attempted to deal with the lack of an acceptable self-report measure of self-presentation style by developing the Self-Presentation Style Scale (SPSS). The purpose of the scale is to assess acquisitive and protective motivational states. The original scale contained 15 Likert-type items on a 7-point scale but a subsequent revision (Meleshko & Alden, 1993) reduced the item total to 8, with no apparent loss of reliability or

validity.

A criterion groups analysis was used to establish concurrent validity of the 15-item scale. Scores on the Social Avoidance and Distress Scale (Watson & Friend, 1969) were used to divide a sample of female university students into a high social anxiety group (scoring 12 or above) and a low social anxiety group (scoring 2 or below). The high social anxiety subjects were found to be more motivated by protective concerns than were the low social anxiety subjects [$F(1, 80) = 37.50$, $p < .001$] while the low social anxiety subjects were more motivated by acquisitive concerns than were the high social anxiety subjects [$F(1, 80) = 28.14$, $p < .001$]. The results suggest that people tend to be motivated by one set of concerns in the relative absence of the other (Meleshko, 1989).

Meleshko and Alden (1993) conducted a principal components analysis on the 8-item SPSS and, as was the case with the 15-item scale, a two factor solution was found to be optimal. The protective items loaded on the first factor (with factor loadings ranging from .72 to .75), accounting for 33.5% of the variance. The acquisitive items loaded on the second factor (factor loadings ranging from .60 to .83), accounting for 22.4% of the variance. Based on this analysis, the authors concluded that, rather than being scored as a unidimensional scale, the SPSS should be scored as two subscales. As a result, the four protective self-presentation items (Factor 1) were combined to provide a protective subscale score and the four acquisitive self-presentation items (Factor 2) were combined to provide an acquisitive subscale score.

The SPSS was created as a state measure of self-presentation style and the wording of the items reflect this intention, as they ask the subject to report on various motivations with reference to a recently completed social interaction. For this reason, the present study adopted the 8-item SPSS as a state measure of relative acquisitive and

protective self-presentation styles.

Other Measures

Self-Appraisal Survey. The Self-Appraisal Survey is a short 5-item questionnaire that was specifically designed for this study. The instrument assesses a number of issues pertaining to subjects' appraisal of their own performance and their partner's performance during the interaction phase of the manipulation. Each item is rated on a 9-point Likert-type scale. The five questions included in the questionnaire are: "How well do you feel you presented your own viewpoint during your discussion with the other person in this study?"; "Do you feel that the other person presented some views during the discussion that you had previously failed to consider?"; "How would you rate the level of expertise of the other person in this study on the chosen topic?"; "Overall, how satisfied do you feel with your performance during the discussion with the other person in this study?"; and "How much did you enjoy your discussion with the other person in this study?". Each item was separately scored and examined. No attempt was made to calculate a total score since the questions, although related, were not meant to represent any particular, single construct.

Results

Study 1

Preliminary Analysis

A total of 251 questionnaire packages were distributed among potential subjects in Study 1. All packages were returned completed (all five instruments filled out) and, as a result, no subjects were eliminated from Study 1.

Means, standard deviations, and reliabilities (internal consistencies) were calculated for each of the measures (see Table 1). A check on the reliabilities of the instruments reveals values ranging from acceptable to exceptional.

A correlation matrix was calculated that allowed for examination of the associations amongst the variables (see Table 2). Prior to examining the main variables of interest, additional correlations were calculated between the main variables and two other structural, nominal variables: sex of subject (Sex) and whether or not English was indicated as the subject's first language (English) (see Table 3). This made it possible to gain a better understanding of the make-up of the sample as well as to identify any relations between these two variables and the main variables.

Of the subjects who participated in Study 1, 89 were males and 162 were females. Examination of the correlation matrix revealed that the sex of subjects did not correlate significantly with any of the five subject variables of interest, absolute values of the correlations (Pearson *r*) ranging from .01 to .11.

Of the total sample, 205 subjects indicated that English was their first language and 36 indicated that English was not their first language. Ten of the subjects did not indicate their first language. Absolute values of the correlations between first language and the five subject variables of interest ranged from .01 to .20. One of the correlations was found to be significant, that between English and ASI.

Table 1

Means, Standard Deviations, and Reliabilities of the Measures Used In Study 1 (N = 251)

Measure	*M*	*SD*	α
IAS	25.62	10.21	.9035
CBI	7.11	3.82	.7195
SAS	2.21	2.57	.8177
ASI	19.02	10.63	.8824
HIPI	40.98	9.27	.7238

Table 2

Correlations Amongst Variables Used In Study 1

Variable	2	3	4	5
1. IAS	.73***	.63***	.34***	.47***
2. CBI		.61***	.25**	.35***
3. SAS			.31***	.33***
4. ASI				.42***
5. HIPI				

* $p < .05$

** $p < .01$

*** $p < .001$

Table 3

Correlations Between Variables Used In Study 1 and Sex of Subject and English Background of Subject

Variable	Sex	English
1. IAS	.11	.05
2. CBI	.00	.02
3. SAS	.01	.01
4. ASI	.07	.20**
5. HIPI	.08	.10

* $p < .05$

** $p < .01$

*** $p < .001$

Subjects whose first language was not English scored significantly higher on ASI than did those subjects whose first language was English (M = 24.30 and M = 18.29 respectively) (r = .200, p < .01). This suggests that subjects whose first language was not English were more attuned to bodily symptoms that indicate anxiety than were subjects whose first language was English.

As a result of the above finding, only subjects who indicated that English was their first language were asked to participate in Study 2. Random assignment to conditions would likely have controlled for this possible confound, however, by restricting the sample in this way, it became possible to assume a relatively homogenous sample for Study 2.

Primary Analysis

The first part of the analysis for Study 1 involved calculating a correlation matrix amongst the variables of interest in order to determine whether variables that were conceptually related showed meaningful connections. Examination of this matrix (see Table 2) reveals a number of significant correlations. Not surprisingly, IAS, CBI, and SAS were all significantly and positively correlated with one another, each reaching significance in excess of p < .001. Any other result would be unexpected as each of the instruments measures different aspects of shyness.

Four of the hypotheses in Study 1 (1, 2, 4, and 5) were tested by examining correlation coefficients. Because the four correlations are based on the same data, spurious correlations become possible. In order to control for inflated Type I error (rejecting the null hypothesis when it is in fact true) Bonferroni corrections were included. The nominal level of significance (.05) was divided by the number of correlations calculated (4 equations) and the corrected level of significance was set at .0125.

The second part of the analysis for Study 1 concerned predictions from the three "shyness" variables (IAS, CBI, and SAS) to the other two

variables of interest (ASI and HIPI). First, however, a canonical correlation was calculated in order to identify two linear combinations (one for each set of variables) such that they are maximally correlated. The first canonical correlation was .50 (25% of variance). The second canonical correlation was only marginally greater than zero. The first chi-square test, with both canonical correlations included, was calculated at $\chi^2(6) = 74.23$, $p < .0001$. The second chi-square test, with the first canonical correlation removed, was not significant. As a result, the first pair of canonical variates accounted for the single significant relaticnship between the predictor and criterion variables.

All three predictor variables (IAS, CBI, and SAS) correlated well with the canonical variate for the first set of variables. Likewise, both criterion variables (ASI and HIPI) correlated well with the canonical variate for the second set of variables. The canonical loadings (in parentheses) for the canonical variates indicate that those subjects with high social anxiety (.98), high behavioural inhibition (.75), and high behavioural avoidance (.76) also tended to experience more anxiety over body symptoms (.70) and more impostor feelings (.94).

Following the canonical correlation, a series of multiple regression equations were calculated. Multiple regression analysis represents an extension of bivariate regression where there is only one predictor variable and only one criterion variable. From another perspective, multiple regression can be understood as a specialized instance of canonical correlation in which two or more variables are included on both sides of the regression equation. In multiple regression, while a number of variables are included as independent (predictor) variables, only one is included as the dependent (criterion) variable.

The aim of multiple regression analysis, then, is to create an equation that identifies a number of predictor variables that serve to predict a single criterion variable. In addition, the relative

contributions of each of the predictor variables to the equation can be calculated. For the present study, the relative contributions of both social anxiety and behavioural inhibition and avoidance were examined in separate equations for both anxiety sensitivity and impostor feelings.

The multiple regression equations tested the experimental hypotheses and examined whether the two criterion variables, anxiety sensitivity and impostor feelings, would be best predicted by social anxiety, behavioural inhibition and avoidance, or both. An "All Subsets" procedure was used to calculate a separate equation for each combination of predictor variables. Given that the present study includes three predictor variables, seven multiple regression equations resulted. By using this procedure it becomes possible to examine the various combinations of variables that enter the equation, an advantage that is necessary for proper testing of the experimental hypotheses. While the standard R^2 statistic represents the standard test of measure of fit, adjusted R^2 ($\hat{R}^2$) calculates a measure of fit that is independent of the number of variables in the equation. The standard R^2 statistic was used to test the hypotheses. However, because different numbers of predictor variables are included in the equations, adjusted R^2 values were used for descriptive purposes (including interpretations).

For the purposes of testing the hypotheses, affective signs of anxiety were determined from the social anxiety measure (IAS) while behavioural signs of anxiety were determined from both the behavioural inhibition measure (CBI) and the avoidance measure (SAS).

Hypotheses

Hypothesis 1. The first hypothesis predicted that anxiety sensitivity would correlate positively with social anxiety.

Results of the study supported this hypothesis. ASI scores were found to form a significant positive correlation with IAS scores (r = .336, $p < .001$). As social anxiety increased, so did sensitivity to anxiety symptoms.

Hypothesis 2. This hypothesis predicted that anxiety sensitivity would correlate positively with behavioural inhibition and avoidance.

Results supported this hypothesis. ASI scores were found to form significant positive correlations with both CBI scores and SAS scores ($r = .247$, $p < .001$ and $r = .313$, $p < .001$, respectively). As behavioural inhibition and avoidance increased, so did sensitivity to anxiety symptoms.

Hypothesis 3. The third hypothesis predicted that anxiety sensitivity would be determined better by social anxiety and behavioural inhibition and avoidance together than by either alone.

Results of the study failed to support this hypothesis. Entering IAS scores into the multiple regression equation on its own accounted for 11% of the variance [$R^2 = .117$, $F(1, 249) = 32.643$, $p < .0001$; $\hat{R}^2 = .113$] while entering CBI scores and SAS scores together accounted for 10% of the variance [$R^2 = .103$, $F(2, 248) = 14.087$, $p < .0001$; $\hat{R}^2 = .095$]. However, only the coefficient for SAS accounted for significant variance. Entering all three predictor variables together accounted for 12% of the variance [$R^2 = .134$, $F(3, 247) = 12.657$, $p < .0001$; $\hat{R}^2 = .123$]. Both IAS scores and SAS scores accounted for significant variance while CBI scores did not. However, IAS score was clearly the most important, to the exclusion of the others. In summary, affect (social anxiety) and behaviour (behavioural inhibition and avoidance) together did not predict anxiety sensitivity better than did either alone.

Hypothesis 4. The fourth hypothesis predicted that impostor feelings would correlate positively with social anxiety.

Results of the study supported this hypothesis. HIPI scores were found to form a significant positive correlation with IAS scores ($r = .469$, $p < .001$). As social anxiety increased, so did impostor feelings.

Hypothesis 5. This hypothesis predicted that impostor feelings would correlate negatively with behavioural inhibition and avoidance.

Results failed to support this hypothesis. HIPI scores were found to form significantly positive correlations with both CBI scores and SAS scores ($r = .350$, $p < .001$ and $r = .334$, $p < .001$, respectively). As behavioural inhibition and avoidance increased, so did impostor feelings.

Hypothesis 6. The sixth hypothesis predicted that impostor feelings would be determined better by social anxiety and behavioural inhibition and avoidance together than by either alone.

Results of the study only partly supported this hypothesis. Entering IAS scores into the multiple regression equation on its own accounted for 23% of the variance [$R^2 = .230$, $F(1, 249) = 73.672$, $p < .0001$; $\hat{R}^2 = .227$] while entering CBI scores and SAS scores together accounted for 14% of the variance [$R^2 = .146$, $F(2, 248) = 21.090$, $p < .0001$; $\hat{R}^2 = .139$]. Both the coefficients for CBI and SAS accounted for significant variance. Entering all three predictor variables together accounted for 22% of the variance [$R^2 = .232$, $F(3, 247) = 24.649$, $p < .0001$; $\hat{R}^2 = .222$]. However, this time, only IAS scores accounted for significant variance. In summary, while affect (social anxiety) and behaviour (behavioural inhibition and avoidance) together predicted impostor feelings better than did behaviour alone they did no better at predicting impostor feelings than did affect alone.

Summary of Results of Study 1

The purpose of Study 1 was to examine social anxiety and behavioural inhibition and avoidance and explore their relationships to two other variables of interest, anxiety sensitivity and impostor feelings. In preliminary analyses, no correlations were uncovered between the sex of the subject and any of the psychological constructs of interest. Also, there was a question as to whether the English abilities of the subjects might affect either their scores on self-report questionnaires or their performance during a structured verbal task. The concern was found to be of limited importance as only one

significant correlation was found, that between English abilities and sensitivity to bodily symptoms of anxiety. Nevertheless, in order to eliminate any possible confound, only subjects who indicated that English was their first language were asked to participate in Study 2.

As was predicted, the different aspects of shyness (subjective anxiety and overt behaviour) correlated strongly with one another. As subjective feelings of anxiety in social situations increased, so did the tendency to avoid social situations as well as the tendency to interact minimally once in those situations.

In examining the specific hypotheses, as social anxiety increased so did sensitivity to anxiety symptoms. The same was true for behavioural inhibition and avoidance; as either increased, so did anxiety sensitivity.

In addition, as social anxiety increased, so did impostor feelings. However, contrary to prediction, as behavioural inhibition and avoidance increased, so did impostor feelings. It had been predicted that a combination of high social anxiety with low behavioural inhibition and low avoidance might create feelings of conflict or incongruity that would result in increased concerns in the subjects about being an impostor. This, however, did not prove to be the case.

After examining the more complex relationships between the various shyness variables and anxiety sensitivity and impostor feelings, interesting patterns began to emerge. In most cases, social anxiety accounted for the majority of variance, and behavioural inhibition and avoidance accounted for relatively little. When behavioural inhibition and avoidance did account for some variance, it was the avoidance factor and not the inhibition factor that proved to be significant.

This pattern was especially true when examining impostor feelings. Social anxiety accounted for virtually all of the variance and the behavioural aspects accounted for almost none. The importance of behavioural factors was somewhat more evident when examining anxiety

sensitivity. In this case, social anxiety continued to occupy the majority of the variance but the avoidance factor did account for some variance.

Study 2

Preliminary Analysis

A total of 84 subjects took part in Study 2. These subjects were drawn from the sample that participated in Study 1 and were chosen on the basis of their being located in the top third or the bottom third of the distribution of IAS scores.

Of the subjects that were contacted to participate in Study 2, 15 declined to participate (6 from the Low Social Anxiety group and 9 from the High Social Anxiety group). Of those who agreed to participate, 12 failed to attend their scheduled appointments (6 from the Low Social Anxiety group and 6 from the High Social Anxiety group). Finally, only one subject withdrew from the study upon reading the consent form and discovering the requirements of the study. This subject was from the High Social Anxiety group.

Of the initial 84 subjects, the data from four were eliminated because random assignment to the manipulated condition had resulted in some cells being over-filled. In the end, 80 individual subject results were included in Study 2, 20 in each cell.

Mean IAS scores were calculated for the Low and High Social Anxiety groups in order to confirm the two groups did, in fact, differ in their levels of social anxiety. A t-test confirmed that subjects in the Low Social Anxiety group differed significantly in their IAS scores from those in the High Social Anxiety group (M = 13.925 and M = 37.550, respectively) (t = 19.72, $p < .0001$).

In comparing these average IAS scores to those obtained in previous studies, it can be seen that these averages were somewhat low. Typically, the overall average scores of university student subjects have fallen in the 38 to 40 range (e.g., Leary, 1983a; Leary, et al.,

1986; Leary & Kowalski, 1993). In the present study, the average scores for the High Social Anxiety group fell within this range while those for the Low Social Anxiety group fell well below this average.

Leary (1983a) administered the IAS to a number of different groups of university students, including a sample of students who had sought professional help for interpersonal problems where anxiety comprised a significant complaint. This group obtained average IAS scores of 54.9, in comparison to a group of students from the psychology subject pool who obtained average scores of 38.1. It appears, then, that the High Anxiety subjects in the present study were, in comparison to published norms, not particularly anxious.

Of the total sample, 52 were recruited from the Psychology Subject Pool and 28 were recruited from tutorials. Twenty-six subjects chose Free Trade as their topic while 54 chose Logging. Finally, 32 subjects adopted a position in favour of their topic and 48 adopted a position opposed.

A correlation matrix was calculated that allowed for examination of the associations amongst the variables. Because level of social anxiety and level of expertise could affect resulting correlations, separate correlation values were calculated for each of the four cells (Low and High Social Anxiety; Low and High Expertise). The resulting direction and strength of the correlations amongst cells was approximately equal, therefore, within-cell correlations were averaged (see Table 4).

As was the case in Study 1, additional correlations were calculated between the main variables and the sex of subject (see Table 5). Sex of subject was examined in order to identify possible sex differences in the dependent variables. Of the total sample of 80 subjects who participated in Study 2, 59 were female and 21 were male. While sex of subject did not correlate significantly with any of the variables of interest in Study 1, sex did correlate significantly with

Table 4

Averaged Within-Groups Correlations Amongst Variables Used In Study 2 (df = 72)

Variable	2	3	4	5	6	7	8
1. Heart	.59***	.00	-.02	.11	-.06	.02	.06
2. Habit		.05	.11	.32**	.15	-.02	-.04
3. Talk			-.17	-.25*	-.14	.34**	.01
4. Eye				.08	-.18	-.20	-.07
5. Innoc					.18	.03	.13
6. Disc						-.07	-.01
7. Acq SPS							-.12
8. Pro SPS							

* $p < .05$

** $p < .01$

*** $p < .001$

Table 5

Correlations Between Variables Used In Study 2 and Sex of Subject

Variable	Sex
Heart Rate Increase	.13
Heart Rate Habituation	.12
Time Talking	.37***
Eye Contact	.18
Innocuous Sociability	.07
Disclaimers	.11
Acquisitive SPS	.21
Protective SPS	.09

* $p < .05$

** $p < .01$

*** $p < .001$

one of the main dependent variables in Study 2, the amount of time the subject talked during the interaction. To control for a possible inflated error term, a three-way ANOVA (Social Anxiety x Expertise x Sex of Subject) was calculated to test the hypothesis (Hypothesis 9) that examined time talking.

Examination of the main correlation matrix reveals a number of correlations of interest. Higher increases in initial heart rates at the start of the interaction tended to be associated with more heart rate habituation over the course of the interaction ($r = .660$, $p < .001$). Subjects who showed more heart rate habituation also tended to engage in more innocuous sociability ($r = .32$, $p < .01$).

Two of the significant correlations focussed on the amount of talking the subjects engaged in during the interaction. Subjects who talked more during the interaction tended to engage in less innocuous sociability ($r = -.25$, $p < .05$). Also, subjects who talked more tended to score higher in acquisitive self-presentation style ($r = .34$, $p < .01$).

As stated in a previous section, all subjects were randomly assigned to conditions. Of the 21 male subjects, 12 were assigned to the Low Expertise condition and 9 were assigned to the High Expertise condition. Of the 59 female subjects, 28 were assigned to the Low Expertise condition and 31 were assigned to the High Expertise condition. Random assignment helped to ensure that no sex differences existed in the assignment to manipulated conditions.

The means, standard deviations, and reliability scores were calculated for the two subscales of the only self-report instrument used in Study 2, the SPSS (see Table 6). Alpha co-efficients were found to be adequate for short measures.

Subjects' reactions to their interaction partners were studied for possible confounding effects accompanying the two Research Assistants by calculating correlations between the two interaction partners and the

Table 6

Means, Standard Deviations, and Reliabilities of the Self-Presentation Style Scale Used In Study 2 (N = 80)

Subscale	M	SD	α
Acquisitive SPS	17.66	4.86	.7480
Protective SPS	9.08	4.48	.7405

dependent variables. Exactly one-half of the subjects (40) were exposed to an interaction with one partner while the other half (40) were exposed to an interaction with the other partner. The partner to which the subject was exposed did not correlate significantly with any of the variables of interest, absolute values of the correlations ranging from .009 to .146. The lack of correlations between partner and other variables indicates that the specific identity of the partner had no effect on the responses of the subject. In other words, the interaction partners did not differ significantly from one another, subjects responded to the condition not to the individual Research Assistant.

Two manipulation checks were conducted to investigate whether the Research Assistants differed significantly in their behaviour across the two Expertise conditions. In the first, responses to Question 3 from the Self-Appraisal Survey were examined. In the second, an independent rater viewed the videotapes of ten randomly chosen interactions and was asked to identify whether the Research Assistant was acting in the role of a high expertise partner or a low expertise partner.

Question 3 from the Self-Appraisal Survey asked, "How would you rate the level of expertise of the other person in this study on the chosen topic?" and this expertise was rated on a 9-point scale. A t-test was calculated and indicated that subjects in the High Expertise condition rated their partners significantly higher on this item than did those in the Low Expertise condition (M = 6.425 and M = 4.400, respectively) $t = 5.09$, $p < .001$). A less obvious item (Question 2) asked, "Do you feel the other person presented some views during the discussion that you had previously failed to consider?". Subjects responded in the expected direction (high expertise partners perceived as introducing more information) but the trend was not significant (M = 4.880 and M = 3.880, respectively) ($t = 1.765$, $p = .082$).

The independent rater viewed the ten video-taped interactions and was given no information regarding the condition to which the subject

was being exposed. After viewing the entire five-minute interaction, the rater indicated a guess as to whether the interaction occurred in the High Expertise or the Low Expertise condition. Results confirmed that the Research Assistants enacted their roles appropriately in that the independent rater correctly identified nine of the ten interactions that were viewed. This outcome is significantly different from that which would be expected by chance alone ($G^2 = 7.718$, $p < .005$).

In order to assess reliability of the scoring of the videotapes, intra-rater correlations were calculated. Twenty interactions were randomly chosen and rated a second time, by the same rater, on the four behavioural variables. Alpha coefficients were calculated between the two scores for each variable (see Table 7). Results of this analysis revealed that the subjective scoring of these variables showed excellent intra-rater reliability, all alpha values exceeding .9945.

Primary Analysis

The main analysis for Study 2 involved the calculation of a series of two-way ANOVAs. In instances where a significant interaction resulted from the two-way ANOVA, one-way ANOVAs were calculated to further explore the interaction. These analyses made it possible to determine whether subjects high in social anxiety would respond differently to the expertise level of their partners while subjects low in social anxiety would respond approximately the same. Subjects were split into Low and High Social Anxiety groups and, within each group, were assigned either to the Low or High Expertise condition. The dependent variables included: a) heart rate response during the interaction, b) observable behavioural reactions, and c) self-presentation style. Cell means and standard deviations are presented in Table 8.

Comparison of cell means across manipulated conditions makes it possible to calculate effect sizes for each of the dependent variables (see Table 9). Effect sizes ranged from a low of .12 to a high of .94.

Table 7

Intra-Rater Reliabilities of the Subjectively Scored Measures Used in Study 2

Variable	α
Time Talking	.9966
Eye Contact	.9949
Innocuous Sociability	.9964
Disclaimers	.9970

Table 8

Cell Means (n = 20) of Dependent Variables Used in Study 2 with Social Anxiety and Expertise Acting as Independent Variables

	Social Anxiety			
	Low		High	
	Expertise		Expertise	
	Low	High	Low	High
Heart Rate Increase	16.58 (10.46)	11.35 (6.68)	19.28 (13.23)	10.83 (6.98)
Heart Rate Habituation	12.28 (8.85)	4.73 (7.26)	13.13 (10.72)	9.54 (7.43)
Time Talking	159.85 (49.91)	148.70 (40.37)	159.35 (40.05)	137.35 (30.85)
Eye contact	207.75 (34.66)	195.00 (36.26)	199.80 (43.62)	224.80 (46.32)
Innocuous Sociability	12.40 (7.48)	18.90 (12.37)	12.65 (8.08)	17.75 (6.47)
Disclaimers	1.00 (1.68)	1.45 (1.70)	1.25 (2.15)	0.40 (0.59)
Acquisitive SPS	18.60 (5.16)	19.60 (4.17)	15.95 (5.86)	16.50 (3.20)
Protective SPS	7.20 (3.52)	6.05 (2.19)	13.05 (3.90)	10.00 (4.48)

Standard deviations in parentheses.

Table 9

Effect Sizes (n = 20) of Dependent Variables Used in Study 2 with Social Anxiety Acting as the Independent Variable

	Social Anxiety	
	Low	High
Heart Rate Increase	.61	.83
Heart Rate Habituation	.94	.39
Time Talking	.28	.62
Eye contact	.36	.55
Innocuous Sociability	.65	.70
Disclaimers	.27	.62
Acquisitive SPS	.21	.12
Protective SPS	.40	.73

The average effect size for the Low Social Anxiety subjects was .46 while the average for the High Social Anxiety subjects was .57. These results are consistent with the prediction that the manipulation would have a greater effect on the High Social Anxiety subjects.

Consideration of effect size along with cell size makes it possible to calculate the power to reject a false null hypothesis. In the present study, power for the High Social Anxiety group (the group where differences across the manipulated variable were predicted to occur) was calculated at .44. In other words, there is a 44% chance of rejecting the null hypothesis.

As was the case in Study 1, numerous tests were performed on the same data and, as a result, spurious results are possible. To control for inflated Type I error, Bonferroni corrections were included. First, however, hypotheses were grouped according to the content of the predictions (i.e., physiological, behavioural, and self-report). The nominal level of significance (.05) was then divided by the number of ANOVAs calculated within each group: physiological (2 equations), behavioural (4 equations) and self-report (2 equations). Corrected significance levels were set at .025, .0125, and .025, respectively.

Hypotheses

Hypothesis 7. The seventh hypothesis predicted that subjects high in social anxiety who were exposed to an interaction with a high expertise partner would exhibit greater elevations in their heart rates (heart rate would increase more from their baseline) than would those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety would not differ in their heart rate elevations, regardless of whether they were exposed to an interaction with a high expertise or low expertise partner.

The two-way ANOVA uncovered only a single main effect. The interaction term was nonsignificant. Subjects in the Low Expertise condition responded to the start of the interaction with a greater

increase in heart rates than did those in the High Expertise condition [$F(1, 76) = 9.901$, $p < .005$], regardless of Social Anxiety level (see Table 10a).

Hypothesis 8. This hypothesis predicted that subjects high in social anxiety who were exposed to an interaction with a high expertise partner would habituate less (heart rate would decrease less over the interaction period) than would those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety would not differ in the degree they habituate, regardless of whether they were exposed to an interaction with a high expertise or low expertise partner.

In the two-way ANOVA a single main effect was found. The interaction term was nonsignificant. Subjects in the Low Expertise condition habituated more (their heart rates decreased more over time) than did those in the High Expertise condition [$F(1, 76) = 8.241$, $p < .005$], regardless of Social Anxiety level (see Table 10b).

Hypothesis 9. The ninth hypothesis predicted that subjects high in social anxiety who were exposed to an interaction with a high expertise partner would talk for a lesser amount of time than would those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety would not differ in the amount of time they talked, regardless of whether they were exposed to an interaction with a high expertise or low expertise partner.

As previously stated, a three-way ANOVA was calculated for this variable in order to control for an expected sex difference. Results of the three-way ANOVA revealed a single main effect for sex of subject but all other main effects and interactions (both two-way and three-way) were nonsignificant. Male subjects talked more than did female subjects [$F(1, 72) = 11.699$, $p < .001$] (see Table 11a).

Hypothesis 10. This hypothesis predicted that subjects high in social anxiety who were exposed to an interaction with a high expertise

Table 10a

Summary of Analysis of Variance (Heart Rate Increase)

Source of Variance	*SS*	*df*	*MS*	*F*	*p*
Anxiety	23.76	1	23.76	.25	.618
Expertise	935.71	1	935.71	9.90	.002**
Anxiety x Expertise	51.84	1	51.84	.55	.461
Error	7182.48	76	94.51		

Table 10b

Summary of Analysis of Variance (Heart Rate Habituation)

Source of Variance	*SS*	*df*	*MS*	*F*	*p*
Anxiety	159.61	1	159.61	2.12	.150
Expertise	620.50	1	620.50	8.24	.005**
Anxiety x Expertise	78.41	1	78.41	1.04	.311
Error	5722.24	76	75.29		

* $p < .025$ (Bonferroni adjusted)

** $p < .005$ (Bonferroni adjusted)

*** $p < .0005$ (Bonferroni adjusted)

Table 11a

Summary of Three-way Analysis of Variance (Time Talking)

Source of Variance	*SS*	*df*	*MS*	*F*	*p*
Anxiety	236.29	1	236.29	.17	.685
Expertise	3947.04	1	3947.04	2.78	.100
Sex	16622.51	1	16622.51	11.70	.001**
Anxiety x Expertise	3398.70	1	3398.70	2.40	.206
Anxiety x Sex	2520.40	1	2520.40	1.77	.187
Expertise x Sex	1425.90	1	1425.90	1.00	.320
Anxiety x Expertise x Sex	1858.65	1	1858.65	1.31	.257
Error	102296.83	72	1420.79		

* $p < .0125$ (Bonferroni adjusted)

** $p < .0025$ (Bonferroni adjusted)

*** $p < .00025$ (Bonferroni adjusted)

partner would engage in a lesser amount of direct eye contact with their partners than would those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety would not differ in the amount of direct eye contact, regardless of whether they were exposed to an interaction with a high expertise or low expertise partner.

No significant main effect or interaction was uncovered in the two-way ANOVA (see Table 11b).

Hypothesis 11. The eleventh hypothesis predicted that subjects high in social anxiety who were exposed to an interaction with a high expertise partner would engage in more innocuous sociability than would those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety would not differ in the amount of innocuous sociability they engaged in, regardless of whether they were exposed to an interaction with a high expertise or low expertise partner.

A single main effect was found in the two-way ANOVA. The interaction term was nonsignificant. Subjects in the Low Expertise condition engaged in less innocuous sociability than did those in the High Expertise condition [$F(1, 76) = 8.512$, $p < .005$], regardless of Social Anxiety level (see Table 11c).

Hypothesis 12. This hypothesis predicted that subjects high in social anxiety who were exposed to an interaction with a high expertise partner would make more disclaimer statements than would those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety would not differ the amount of disclaimer statements they made, regardless of whether they were exposed to an interaction with a high expertise or low expertise partner.

No significant main effect or interaction was uncovered in the two-way ANOVA (see Table 11d).

Hypothesis 13. The thirteenth hypothesis predicted that subjects high in social anxiety who were exposed to an interaction with a high

Table 11b

Summary of Analysis of Variance (Eye Contact)

Source of Variance	*SS*	*df*	*MS*	*F*	*p*
Anxiety	2300.51	1	2300.51	1.40	.240
Expertise	800.11	1	800.11	.49	.487
Anxiety x Expertise	7277.11	1	7277.11	4.43	.039
Error	124717.74	76	1641.02		

Table 11c

Summary of Analysis of Variance (Innocuous Sociability)

Source of Variance	*SS*	*df*	*MS*	*F*	*p*
Anxiety	4.05	1	4.05	.05	.822
Expertise	672.80	1	672.80	8.51	.005*
Anxiety x Expertise	9.80	1	9.80	.12	.726
Error	6006.90	76	79.04		

* $p < .0125$ (Bonferroni adjusted)

** $p < .0025$ (Bonferroni adjusted)

*** $p < .00025$ (Bonferroni adjusted)

Table 11d

Summary of Analysis of Variance (Disclaimers)

Source of Variance	*SS*	*df*	*MS*	*F*	*p*
Anxiety	3.20	1	3.20	1.19	.278
Expertise	.80	1	.80	.30	.586
Anxiety x Expertise	8.45	1	8.45	3.16	.080
Error	203.50	76	2.68		

* $p < .0125$ (Bonferroni adjusted)

** $p < .0025$ (Bonferroni adjusted)

*** $p < .00025$ (Bonferroni adjusted)

expertise partner would report less acquisitive self-presentations than would those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety would not differ in the acquisitive self-presentations they reported, regardless of whether they were exposed to an interaction with a high expertise or low expertise partner.

A single main effect was found in the two-way ANOVA. The interaction term was nonsignificant. Low Social Anxiety subjects made more acquisitive self-presentations than did High Social Anxiety subjects, [$F(1, 76) = 7.454$, $p < .01$], regardless of level of Expertise (see Table 12a).

Hypothesis 14. This hypothesis predicted that subjects high in social anxiety who were exposed to an interaction with a high expertise partner would report more protective self-presentations than would those exposed to an interaction with a low expertise partner, whereas subjects low in social anxiety would not differ in the protective self-presentations they reported, regardless of whether they were exposed to an interaction with a high expertise or low expertise partner.

Two main effects were found in the two-way ANOVA. High Social Anxiety subjects made more protective self-presentations than did Low Social Anxiety subjects [$F(1, 76) = 36.601$, $p < .001$]. Also, subjects in the Low Expertise condition made more protective self-presentations than did those in the High Expertise condition [$F(1, 76) = 6.723$, $p < .01$] (see Table 11b). However, the interaction was nonsignificant.

Self-Appraisal Survey

Items from the Self-Appraisal Survey were rated by subjects on a 9-point scale. Each item was examined using a two-way ANOVA in order that the separate and combined effects of level of anxiety and level of expertise could be examined.

As was the case in the Primary analysis, correlations were first calculated between the five items from the Self-Appraisal Survey and the

Table 12a

Summary of Analysis of Variance (Acquisitive Self-Presentation Style)

Source of Variance	*SS*	*df*	*MS*	*F*	*p*
Anxiety	165.31	1	165.31	7.45	.008*
Expertise	12.01	1	12.01	.54	.464
Anxiety x Expertise	1.01	1	1.01	.05	.831
Error	1685.55	76	22.18		

Table 12b

Summary of Analysis of Variance (Protective Self-Presentation Style)

Source of Variance	*SS*	*df*	*MS*	*F*	*p*
Anxiety	480.20	1	480.20	36.60	.001**
Expertise	88.20	1	88.20	6.72	.011*
Anxiety x Expertise	18.05	1	1.38	1.38	.244
Error	997.10	76	13.12		

* $p < .025$ (Bonferroni adjusted)

** $p < .005$ (Bonferroni adjusted)

*** $p < .0005$ (Bonferroni adjusted)

sex of the subject. Sex was found to correlate significantly with only one of the items (item 4). Female subjects were less satisfied with their performances during the interaction than were male subjects (M = 6.102 and M = 7.190, respectively) (r = .254, $p < .05$). To control for a possible inflated error term, a three-way ANOVA (Social Anxiety x Expertise x Sex of Subject) was calculated to test this particular item.

In addition, correlations were calculated between the five items and the identity of the interaction partner. All of the correlations were nonsignificant, indicating that the specific partner to which the subjects were exposed did not affect how the subjects responded to the Self-Appraisal Survey.

Question 1 asked, How well do you feel you presented your own viewpoint during your discussion with the other person in this study?". A single main effect was found for this item. Low Social Anxiety subjects believed that they presented their views better than did High Social Anxiety subjects [$F(1, 76) = 12.607$, $p < .001$]. No significant interaction was uncovered.

Question 2 asked, "Do you feel the other person presented some views during the discussion that you had previously failed to consider?". No significant main effect or interaction was uncovered for this item.

Question 3 asked, How would you rate the level of expertise of the other person in this study on the chosen topic?". Responses to this item were discussed in the preliminary analysis that focused on the manipulation check value of the item. Briefly, subjects in the High Expertise condition rated their partners higher on this item than did subjects in the Low Expertise condition [$F(1, 76) = 25.425$, $p < .001$].

Question 4 asked, "Overall, how satisfied do you feel with your performance during the discussion with the other person in this study?". As previously stated, a three-way ANOVA was calculated for this item in order to control for an expected sex difference. Two main effects were

found for this item. Low Social Anxiety subjects rated their performances higher than did High Social Anxiety subjects [$F(1, 76) = 13.770$, $p < .001$] and male subjects rated their performances higher than did female subjects [$F(1, 76) = 5.143$, $p < .05$]. In addition, a significant interaction was uncovered. Low Social Anxiety subjects felt more satisfied with their performances in the Low Expertise condition while High Social Anxiety subjects were more satisfied in the High Expertise condition [$F(1, 76) = 5.424$, $p < .05$]. In fact, Low Social Anxiety subjects in the Low Expertise condition felt most satisfied with their performances while Low Social Anxiety subjects in the High Expertise condition felt least satisfied.

Question 5 asked, "How much did you enjoy your discussion with the other person in this study?". A single main effect was found for this item with Low Social Anxiety subjects enjoying the discussion significantly more than High Social Anxiety subjects [$F(1, 76) = 8.801$, $p < .005$]. A significant interaction was also uncovered. Low Social Anxiety subjects enjoyed their discussion slightly more in the Low Expertise condition while High Social Anxiety subjects enjoyed their discussion more in the High Expertise condition [$F(1, 76) = 5.688$, $p < .05$]. Replicating the pattern from Question 4, Low Social Anxiety subjects in the Low Expertise condition enjoyed the discussion the most while Low Social Anxiety subjects in the High Expertise condition enjoyed the discussion the least.

Summary of Results of Study 2

The purpose of Study 2 was to investigate whether a situational variable (perceived expertise of one's social partner) would have any effect on the social behaviours of socially anxious vs. non-socially anxious individuals. In preliminary analyses, a significant correlation was uncovered between the sex of the subject and one of the constructs of interest, the amount of time the subject talked during the five minute interaction. Further examination proved, with regard to time

talking, that the only significant main effect or interaction term was the sex of the subject. Male subjects talked more than did female subjects. No other sex differences were evident as the remaining dependent variables formed nonsignificant correlations with the sex of the subject.

Other correlations indicated that initial increase in heart rate was positively associated with heart rate habituation over the course of the interaction. Also, heart rate habituation was positively associated with innocuous sociability. In addition, time talking was positively associated both with innocuous sociability and with acquisitive self-presentation style.

Subjects' reactions to their interaction partners were studied for possible confounds associated with the Research Assistants and it was found that the specific partner to which the subjects were exposed did not correlate with any of the variables of interest. While the two Research Assistants were not expected to differ from one another within conditions, two manipulation checks confirmed that they did differ across conditions. These results, taken together, confirm that the Research Assistants enacted their roles appropriately.

Of the eight hypotheses in Study 2 concerning differential effects of social anxiety, none followed the hypothesized pattern. As a result, it must be concluded that the manipulation of partner expertise, while effective in influencing reactions of the subjects, was ineffective in terms of differentiating socially anxious subjects from non-socially anxious subjects.

In terms of physiological effects, subjects in the Low Expertise condition responded to the start of the interaction with greater increases in their heart rates and their heart rates habituated more than did subjects in the High Expertise condition. In terms of observable behaviour, subjects in the Low Expertise condition engaged in less innocuous sociability than did those in the High Expertise

condition. Finally, with regard to self-presentation style, Low Social Anxiety subjects made more acquisitive self-presentations and fewer protective self-presentations than did High Social Anxiety subjects. Also, subjects in the Low Expertise condition made more protective self-presentations than did those in the High Expertise condition.

The Self-Appraisal Survey revealed that male subjects rated their own performances better than did female subjects. Low Social Anxiety subjects rated their own performances better, they reported feeling more satisfied with their performance, and they enjoyed the interaction more than did High Social Anxiety subjects. Low Social Anxiety subjects reported feeling more satisfied in the Low Expertise condition while High Social Anxiety subjects felt more satisfied in the High Expertise condition. Finally, Low Social Anxiety subjects in the Low Expertise condition enjoyed the discussion the most while Low Social Anxiety subjects in the High Expertise condition enjoyed the discussion the least.

To summarize the main effects and interactions, High Social Anxiety subjects scored lower on acquisitive self-presentation style, scored higher on protective self-presentation style, rated their performances poorer, and enjoyed the interaction less than did Low Social Anxiety subjects. Subjects in the High Expertise condition reacted to the start of the interaction with lesser increases in their heart rates, habituated less over the course of the interaction, engaged in more innocuous sociability, and scored lower on protective self-presentation style than did subjects in the Low Expertise condition.

High Social Anxiety subjects reported feeling more satisfied with their performances in the High Expertise condition while Low Social Anxiety subjects felt more satisfied in the Low Expertise condition. Finally, High Social Anxiety subjects enjoyed the discussion more in the High Expertise condition while Low Social Anxiety subjects enjoyed the discussion more in the Low Expertise condition.

In the following section, the results of both studies are discussed in greater detail along with implications of the findings.

Discussion

In the Introduction the suggestion was made that separating shyness into its component parts, affect and behaviour, would help to increase the understanding of this common and debilitating problem. While, as Leary (1983a) suggests, the majority of people who feel anxious also act in an anxious manner, this is not the case for all people in all situations. The results of Study 1 and Study 2, taken together, support this argument. Study 2, especially, confirms that people can differ a great deal in how they react to social stressors.

Study 1

The purpose of Study 1 was to examine an affective component (social anxiety) and two behavioural components (behavioural inhibition and avoidance) of shyness and to explore their relationships to two other variables of interest, anxiety sensitivity and impostor feelings.

In preliminary analyses, the sex of the subject was not found to be associated with any of the variables that were measured. This finding is noteworthy because, in the area of social anxiety, sex differences are often assumed. For example, Pilkonis (1977b) found that, in college samples, male subjects reported more social anxiety than did female subjects. Likewise, Amies, Gelder, and Shaw (1983) found that a greater proportion of social phobics were males. Some studies, however, have reported the opposite. Gough and Heilbrun (1983) found that more adult women than men reported being socially anxious.

Zimbardo (1977) found shyness to be as common among women as men, although men rated it as a less desirable characteristic and thus concealed it more often. In the present study, no differences were evident between sexes in the self-reports of subjective anxiety or overt behaviour. It is difficult, however, to assess accurately whether this finding reflects the actual experience of shyness or the willingness to acknowledge its existence. Study 2 attempted to shed additional light on this issue by assessing indicators of anxiety that are under less

voluntary control than are self-report measures (e.g., heart rate, eye contact).

In addition to the above, no sex differences were found in self-reports of anxiety sensitivity or impostor feelings. In their original creation and validation of the Anxiety Sensitivity Index, Reiss, Peterson, Gursky, and McNally (1986) found higher anxiety sensitivity scores among women than among men, across two different samples. However, in a subsequent study, three of the authors found no evidence of sex differences (Reiss, Peterson, & Gursky, 1988). Stewart, Knize, and Pihl (1991) failed to find sex differences among either a clinical or a non-clinical population and Taylor, Koch, and Crockett (1991) concluded that sex differences in anxiety sensitivity are unlikely. It appears, then, that the lack of sex differences found in the present study is consistent with the bulk of the literature on this construct.

When Clance and Imes (1978) first introduced the notion of impostor feelings it was applied only to high-achieving women and the authors suggested that the phenomenon was most prevalent among females. However, according to Langford and Clance (1993), this contention was based not so much on research findings as on the postulation that women were more susceptible to internalizing the stereotype that women are less capable than men. In fact, Topping and Kimmel (1985) found that, in a sample of university faculty members, male respondents scored higher than did female respondents. Langford and Clance go on to argue that surveys among several populations have failed to find significant sex differences in the impostor phenomenon (e.g., Harvey, 1981).

There were some concerns whether the English abilities of the subjects might affect either their scores on self-report questionnaires or their performance during a structured verbal task. Sue and Sue (1990) found that Chinese American women did not differ from Caucasian women on behavioural measures of assertiveness (during a structured role-play situation) or on most self-report measures of assertiveness.

The only difference uncovered was that Chinese subjects were more apprehensive about social situations than Caucasians. On the other hand, using a Canadian sample of English-as-first-language subjects, MacIntyre and Noels (1994) found that anxiety over one's ability to communicate in a second language (French) was strongly related to perceived competence and actual competence in that language.

In the present study, the issue of second language was found to be of minimal importance as only one significant correlation was uncovered, that between English-as-a-second-language and anxiety sensitivity. This result may be due to the fact that the subjects were drawn from a population (an English language university) where relatively strong competence in English is expected to exist. Nonetheless, because one correlation was found to be significant (that between English background and anxiety sensitivity), only those subjects who indicated that English was their first language were asked to participate in Study 2.

As was expected, the different aspects of shyness (subjective anxiety and overt behaviour) all correlated positively and strongly with one another. As subjective feelings of anxiety in social situations increased, so did the tendency to avoid social situations as well as the tendency to interact in an inhibited manner once in those situations. These findings are consistent with the literature in this area. Leary (1983a) stated that most socially anxious people also display various "anxious behaviours" (e.g., disaffiliation, social inhibition). Likewise, Rothbart and Mauro (1990) conclude that social anxiety and behavioural inhibition are strongly related both in children and in adults.

In examining the specific hypotheses concerning the variables contributing to anxiety sensitivity, as social anxiety increased so did sensitivity to anxiety symptoms. The same was true for behavioural inhibition and avoidance, as either increased, so did anxiety sensitivity. These findings are consistent with previous studies that

suggest socially anxious individuals are particularly sensitive to the evident signs of their anxiety. Leary (1983b) observed excessive concerns with appearing nervous in socially anxious individuals. Likewise, Beidel, Turner, and Dancu (1985) also noted heightened sensitivity to physiological arousal in socially anxious individuals. Stewart, Knize, and Pihl (1991) found correlations between anxiety sensitivity and general lack of self-confidence in social situations.

Social anxiety, behavioural inhibition, and avoidance all accounted for only 13% of the variance in anxiety sensitivity scores. Reiss, et al. (1986) state that anxiety sensitivity involves fear regarding the consequences of anxiety (e.g., additional fear, illness, embarrassment, loss of control). Only one of these consequences (embarrassment) has a strictly social nature.

Other studies have found anxiety sensitivity to be strongly related to trait anxiety (Reiss, et al., 1986), general fearfulness (Reiss, Peterson, & Gursky, 1988), and social self-confidence and dependency (Stewart, Knize, & Pihl, 1991). The fact that the three shyness variables, together, accounted for less than 15% of the variance in anxiety sensitivity supports the contention of Taylor, Koch, and Crockett (1991) that the particular inventory used to measure that construct (the Anxiety Sensitivity Index) likely does not really measure "fear of the social consequences of anxiety" as was the original intention of Reiss, et al. (1986). Whether the inventory does, instead, measure "fear of bodily sensations" as suggested by Taylor, Koch, Crockett is difficult to determine from the present study.

In examining the factors associated with impostor feelings, as social anxiety increased so did impostor feelings. This finding is also consistent with literature in this area. Topping (1983) found that impostor feelings and anxiety were strongly related. Harvey and Katz (1984) note that uneasiness in social situations is one of the key ingredients of the experience of feeling like a social impostor, and

Topping and Kimmel (1985) found impostor feelings to be strongly related to trait anxiety.

Contrary to the prediction, however, as behavioural inhibition and avoidance increased, so did impostor feelings. It was predicted that a combination of high social anxiety and low behavioural inhibition and avoidance might create conflict for the individual that would increase concerns about being an impostor. Harvey and Katz (1984) commented on this conflict when they noted that social situations can activate impostor feelings when one believes that one is playing a public part that is not reflective of who that person is on the inside. This conflict is especially evident when one attempts to hide one's discomfort by attempting to appear at ease. Likewise, Zimbardo (1977) argued that socially anxious people are often excessively concerned with whether or not their actions reflect their real selves.

This hypothesized inverse relationship between anxiety (impostor feelings) and behaviour did not prove to exist in the study. This finding may reflect a fear of failure that is a key characteristic of individuals suffering from impostor feelings. If one fears that his or her actions may bring on failure then it is not surprising that these actions (behaviours) will be restricted. Langford and Clance (1993) point out the common concern that making mistakes makes it more likely that one will be exposed as an impostor. Harvey and Katz (1984) note that people suffering from the impostor phenomenon are less likely to try novel activities, partly due to fear of failure and partly due to fear of standing out from the crowd. Clance (1985) supported this notion and added that high impostor phenomenon individuals are less revealing (especially of their fears and insecurities) and they tend to withdraw from others (especially following failure).

All of these results indicate that the various constructs of interest included in Study 1 are related to one another. In all instances they formed strong relationships, as one would expect.

However, in one instance, they did not follow the predicted pattern.

In all cases, social anxiety scores were found to account for the majority of variance in both anxiety sensitivity and impostor feelings, while behavioural inhibition and avoidance accounted for relatively little. When behavioural inhibition and avoidance did account for some variance, it was the avoidance factor that proved to be significant. Whether this pattern is indicative of the overlap across constructs or the overlap across the measures selected for this study is difficult to ascertain. Again, by examining specific behavioural concomitants of social anxiety, Study 2 helped to clarify this issue.

The striking role played by social anxiety was especially true when examining impostor feelings. The anxiety factor took up virtually all of the variance in accounting for impostor phenomenon scores and the behaviour factors accounted for almost none. This might suggest that impostor feelings are affected more by affect than by overt behaviour. An alternative explanation, however, is that the affect measure and the behaviour measures were too strongly related. The behaviour measures may have failed to assess any unique variance (i.e., they were consumed by the affect measure) no matter what they were attempting to predict. Given the strong correlations between the affect measure and the behaviour measures coupled with the finding that, on their own, behavioural factors did correlate strongly with impostor feelings, this seems an attractive explanation.

As previously noted, the importance of behavioural factors was more evident when examining anxiety sensitivity. There, social anxiety continued to take up the majority of the variance in predicting anxiety sensitivity and while one behavioural factor (social avoidance) proved to be significant as well the two factors together did not account for significantly more variance than did the affect measure alone. Again, what the three constructs measure likely overlaps too much for each of them to retain unique variance in predicting this particular variable.

Certainly, the correlations amongst the three predictor measures were very high.

These results suggest that there is more to impostor feelings and anxiety sensitivity than various aspects of shyness, and these findings are not surprising. Social anxiety and behavioural inhibition and avoidance related strongly to impostor feelings, but together they accounted for only 23% of the variance in impostor phenomenon scores. Langford and Clance (1993) suggest that there are five aspects to impostor feelings. These include fear of failure, the attribution of success to charm and luck, the desire to stand out, the feeling of giving other people a false impression, and a tendency to discount positive feedback. Although a social component exists, clearly other dimensions are important in gaining an understanding of this construct. Harvey and Katz (1984) describe "social impostors" but impostor feelings involve performance in educational, vocational, as well as social, situations.

It appears, then, that pulling shyness apart into its components is a useful endeavour in some instances but not in all. Certainly, people do differ in the degree of consistency between their affect and their behaviour in social situations. Some feel quite anxious but their behaviour does not reveal their anxiety while others feel minimal anxiety but interact very little with others. What differentiates these people from those who show more consistency between their affect and behaviour (the typical "shy" and "non-shy") likely involves a number of factors.

It may be that when applying shyness to other constructs the anxiety component carries so much weight that examining behaviour adds little to our understanding. With regard to Study 1, a method confound may have been present regarding the high fidelity of the various domains of prediction. In other words, self-reported affect predicts other self-reported affect best while observed behaviour predicts other

observed behaviour best.

Perhaps the practice of separating affect from behaviour is most useful when examining those individuals who differ in affect and behaviour. Of course, it is impossible to identify these individuals without first conducting a comprehensive assessment (one that includes the measurement of affective, behavioural and, possibly, other factors).

Study 2

The purpose of Study 2 was to investigate the effect that a particular situational variable (perceived expertise of one's social partner) would have on the social behaviours of socially anxious vs. non-socially anxious individuals. A number of variables (physiological, behavioural, and self-report) were examined in order to determine the effects of manipulating this variable.

Preliminary analyses indicated that the sex of the subject was associated with two variables in Study 2. Female subjects talked less during the five minute interaction than did male subjects and female subjects were less satisfied with their performances during the interaction than were male subjects. These findings contrasted from those obtained in Study 1 where no sex differences were uncovered.

With regard to amount of verbal output, similar studies of conversational behaviours of males and females in dyadic interactions have yielded largely inconsistent results. While Welkowitz and Bond (1984) found that males were more verbally active than females, Elias and Broerse (1992) found that female subjects talked more frequently and for longer durations in conversational dyads than did male subjects. Other researchers (e.g., Pillon & Degauguier, 1992) have uncovered few or nonexistent sex differences.

Some research has investigated not only the quantity of verbal output but also the quality. These investigations may have particular application to the present study. Argyle and Trimboli (1988), for example, reported that males talked more about daily events than did

females. The fact that, in the present study, the assigned conversation topics involved topical news events may account for the greater verbal output by male subjects. Other researchers (e.g., Hendrick & Strange, 1991) report that males view conversations as opportunities to dominate more so than do females. Again, given that part of the instructions for the present study involved notifying the subject that the interaction partner would take an opposing point of view, this may have increased the tendency of the male subjects to attempt to dominate the discussion.

Females in the present study were also less satisfied with their performances during the interaction than were males. These findings are consistent with literature that has examined the self-evaluation tendencies of males and females. Jackson and Hodge (1994) found that, in a sample of college students, male subjects evaluated themselves more positively than did female subjects. Similarly, in a work setting, Shore and Thornton (1986) found that males provided higher self-ratings of their performance than did women. Of particular relevance to the present study is the finding that males tend to rate themselves as more knowledgeable in conversations discussing current affairs than do females (Slevin & Aday, 1993).

In examining the experimental hypotheses, none of the hypotheses concerning the differential effects of level of expertise and social anxiety on performance received support. While these results were disappointing, results revealed that the manipulation did have an effect on the subjects. That is, for many variables, subjects who interacted with a high expertise partner reacted differently than did those who interacted with a low expertise partner. However, the high social anxiety subjects did not respond differently than did the low social anxiety subjects to the manipulation of partner expertise.

Some results, although not contained within stated hypotheses, were consistent with general predictions of the study concerning the effects of social anxiety and situational stressors. The heart rates of

subjects who interacted with low expertise partners habituated more than did those who interacted with high expertise partners, regardless of social anxiety level. The high expertise condition was considered to be more threatening and, as a result, would be expected to be more resistant to habituation. While very little literature exists addressing the specific notion of heart rate habituation, numerous studies have demonstrated that individuals who find themselves in socially threatening situations tend to react with increased physiological arousal (Brodt & Zimbardo, 1981; Leary, 1983b; Twentyman & McFall, 1975). Given the fact that the low expertise condition produced more of an initial physiological response (see below), it is not surprising that more habituation of this response occurred.

Subjects in the low expertise condition also engaged in less innocuous sociability than did those in the high expertise condition. This finding was expected and is consistent with literature in this area (Leary, 1983b; Natale, Entin, & Jaffe, 1979; Pilkonis, 1977a).

High social anxiety subjects made fewer acquisitive self-presentations than did low social anxiety subjects. This finding supports a central notion in the self-presentation literature that highly socially anxious individuals generally make fewer acquisitive self-presentations than do individuals lower in social anxiety (Schlenker & Leary, 1982). Also, high social anxiety subjects made more protective self-presentations than did low social anxiety subjects, a finding that is also consistent with the literature (Schlenker & Leary, 1982).

High social anxiety subjects rated their own performances during the interaction as being poorer than did low social anxiety subjects. They also reported feeling less satisfied with their performance and they enjoyed the interaction less than did low social anxiety subjects. These findings make intuitive sense, since by definition socially anxious individuals harbour such concerns in social situations. These

concerns are part of the problem of social anxiety and shyness. In fact, it could be argued that if they rated their performances higher, were more satisfied, or enjoyed the social interactions more, they would not be socially anxious (Cheek & Melchior, 1990; Gough & Thorne, 1986; Leary, 1983b; Zimbardo, 1977).

Some findings from Study 2 were not expected. In terms of physiological response, subjects in the high expertise condition responded to the start of the interaction with lesser increases (not greater) in their heart rates than did those in the low expertise condition. This differed from that expected in that the high expertise condition was considered to be more threatening (and thus, more physiologically arousing) than the low expertise condition. A review of the literature reveals support for these expectations. For example, Beidel, Turner, and Dancu (1985) found socially anxious individuals to be more physiologically reactive (as measured by heart rate and blood pressure) to social situations than non-socially anxious individuals. Also, they showed greater latency to habituation. Twentyman and McFall (1975) found that men high in social anxiety had higher peak arousal in their heart rates than did those low in social anxiety across a number of role-play situations and Kagan and Reznick (1986) found that behaviourally inhibited children showed higher and less variable heart rates in group social encounters than did non-inhibited children.

In attempting to explain these findings, it may be that the manipulated variable (perceived expertise of one's interaction partner) contained an unanticipated confound. Perhaps the amount of structure of the interaction interacted with the experimental manipulation. If the subjects in the low expertise condition were not sure what was expected, their anxiety may have been increased. In contrast, those confronted with a high expertise partner assumed that person would organize the discussion without much being expected of the subject. This interpretation is consistent with Pilkonis (1977b) who found that

shyness was more readily evoked by ambiguous, unstructured encounters than by structured encounters. Likewise, Zimbardo (1977) argues that shyness tends to be aroused in settings that provide little in the way of guidelines for appropriate behaviour.

One final set of findings was particularly interesting because the findings differed from expectations of the study but were consistent with one another. High social anxiety subjects reported feeling more satisfied with their performances and reported enjoying the discussion more in the high expertise condition. At the same time, low social anxiety subjects were more satisfied with their performances and enjoyed the discussion more in the low expertise condition. As mentioned, although these results are not consistent with expectations of the study, they are consistent amongst themselves.

The interpretation based on the structure/lack of structure of the situation discussed earlier is likely relevant here as well. If the high social anxiety subjects demonstrate fewer "anxious" behaviours when interacting with a high expertise partner, they may be feeling more comfortable with the expectation that their partner will take more of an active and guiding role in the interaction. Likewise, the low social anxiety subjects may have felt more comfortable with the potential of being given the opportunity to take control of the interaction when interacting with a low expertise partner.

Overall, subjects high in social anxiety (a dispositional variable) did what was expected in a number of areas. They scored lower on acquisitive self-presentation style, scored higher on protective self-presentation style, rated their performances as being poorer, and enjoyed the interaction less than did low social anxiety subjects. These results support the argument that dispositional factors affect how people react to social interactions.

Subjects in the high expertise condition (a situational variable) also did what was expected in a number of areas. Their heart rates

habituated less over the course of the interaction and made more innocuous sociability utterances than did subjects in the low expertise condition. However, contrary to expectations, those subjects in the high expertise condition responded to the start of the interaction with lesser increases in their heart rates and they scored lower on protective self-presentation style than did subjects in the low expertise condition. These results support the notion that some situational variables affect the experience of social anxiety and accompanying behaviours.

What is particularly interesting is that dispositional and situational variables showed expected results with some behaviours and unexpected results with others. As a result, it is difficult to reach a general conclusion that the subject variable (social anxiety) and/or the manipulated variable (perceived expertise) had uniform effects on the subjects. Had the effects been more consistent or had no effect been uncovered, a more general conclusion would be more appropriate.

Two weaknesses in Study 2 may have interfered with the ability to obtain more in the way of significant findings. The first addresses the fact that the average anxiety scores of those subjects classified as high in social anxiety were relatively low in comparison with previous research findings. If these subjects were, in an absolute sense, not particularly anxious, then it is not surprising that their responses did not differ significantly from those subjects who were classified as low in social anxiety.

A second weakness addresses the issue of power. The relatively low power obtained in Study 2 made it difficult to reject the null hypothesis. An increase in the number of subjects per cell would increase power and would, as a result, help produce more in the way of significant results.

When examining the specific behaviours that followed predictions and comparing them to those that did not, no consistent pattern emerges.

Traditionally, heart rate has enjoyed the position of being one of the best single indicators of anxiety but, in the present study, this variable did not follow expectations. However, some studies (e.g., Ahern, Wallander, Abrahms, & Monti, 1983) have found little relationship between heart rate and behavioural signs of anxiety. Thus, although the present results differ from one set of findings in the literature, they appear to be consistent with others.

What does seem clear is that one of the initial arguments of the present study, that more than social anxiety level needs to be addressed when examining the field of social anxiety and shyness, has been supported. In Study 1 subjects were assessed on a number of shyness dimensions, including social anxiety, behavioural inhibition, and avoidance, but Study 2 focused on the social anxiety dimension. The inconsistent results of Study 2 would likely be better accounted for if other variables were taken into account, such as behavioural inhibition, social avoidance, social skill, self-efficacy, and cognitive style. These issues are discussed in greater detail in the section, "Recommendations for Future Research".

It is important to take into account how a particular individual perceives a particular social experience. While the experience may be interpreted as threatening for the majority of people, not all people may see it as so. Certainly, individual differences need to be taken into account but it is also important to recognize that situational factors have a strong influence. In fact, in Study 2, it was manipulation of the situational variable that had the greatest impact on the various "anxious" behaviours that were measured. Four of the eight main dependent variables showed differential effects across the two levels of the situational variable (high vs. low expertise). In contrast, only two of the main dependent variables showed differences across the two levels of the dispositional variable (high vs. low social anxiety).

The present study was unable to uncover interactions between dispositional and situational variables. Future research is required to determine whether conceptualizations of social anxiety and shyness that are able to accommodate these interactions will prove to be more successful over the longer term or whether they will only serve to needlessly complicate our understanding.

Recommendations for Future Research

Useful information was gained both in regard to dispositional and situational factors affecting shyness but only a limited number of factors were chosen for examination in these two studies. In terms of dispositional factors, the evidence suggests that it is a useful practice to separate affect from behaviour. It may even be a necessary first step, especially for those individuals whose anxiety and behaviour are not consistent with one another. Without a doubt, most people show consistency between their affect and behaviour; this relationship has been well documented in the literature and was supported by the findings of Study 1.

Evidently, however, not everyone is consistent. Some individuals experience little in the way of anxiety but display a great deal of avoidant or inhibited behaviour. Others experience high levels of anxiety but behavioural indicators of their anxiety are scarce or nonexistent. Those who demonstrate low anxiety and high inhibition and avoidance are probably of only limited interest in that their inconsistency can probably be explained by lack of motivation/interest on their part to engage in social interactions. They probably are relatively uninterested in other people.

The other group, however, those who experience high anxiety but show little inhibition or avoidance are of particular interest. The question as to what it is that allows these individuals to interact fully while others with similar high anxiety levels cannot is an interesting one. A number of explanations have been offered (e.g.,

level of social skill, physiological reactivity) and additional research in these areas would likely be fruitful.

Once affect and behaviour have been successfully separated, it becomes possible to apply them to a wide range of dispositional variables such as those investigated in the present study (anxiety sensitivity and impostor feelings). This, in itself, is not a new field of inquiry as social anxiety and shyness have been studied in relation to assertiveness, loneliness, academic and vocational performance, and self-monitoring, to name only a few. What has not been done is first separating affect from behaviour and then applying each to these other domains of behaviour.

By doing so, more precise models can be developed as to how anxiety and behaviour interact. A number of useful models already exist (e.g., self-presentation, social skills, physiological reactivity, self-efficacy) postulating factors that were not included in the present study as having an important bearing on the experience of social anxiety (e.g., Turner, Beidel, Dancu, & Keys, 1986) and their focus on social skills]. Additional research may find more support for existing theories or may help in the discovery of new ways of understanding the phenomena of social anxiety and shyness.

Another avenue of inquiry involves continued efforts to develop better means of measuring affect and behaviour. This need is especially relevant with regard to assessing anxious behaviour. The validity and reliability of the self-report measures used in the present study have been well investigated and documented. In addition, using subscales and drawing items from the scales (as was done for the Social Avoidance and Distress Scale and the Cheek and Buss Shyness Scale, respectively) has been successfully attempted in the past and has been found to be appropriate (Innes & Thomas, 1989; Leary et al., 1986).

The issue of molar vs. molecular behaviours was discussed in the Introduction, and the choice over what behaviours are included for

investigation is an important one. Molecular behaviours help in increasing specificity and precision of measurement, however the way these specific behaviours interact is also important and can be examined when selecting more global or molar behaviours for investigation.

What seems clear is that it is not only the quantity of a particular behaviour that is important but also the quality. For example, when examining verbal output, one can assess the amount of talking, as was the case in the present study. However, other factors may also be important. Fischetti, Curran, and Wessberg (1977) examined the timing of verbal behaviours and uncovered differences between socially anxious and non-socially anxious individuals. Likewise, Leary, Knight, and Johnson (1987) examined the content of verbal output and found this variable to be an important one.

In terms of situational variables, perceived expertise of one's social partner was chosen for examination in the present study. It seems quite clear that different situations can increase or decrease the experience of social anxiety for most people. As Zimbardo (1977) notes, while a certain portion of the population considers itself dispositionally shy, another portion describes itself as situationally shy. A number of other situational variables await further investigation (e.g., audience size, audience status, task novelty, personal importance of the social event).

A useful follow-up to this study would involve first dividing subjects on affect and on behaviour before subjecting them to an experimental manipulation. This study did not do this, instead dividing subjects only on the basis of their self-reported social anxiety scores. With more subjects one could divide into high and low anxiety and high and low behavioural inhibition and avoidance. In addition, a repeated measures design could be implemented where all subjects are exposed to all conditions. Doing so might help to explain some of the inconsistencies that were evident in Study 2.

In conclusion, the study of social anxiety and shyness show the area to be interesting and complicated. The phenomena appear to be gaining more attention both in relation to everyday discomfort as well as within the realm of more serious or clinical distress, in conditions such as social phobia and avoidant personality disorder. Additional research can help in gaining a greater understanding of these phenomena and can also point researchers and clinicians in the direction of discovering better ways to alleviate the distress experienced by those who suffer from this condition.

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