

Meta-Perceptive Accuracy in Social Anxiety

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**Meta-Perceptive Accuracy in Social Anxiety**

**by**

**Jason P. Ediger**

**A Thesis/Practicum submitted to the Faculty of Graduate Studies  
of The University of Manitoba**

**in partial fulfillment of the requirement of the degree**

**of**

**Doctor of Philosophy**

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### Abstract

Meta-perceptions are the beliefs that people hold regarding the way others view them. Cognitive therapists suggest that socially anxious persons hold inaccurate meta-perceptions because they derive them from beliefs about themselves, whereas non-anxious persons have accurate meta-perceptions because they base them on the observations of others. Social psychologists, however, argue that even non-anxious persons derive meta-perceptions from self-perceptions. The relationship between self-perceptions, self-focused attention and meta-perception in both socially anxious and non-anxious individuals was examined to determine which model was most applicable. Interpersonal ratings involving self-, other-, and meta-perceptions of anxiety and likeability were collected in a round-robin format within groups. Self-report measures of trait social anxiety, focus of attention, and rumination were also measured. Analyses employed Kenny's Social Relations Model (SRM) to determine that, in general, meta-perceptions were accurate for ratings of anxiety. A lack of consensus by social partners prevented the testing of accuracy for ratings of likeability. Social anxiety, attentional focus and rumination had no significant influence on accuracy. Self-perceptions were the primary significant determinant for meta-perceptions for all participants. These results support the social psychological model and suggest that socially anxious people use the same processing strategies as their non-anxious peers. It is differences in their self-perception that skew their beliefs. Clinical implications of these findings are offered.

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## Meta-Perceptive Accuracy in Social Anxiety

Social phobia is a psychological disorder defined as involving enduring fears or anxiety of social embarrassment triggered by situations requiring social interaction, performance, or any context in which there is the possibility of inspection by others (American Psychiatric Association, 1994). Social anxiety, by contrast, is a broader term encompassing the distress experienced by people with social phobia as well as those with sub-clinical anxiety. Social phobia represents a relatively recent addition to the nosological system and was only officially recognised as a category in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1980). Nevertheless, social phobia is quite common with more than 13% of people meeting diagnostic criteria at some point during their lives (Kessler et al., 1994). Approximately 7% of individuals in a large Canadian community sample reported symptoms of social phobia in the last year (Stein, Torgrud & Walker, 2000). Likewise, 7% of those seen by primary care providers in a medical setting will have this disorder (Stein, McQuaid, Laffaye, McCahill, 1999). Moreover, the level of impairment and reduced quality of life associated with severe social anxiety is considerably higher than has been previously thought. Socially anxious people report more loss of achievement and greater dissatisfaction with their relationships, education and employment than non-socially anxious people (Rapee, 1995; Safren, Heimberg, Brown & Holle, 1997; Stein & Kean, 2000). Despite these levels of impairment, social phobia remains significantly under-diagnosed and under-treated in the community (Stein & Chavira, 1998).

Research into social anxiety suggests that cognitive processes play a key role in influencing the onset, presentation, and duration of anxious experiences. As a result, recent cognitive models posit that the beliefs individuals hold regarding the perceptions that others have of them (meta-perceptions) are central to the development and maintenance of anxiety in social situations. More specifically, cognitive models claim that socially anxious people make at least two common assumptions when confronted with social situations. The first of these presuppositions is that other people are inherently critical and likely to evaluate the perceiver's behaviour in a negative fashion (Leary, Kowalski & Cambell, 1988). This is followed by the subsequent assumption that any negative reaction from another person is catastrophic and unacceptable. Thus, the defining characteristic in socially anxious people is an overriding need to convey a favourable impression in social situations and a marked insecurity about their ability to do so (Clark & Wells, 1995; Rapee & Heimberg, 1997). According to this argument, people are socially anxious because they are bothered by the recurring belief that others do not or will not like them. Research has provided strong evidence for this belief in socially anxious populations and its presence has been observed in multiple studies (e.g. Alden & Wallace, 1995; DePaulo, Kenny, Hoover, Webb & Oliver, 1987; Stopa & Clark, 2000).

Since an anxiety disorder is by definition an unreasonable fear, the meta-perceptive beliefs held by the person with social anxiety are assumed to be false or exaggerated. Furthermore, cognitive behavioural therapy actively builds upon this presupposition of meta-perceptive inaccuracy by seeking to challenge a person's beliefs and perceptions within the social situation. This step may be somewhat premature, however,

since the relative accuracy or inaccuracy of meta-perceptions in people with social anxiety has yet to be established empirically.

In this thesis, I am interested in exploring the accuracy of meta-perceptive beliefs in social anxiety. Meta-perceptions in socially anxious individuals are presumed to be inaccurate, but the majority of research to date has measured only the unverified self-report of the individual. Furthermore, the studies which have been done rely almost exclusively on artificial situations and non-clinical samples. An important task that remains for validating the cognitive model of social anxiety is to determine if meta-perceptive responses of individuals with high social anxiety are inaccurate as posited.

The following section will review the concepts of accuracy and meta-perception before considering their significance within the cognitive theories of social phobia. In particular, the theories of social anxiety proposed by Clark and Wells (1995) and Rapee and Heimberg (1997) will be used to illustrate the centrality of meta-perception to our current understanding. I will also examine the empirical support for the role of meta-perception and its potential implications. Finally, I will outline the role that social psychology methods and the social relations model (SRM) in particular may have in helping to understand the meta-perceptions of anxious individuals in social contexts.

### Defining Meta-perception and Accuracy in Context

#### Meta-perception

Laing, Phillipson and Lee (1966) were the first people to use the term meta-perception in interpersonal perception. The concept did not originate with them, however. There is a long tradition in social psychology and sociology that emphasizes the role of social interaction in self-understanding. Cooley (1902) coined the term

“looking glass self” to suggest that the reactions of others to a person provided the raw material for the formation of that person’s self-concept. Similarly, Mead (1934) suggested that all self-knowledge is learned through a process of reflective appraisal. During social interaction, the social feedback provided from others is thought to guide self-perception. These early conceptualizations introduced the idea that the self does not exist in isolation. Instead, self is thought to be created through the assimilation of impressions provided by social partners. This process assumes an awareness of what others are thinking. Thus, a by-product of the looking glass self must be a stable set of beliefs about how we, as human beings, come across to others. This early series of hypotheses stimulated an impressive body of research that has grown significantly over the years. Support for the looking glass self as a dominant interpretation for self-concept and interpersonal perception has been mixed (Lundgren, 2004; Yeung & Martin, 2003). Nevertheless, these ideas have formed the foundation for many of the assumptions and concepts central to the literature on interpersonal perception.

Interpersonal perception may be conceived as involving a minimum of three separate but interrelated cognitive constructs (Kenny, 1994; Laing, Phillipson & Lee, 1966). These components are self-perception, other-perception and meta-perception. Self-perception refers to beliefs that are held about one’s own person. Likewise, other-perception encompasses the beliefs and impressions that are held about someone else. By extension, meta-perception is the belief that an individual holds regarding another person’s perceptions of herself or himself. These constructs can be easily visualised as answers to the following questions:

What do I think about me?	→	self-perception
What do I think about him?	→	other-perception
What does she think about me?	→	meta-perception

Kenny (1994) draws a further distinction in the definition of meta-perception.

He argues that there is both a general meta-perception that reflects how individuals believe others perceive them in general, and a specific dyadic meta-perception associated with each particular other. Thus, it is possible to believe that you are generally viewed negatively or positively, while still holding meta-perceptions about specific persons that contradict that general meta-perception.

Theoretically, interpersonal perceptions are interdependent. Self-, other- and meta-perceptions are thought to feed into each other so that changes in one perception can have significant implications for the other two (Laing et al., 1966). Thus, the impression that an individual believes he or she has made on another, for instance, will influence what that person thinks of him or herself and what they think of that other person. Furthermore, these relationships are thought to be reciprocal so that a change in any single aspect of perceptions may alter all of the others.

#### Meta- Perceptive Accuracy

Accuracy is typically defined as the correspondence between a judgment made by a perceiver and some criterion measure (Kruglanski, 1989). The process involves a minimum of two people: a perceiver and at least one target (Kenny & Winkquist, 2001). This process has some theoretical challenges, however. In order to measure accuracy, it is first necessary to define the criterion. At the core, accuracy is an attempt to measure error (or the lack of error) against a clearly defined criterion. This is complicated by the



reality that not every question has an easily measurable and absolute answer.

Furthermore, examining accuracy across multiple raters raises the concept of absolute accuracy versus accuracy of approximation. Interpersonal perception is prone to subjectivity and change. The likelihood of a perfect one to one relationship between judgement and criterion across raters is limited. Errors in judgement are compounded by errors in measurement. In this context, the measurement of accuracy must become somewhat relative. Judgements that are determined to be statistically accurate may show elements of variability.

Fortunately, in the case of meta-perception, subjectivity actually simplifies the selection of a criterion. By definition, meta-perceptions are the subjective judgements of other subjective judgements. Provided both judgements are measured in a similar manner and with similar scales, a more objective criterion is not necessary. The relationship between judgement and criterion may be influenced by a variety of factors. Accuracy may be affected by motivation, situation, or informational availability (Kruglanski, 1989).

Meta-perceptive judgements are particularly interesting because they represent a higher order of representation as compared with the more immediate tasks of self- and other-perception. They are a secondary level of analysis with a greater number of variables involved. Whereas an other-perception involves a cognitive representation of an individual, a meta-perception includes that other-perception but also adds a representation of that individual's judgements regarding the perceiver. This level of perceptions is less concrete than other-perception. To accurately predict meta-perceptions it is necessary to infer correctly both what behavioural information is

available to others and the opinions those others might form about the behaviours in question (Albright & Malloy, 1999). Interpretative errors in this process can develop quite easily, leading to the creation of positive or negative biases.

Accuracy research is further inspired and challenged by the many types of accuracy that are possible. For instance, the distinction between generalized and dyadic meta-perceptions may be expanded to include generalized and dyadic meta-perceptive accuracy (Kenny, 1994). These forms of accuracy can have different requirements. Generalized meta-perceptive accuracy, for instance, is only possible if there is consensus among the judgements for the social partners providing the criterion. Without this consensus accuracy is difficult because there is no stable criterion to predict.

Several researchers have proposed a taxonomical approach to accuracy. Chronbach (1955), in an early critique of accuracy research, suggested partitioning the discrepancy score between judgment and criterion into four components: elevation, differential elevation, stereotype accuracy, and differential accuracy. Elevation accuracy deals with the discrepancy between the judge's average score across targets and the average score across targets on the criterion. Differential elevation is dependent on the pattern of average ratings across targets matching the pattern of average ratings across the criterion. Stereotype accuracy refers to the degree of correspondence between the mean of a perceiver's judgments of each trait across targets and the overall mean level for the trait on the criterion. Differential accuracy reflects the degree of correspondence between the perceiver's judgment of each trait for each target and the criterion scores of each trait for each target. To use an example provided by Kenny and Winkquist (2001):

If Mary judges Matthew, Mark, Luke and John on the traits of intelligence, friendliness, and conscientiousness and her average rating across targets and traits agreed with the average of the 12 criterion scores, then there is elevation accuracy. There would be differential elevation accuracy if her average judgment for each of the four targets corresponded to the average of each of the four on the criterion scores. There would be stereotype accuracy if her rank ordering of the three traits corresponded to the rank ordering for the traits on the criterion. Finally, there would be differential accuracy if (after the overall mean, the target averages, and the trait averages were removed) her judgments for the four targets on each trait corresponded to the criterion scores for each target on each trait. (p. 267)

Kenny (1994; Kenny & Albright, 1987; Kenny & Winkunst, 2001) built on Cronbach's work to suggest a revised componential taxonomy integrating their social relations model of interpersonal perception. It separates discrepancies with the criterion in a different manner, however, and highlights the reciprocal nature of interpersonal perceptions. Furthermore, while Cronbach (1955) examined the accuracy of a judge across a set of targets and traits, Kenny and Albright (1987) typically look at accuracy for a trait across a set of judges and targets. The resultant four component model consists of elevation accuracy, response-set accuracy, individual accuracy and dyadic accuracy. Elevation accuracy concerns the ability of judge's in general to know the criterion scores of targets in general. Thus, accuracy in the context is measured as the degree of correspondence between the mean across judgements and the mean across criterion measures of the criterion (Kenny & Winkunst, 2001). Response-set accuracy, also called

perceiver accuracy, concerns whether the average response of a given rater corresponds to the average score of his or her interaction partners. Individual accuracy tests the relationship between how one is generally predicted to behave by social partners and how one actually behaves. In the context of meta-perception, this is the generalized meta-perceptive accuracy described earlier. Dyadic accuracy corresponds to dyadic meta-perception and refers to unique correspondence between the perceiver and specific social partners. It is these last two forms of accuracy, individual accuracy and dyadic accuracy that have been most commonly used in studying interpersonal perception.

In analyzing the taxonomies of Cronbach (1955) and Kenny and Albright (1987), Kruglanski (1989) points out that these forms of accuracy differ in relevance depending on the question. Both taxonomies can be separated into theory-driven and stimulus-driven forms of accuracy. Theory-driven forms of accuracy are based on a judges' pre-existing stereotypes and biases. Stimulus-driven accuracies, by contrast, reflect a judges' responsiveness to situational factors and cues. Kruglansky (1989) points out that both Cronbach (1955) and Kenny and Albright (1987) imply a hierarchy of interest based on these principles. For Cronbach's (1955) taxonomy, elevation accuracy and stereotype accuracy represent theory-driven concepts of lesser interest to the study of interpersonal perception than the stimulus-driven differential elevation and differential accuracy. Likewise, Kenny and Albright's (1987) individual accuracy and dyadic accuracy are judged to be the most useful in studying interpersonal perception (Kruglansky, 1989). Thus, it is not surprising that these forms of accuracy dominate the accuracy research to date.

Existing research highlights the complex nature of meta-perceptive accuracy. In general, there appears to be a more evidence for individual (or generalized) meta-perceptive accuracy than for dyadic accuracy, especially in the judgment of personality traits (Kenny, 1994). There is also evidence supporting the proposed inter-relationship between self-, other-, and meta-perceptions. Kenny and DePaulo (1993) took this a step further, however by demonstrating that people's views about how others see them are more related to their own self-view than to how other people actually view them. This reverses the process previously proposed by Cooley in the "looking glass self" (1902). Where previous theory suggested that self-concept was based on the impressions of others, this argument suggests that self-concept informs the development of meta-perception. Thus, a discrepancy between an individual's self-view and the actual ways that person is viewed by others leads to inaccuracies in meta-perception. Within a normal population, this tendency may have little impact on the accuracy of meta-perceptions. Provided one's self-perception matches fairly closely to the way others respond, it does not matter on which perception the judgement is based. Meta-perception is still likely to be accurate. In the event of a discrepancy between self-perceptions and others perceptions, however, accuracy is compromised.

A rigidly-held negative perspective in any one domain would create a corresponding effect on the other two perspectives as well. Thus, in the case of social phobia, negative self- and meta-perceptions regarding the outcome of social situations would continually reinforce each other and inhibit the development of alternative viewpoints. These people may then develop meta-perceptive beliefs that are inconsistent with the opinions held by others. The inaccurate judgements that follow

this scenario may then predispose these people to maladaptive interpretations of their environment. In cognitive terms, the beliefs that are held regarding the varying types of perception proposed in interpersonal psychology act as schemas to filter information about the self in social interactions. It is from this understanding that cognitive models of social anxiety address meta-perception.

### Cognitive Models of Social Anxiety

There have been several major cognitive models of social anxiety proposed in the last twenty years (e.g. Clark & Wells, 1995; Hartman, 1983; Rapee & Heimberg, 1997; Schlenker & Leary, 1982). It is important to note that, while all of these models discuss the concept of meta-perception, the term meta-perception is never used in any of these models. Rather, meta-perception is discussed more operationally and with varying levels of specificity. Schlenker and Leary (1982), for instance, discuss the importance of understanding and misunderstanding "impression-relevant reactions from others" (p. 645). Similarly, Hartman (1983) uses the phrase "interpretation of feedback from others" (p. 442) and Clark and Wells (1995) make reference to "conditional beliefs concerning social evaluation". (p. 75) Finally, Rapee and Heimberg (1997) base the central tenets of their model around "mental representations of the self as seen by the audience". (p. 743) Despite these differences in terminology, it is clear that meta-perception plays a significant role in each of these models. This is not surprising since these models were derived at similar times and using the same resources. The similarity between these models is further compounded as both of the later models cite their predecessors as significant influences (Clark & Wells, 1995; Rapee & Heimberg, 1997). For this reason it seems logical to focus primarily on the later models as these

incorporate those considerations proposed earlier while at the same time having the advantage of being informed by subsequent research as well.

Both Clark and Wells (1995) and Rapee and Heimberg (1997) propose cyclical models of social anxiety. In this way, these models resemble the vicious circle of anxiety proposed by Barlow (1988). Social anxiety can occur in anticipation of a social situation or in the actual situation itself. Consequently, both models state that the trigger for social anxiety can be either the presence of, or the potential for, an audience. This trigger then starts the cycle of cognitive, physiological, and behavioural events that serve to perpetuate anxiety in social situations. The way these models differ is in how the proposed cycles are explained and the relative importance that meta-perception is given within each framework.

#### Clark and Wells' Cognitive Model of Social Phobia

Clark and Wells (1995) suggest that the defining characteristic in socially anxious people is an overriding need to convey a favourable impression in social situations and a marked insecurity about their ability to do so. This need and insecurity are tied to two beliefs. Insecurity is thought to result from a common conviction that every time a person enters a social interaction he or she is in danger of acting foolishly. Moreover, socially anxious people also believe that this foolish behaviour will directly result in the negative outcomes of humiliation, loss of status or rejection. Although not explicitly identified as such, this description suggests that meta-perception plays a central role in the development of social anxiety. As humiliation and loss of status are mediated by the opinions of others, it is the socially anxious individual's perception of what others think that forms the underlying cause of the anxiety. The implications of

this are not fully explored by Clark and Wells (1995), however. Instead, beliefs about meta-perceptions are lumped in with beliefs about social situations in general and phrased as a general pre-requisite for the subsequent experience of anxiety.

According to their model, once these beliefs have been established, a complex series of cognitive, somatic, affective and behavioural responses may develop to augment them. Over time, these responses may be triggered automatically by any new social situation and result in the following reflexive responses:

First, the somatic and behavioural symptoms of anxiety become further sources of perceived danger and anxiety. Second, social phobics become preoccupied with their somatic responses and negative social-evaluative thoughts, and this preoccupation interferes with their ability to process social cues, an effect that they notice and take as further evidence of social threat and failure. Third, some of the ways in which social phobics behave when anxious may then elicit less friendly behaviour from others and partly confirm the phobics' fears. Finally, some of the behavioral symptoms directly produce further feared sensations. (p. 70)

These newly produced feared sensations then contribute back to the first stage and help to perpetuate the cycle. Over time these processes become ingrained and produce predictable patterns of behaviour. Socially anxious people come to regard themselves as the primary focal point of any social situation. Their anxiety causes further deterioration in their ability to perform socially under pressure and they begin to rely upon maladaptive safety behaviours and avoidance in order to cope. Eventually, the social



experience itself is no longer necessary and the mere thought of a future experience is enough to trigger anticipatory anxiety.

Self-Focused Attention in Clark and Wells Model. One possible explanation for the lack of emphasis on meta-perception in Clark and Wells (1995) model is their emphasis on self-focused attention. According to their model, socially phobic individuals engage in detailed monitoring of their cognitive and physical state. This self-awareness is thought to highlight their anxiety in social situations while at the same time detracting from their ability to collect data for meta-perceptions from the environment. Thus, the assumption is that meta-perception in social anxiety is influenced primarily by self-focused attention and not by objective interpretation of the environment (Clark, 2000). The unstated implication of this statement is that non-anxious people must pay more attention their environment. This assumption likely originated with Cooley's (1902) "looking glass self" model in which normal meta-perception is a stable and accurate interpretation of feedback from others.

In interpersonal terms, Clark and Wells (1995) theory would state that excessive attention to self-perception provides unwarranted influence on meta-perception. A pre-occupation with self-perception is hypothesised to interfere with the normal interpretation of external cues that signal safety and threat. This misinterpretation, when combined with an already negative self-perception, is thought to result in inaccurate meta-perceptions.

#### Rapee and Heimberg's Cognitive-Behavioural Model of Social Phobia

Rapee and Heimberg's model (1997) differ from Clark and Wells' model (1995) because it clearly articulates the importance of a mental representation of the self as seen

by the audience. More specifically, they start with the premise that people with social phobia assume that other people are critical towards them. This negative meta-perception is believed to be habitual and global. Thus, socially anxious people do not need to receive negative feedback in order to perceive themselves as disliked. The mere presence of a potentially judgmental audience is enough to activate the belief that others dislike them. This combination then initiates a series of distorted judgements that culminate in heightened anxiety and the maintenance of these negative meta-perceptions.

Rapee and Heimberg (1997) propose that once a social situation has been entered, the anxious person divides his or her attention between searching for signs of disapproval in the external environment and their internal representation of how others are seeing them. This internal representation (meta-perception) is presumed to be dynamic and responsive to input from a variety of sources. Feedback from their social environment is combined with physical symptoms and already existing long-term memories to build a subjective image. This image is then compared to a hypothetical social ideal that the person believes is held by the audience. Anxiety is postulated to occur as a result of any negative discrepancy between these two representations. In the case of socially anxious individuals this result is almost inevitable. Their negative self-perception and the globally negative meta-perception already weight the meta-perceptual image they have created in the situation against them. This is then combined with an overly idealised social standard to create a discrepancy in almost any social situation.

Like Clark and Wells (1995), Rapee and Heimberg also incorporate the behavioural, cognitive and physical symptoms of anxiety as both sequelae and

subsequent reinforcers of their negative beliefs. Behavioural symptoms such as avoidance and stuttering or inappropriate nervous behaviour may cause them to receive negative feedback from their social environment. At the same time, the internal cognitions and physical symptoms associated with anxiety are also being incorporated into the meta-perception. The result is a self-sustaining loop that is difficult to challenge or break.

### The Role of Meta-perception in Cognitive Models of Social Anxiety

Meta-perception is pivotal to the cognitive understanding of social anxiety. Socially anxious people are thought to be very preoccupied with how others view them. Furthermore, this preoccupation is highly biased with affected individuals carrying the conviction that others are likely to think badly of them. Thus, negative meta-perceptions are one of the primary pre-requisites for a socially anxious experience. The other cognitive requirement is a belief that it is terrible not to be liked. If a person does not feel that others dislike them, then the need to be liked is satisfied and no anxiety occurs. Similarly, if a person believes they are disliked, but does not care, there is also no anxious response. Thus, while social situations may be the trigger for social phobia, it is the negative meta-perceptions and beliefs about the importance of social acceptance that are believed to underlie the anxiety disorder. According to this argument, meta-perceptions are essential to the development of social phobia. This conceptualisation has significant implications for the etiology and treatment of social anxiety. It is necessary to discover why these negative meta-perceptions develop in some people and not in others. Furthermore, if it possible to purposefully alter these meta-perceptions,

new approaches may be developed to augment the exposure therapy that is standard today.

### Empirical Findings on Meta-perception in Social Anxiety

Having established the theoretical role of meta-perception in cognitive models of social anxiety, this portion of the paper will briefly review the literature to determine whether existing research is consistent with this hypothesis. It is important to note that, despite the importance of negative meta-perceptions within cognitive theory, there is remarkably little research dedicated to confirming that negative meta-perceptions maintain social anxiety. Research on meta-perception in social anxiety is still in its early stages. Thus, most of the research in the last fifteen years has focused on confirming the correlation between what I am referring to as negative meta-perceptions and social anxiety while seeking to understand better what factors may contribute to their development. These steps form a logical beginning. With this increased understanding, it may be possible to manipulate the development of meta-perceptions and experimentally confirm their role in social anxiety.

Research on meta-perception in social anxiety can be organised into three separate areas with varying levels of advancement. The first group of studies establishes that socially anxious people actually do report more negative meta-perceptions than normal controls. This is followed by a review of research testing the role of self-focused and selective attention in the development and maintenance of these meta-perceptions. Finally, a brief survey of preliminary research on intervening in social phobia at a meta-perceptive level will be provided.

Reports of Negative Meta-perception

As theory suggests, socially anxious people do report a much higher occurrence of negative meta-perceptions than those without social anxiety (Leary et al., 1988; Lundh & Öst, 1996a; Pozo, Carver, Wellens & Scheier, 1991; Smith & Sarason, 1975). Clear evidence of these negative meta-perceptive expectancies comes from a study by Leary, Kowalski and Campbell (1988). Those researchers had student participants engage in imaginal interactions with a professor, a fellow passenger on an airplane trip, and an acquaintance of a friend. The length of the interaction was varied in duration from a brief glance to a fairly long conversation. These individuals were then asked to indicate how they thought the interaction partners would evaluate them. Those high in social anxiety rated the expected impression they made as less favourable than those low in social anxiety. Furthermore, this difference occurred regardless of the length of the interaction.

Pozo and colleagues (1991) reported similar results. In this study, subjects were led to believe that they were responding to questions from a person through a live television feed. In reality, however, the person on the other end of the interview had been previously videotaped and the nature of their non-verbal feedback was controlled for. Socially anxious people rated their interviewer as consistently less approving than normal controls regardless of the valence of facial expression portrayed by the interviewer. These studies support the suggestion of a consistent difference in the way socially anxious people view the impressions they are making on others. It is less clear, however, exactly how this meta-perception is created.

Contributing Factors

Both Clark and Wells (1995) and Rapee and Heimberg (1997) suggest that attentional processes play a key role in the development of negative meta-perceptions. As a result, most of the research on cognitive constructs in social phobia has been directed at the related construct of self-focused and selective attention. In theory, negative meta-perception is maintained by self-focused attention on negative aspects of the self and a corresponding selective attention to negative cues in the environment. Clark and Wells (1995) suggested that socially anxious individuals are so internally focused that they do not have the attentional resources to accurately assess their external environment. Furthermore, any information that is taken in from the environment is filtered through a schema so that negative information is selectively attended to at the expense of positive information. This viewpoint suggests that socially anxious people are inaccurate in their perception of negative judgements from others and may see criticism where none exists. Research on selective attention and self-focused attention is mixed but largely supportive of this theory (Heinrichs & Hofmann, 2001).

Self-focused attention in social phobia. Self-focused attention has been defined as an internal locus of thought or material (Woody & Rodriguez, 2000). Thus, a state of self-focus may be described as being absorbed in thoughts about the self. The nature of this trait is the subject of some controversy. Ingram (1990) has argued that chronic self-focused attention is pathological or at least involved in the maintenance of psychopathology across a wide range of disorders. Others suggest that introspection and self-reflection can be very healthy processes (Trapnell & Campbell, 1999). It is only when self-focus is combined with risk factors that it may become a problem. In the case

of social anxiety, for instance, pathology is thought to require the presence of self-focused attention and an already negative self-concept.

Socially anxious individuals report spending more time focusing on themselves than non-anxious peers and recall less information about their partner after social situations (Hope, Heimberg & Klein, 1990; Melchior & Cheek, 1990). This lack of attentional flexibility and control provides the socially anxious person with less information from their environment with which to form an accurate meta-perception and supports the theory that negative meta-perceptions may be created primarily from internal data. Since they do not notice concrete social reactions from others, these individuals may be forced to use their negative self-perceptions to form their meta-perceptions.

One of the most clinically promising outcomes of research on self-focused attention, however, is the discovery that it may be amenable to conscious manipulation. Woody and colleagues (Woody, 1996; Woody, Chambless & Glass, 1997; Woody & Rodriguez, 2000) have performed a series of studies examining the implications of self-focused attention in the development and experience of social phobia. Woody, Chambless and Glass (1997) followed socially anxious people through a ten session group treatment program to assess correlates of change in situational self-focus. Self-focused attention was significantly related to social anxiety, with increased self-focus predicting more experiential and visible anxiety symptoms. Highly self-focused subjects were also more likely to be rated as poor social partners, show anxiety in social interactions and to engage in self-critical thinking. Interestingly, as treatment progressed, reductions in self-focused attention ratings over the ten weeks were related

to corresponding improvements in these variables but not to changes in externalised attention. Externalised attention ratings remained stable in spite of both clinical judgements of improvement and decreased self-focused attention scores. There are several possibilities that may explain these findings. One possibility is that self-focused and externally focused attention may operate independently. Thus, a change in one area of focus does not necessarily imply a change in the other. In the event that areas of attentional focus are connected, it may also be possible that negatively self-focused attention in particular has become so ingrained and automatic in people with social phobia that it no longer draws heavily on attentional resources. It follows from this that changes in self-focus may not show corresponding changes in external attention because they were not requiring that much effort previously. Finally, since other studies have suggested that manipulating the direction of attention can influence anxiety, these findings may also be a by-product of the relative crudeness and inaccuracy of measures designed to capture change in self-focused and externally-focused attention.

Woody (1996) manipulated focus of attention during a speech task for individuals with social phobia. Participants were required to be either the active speaker or the passive bystander in a speech presented in front of an audience of four therapists. Self-focused attention was manipulated by having half of the speakers talk about their own anxious experience and the other half speak about the anxiety of their passive partner. Thus, in addition to passive and active groups, subjects were also divided into a self- and other-focused group. Results indicate that increasing self-focused attention increased self-reported anticipatory anxiety and externally rated anxious appearance independent of the action group they were in. Contrary to expectation, however, self-



reported anxiety ratings collected during the task showed no differences between self-focused individuals and their other-focused counterparts. It did not matter whether a person was making the speech or just standing there. Thus, while both groups of subjects experienced anxiety, focussing on the self was more predictive of anticipatory anxiety and performance deficits than focusing on someone else. Interestingly, when this study was replicated with a matched sample of normal controls, the same results were found to apply to both groups (Woody & Rodriguez, 2000).

The application of these studies to meta-perception is still somewhat tenuous as the connection between self-focus and meta-perception remains primarily theoretical. Woody and her colleagues (1996, 1997, 2000) did not ask any questions relating specifically to meta-perception. Nevertheless, these findings suggest some intriguing possibilities. If meta-perception is correlated with self-focused attention, it may be possible to manipulate the way people interpret social feedback in their environment by changing their attentional focus to the external environment. Confirmation of this would allow researchers to examine directly the way that meta-perception maintains social anxiety. Simply shifting attention from the self to the environment may not be the perfect solution, however. Even if the person is not self-focused there is evidence that socially anxious people are highly biased in their observation of the world around them.

Selective attention in social phobia. Several empirical methods have provided support for the hypothesis that people with social phobia allocate sizeable attentional resources to the detection of negative evaluative threat. Both modified stroop and dot-probe designs have demonstrated that socially anxious individuals experience more processing interference in response to socially threatening words than to neutral words

(Asmundson & Stein, 1994; Hope, Rapee, Heimberg & Dombeck, 1990). Mattia, Heimberg, and Hope (1993), for example, compared the modified stroop results of socially phobic individuals with those of community volunteers. Participants were presented with variously coloured words displayed on a computer screen for 500 milliseconds. These words were chosen to be either socially threatening (e.g. stupid), physically threatening (e.g. heart attack), or neutral (e.g. table). Participants were then asked to ignore the meaning of the word and name the colour in which the word is printed as rapidly and accurately as possible. People with social phobia demonstrated greater response latencies to all of the words and additional interference in colour-naming social threat words than their neutral counterparts. While stroop effects can be produced by several factors, these results are usually interpreted to suggest that attentional resources of people with social phobia are more strongly attracted by negative evaluation information.

Similar implications are also drawn from studies of facial recognition. Lundh and Öst (1996b) used a memory for faces task to determine whether socially anxious people differed in their processing of positive and negative facial expressions. Both anxious and non-anxious individuals rated photographs of 20 people on whether they were critical or accepting. Five minutes later they were then presented with a larger sample of pictures which included the original 20 and asked to identify the people they had seen previously. Socially anxious people recognised more of the critical than the accepting faces. Comparatively, the normal control group recognised more of the accepting faces. This finding supports the suggestion that socially phobic individuals

are paying more attention to potential threat in their environment and not actively encoding more positive stimuli.

Interestingly, however, although socially anxious people seem highly motivated to spot these cues quickly and remember them, they also seem motivated to avoid them once they are identified. At least two studies have suggested that although socially anxious people quickly identify threat in their environment they try to avoid attending to it (Mansell, Clark Ehlers & Chen, 1999; Yuen, as cited in Clark & Wells, 1995). For example, Mansell and colleagues (1999) used a dot probe paradigm to test the reactions of anxious people to positive and negative facial expressions. Participants were presented with paired images on a computer screen, one above the other. One image was a household object and the other was a face with either a positive, negative or neutral expression. Images were presented for one second and followed by the presentation of a dot in either the upper or lower half of the screen. Furthermore, these trials were administered under conditions of social evaluative threat or no threat. Socially anxious individuals who believed they were being rated on their performance were slower at locating the dot when it appeared in the place of the expressive faces (both positive and negative) than when it appeared in place of the neutral expression. There was no difference for low social anxiety subjects or anxious subjects in the non-evaluative condition.

When the results of the above three studies are considered together it is apparent that socially anxious people are able to recognise and identify socially threatening aspects of their environment quickly. Furthermore, despite attempts to avoid them, memories of these threat cues remain with the individual. This selective processing and

memory may serve to skew the interpretation of any social situation providing the merest hint of negative feedback. Negative feedback may not even be necessary, however.

Winton, Clark and Edelman (1995) compared socially anxious people and non-anxious controls on their abilities to identify negative facial expressions quickly. In comparing slides of faces presented for 60 milliseconds, socially anxious people were more accurate at identifying negative facial expressions than their normal counterparts. These results are misleading, though. Subsequent analysis demonstrated that socially anxious individuals were more likely to rate all facial expressions as negative and that their increased accuracy on negative expressions occurred only as an artefact of this bias. Winton et al. (1995) suggest that socially anxious people are actually doing more than merely remembering their environment selectively. Rather, they argue that social phobic people actively re-interpret ambiguous stimuli as negative. Similar findings have also been reported about ambiguous textual scenarios (Amin, Foa & Coles, 1998). Thus, not only do socially anxious people selectively attend to negative stimuli, but they are more likely to interpret something negatively than others are.

It is possible that, even in the absence of intentionally negative feedback, socially anxious people can still interpret others as responding negatively to them. This possibility leads to Rapee and Heimberg's (1997) suggestion that these individuals may be judging themselves based on a much higher standard of social norms. This higher standard increases the chances of a negative comparison with their selectively interpreted social performance and serves to maintain the negative meta-perception and the subsequent experience of anxiety.

Our perception of what other people think of us appears to be impacted directly by the accuracy and completeness of our perception. According to the data provided by Winton et al. (1995) and Amin et al. (1998), socially phobic individuals do not accurately perceive the social feedback of others and are likely incorrect in their conviction that they are not liked. Not all research supports this interpretation, however.

An alternative hypothesis. Although the dominant theory of social anxiety suggests that the meta-perceptions of anxious people are inaccurate, there is an alternative hypothesis. Congruent with the “looking glass self” model of meta-perception (Cooley, 1902), it is also possible that socially anxious people are not misconstruing feedback from their environment. In fact, factors associated with social anxiety may actually pre-dispose other to dislike them. There is evidence that socially anxious individuals do respond differently to positive and negative feedback. This operates contrary to the suggestion that socially anxious people are incapable of reading their environment. In a previously described study, Pozo et al (1991) varied the expressions of a social partner and tested to see if there were differences in meta-perception afterwards. Participants were led to believe that they were responding to questions from a person through an interactive television hook-up. In reality the experimental partner was previously videotaped. This person’s facial expressions were varied to convey neutral, positive and negative impressions of the subject’s answers. Although socially anxious participants’ meta-perceptions were still more negative than those of normal controls, they were able to differentiate between all three types of feedback provided. Thus, not only did participants rate themselves as more positively received in the positive condition, but they were able to separate neutral feedback from

negative feedback as well. This finding calls into the question suggestions that all of the social phobic person's meta-perceptions are unrealistic. In fact, they might be accurately interpreting their environment.

It is possible that poor social skills and lack of comfort in social situations may actually predispose others to react badly. Clark and Wells (1995) point out that many of the avoidance behaviours that socially anxious people use may be construed by others as antisocial. Failure to meet eye contact, aloofness, and a mental preoccupation with internal thoughts may make the anxious person appear less warm and likeable. At the same time, more overtly anxious symptoms such as sweating and shaking and an unsteady voice may cause people to react negatively.

There is mixed support regarding the suggestion that individuals with social anxiety are actually less skilled in social situations and have particular difficulty gauging the non-verbal aspects of social behaviour. On the one hand, a few studies have found that external viewers and social partners rate socially anxious people as more awkward in social situations (Alden & Wallace, 1995; Schroeder, 1995; Stopa & Clark, 1993). This is consistent with Eysenck's (1979) findings that performance on complex cognitive tasks decreases when individuals are very anxious. However, several other studies have found that, although socially anxious people rate their own social skills below that of others, impartial observers see do not report observing any social skill deficits (Beidel, Turner, & Dancu, 1985; Rapee & Lim, 1992; Woody, 1996). Thus, while not all socially anxious people may have social skill deficits, it is possible that in some cases the negative meta-perceptions of anxious people are accurate (Rapee & Heimberg, 1997). In these instances, people may actually not like the person because

they are more difficult to interact with. Integrating the evidence provides a third and possibly more likely scenario. Others may not like socially anxious people as much as non-socially anxious people, but socially anxious people grossly overestimate this level of dislike.

### Interventions Aimed at Meta-Perception

As mentioned earlier, the ability to manipulate attentional focus offers some possibility of being able to target the development meta-perceptions directly for therapy. In theory, the purposeful redirection of attention towards the careful interpretation of cues in the environment should help offset the influential biases of self-focused attention and selective attention. This would only be an effective intervention, though, if the meta-perceptions that socially anxious people hold are inaccurate. Otherwise, external attention alone without some skills training or other intervention would only serve to confirm the person's worst fears.

Rapee and Hayman (1996), Harvey, Clark, Ehlers and Rapee (2000), and Rodebaugh and Chambless (2002) tested the hypothesis that socially anxious people would be able to modify negative beliefs about how they came across when presented with objective external feedback. All of these studies found that socially anxious individuals were able to reconfigure their meta-perceptions of a social event in a more positive direction after watching a videotape of their performance. Moreover, instructions to view the tape as if watching a stranger resulted in marked improvements over watching the videotape without any preparation (Harvey et al., 2000). Thus, it may be possible to manipulate the meta-perceptions of socially anxious people for a specific instance. It remains to be demonstrated that these meta-perceptual shifts will carry over

into situations without videotape or even to the next situation, but it is logical to assume that learning may occur over time.

The other possible intervention approach currently being explored is similar in theory, but different in application. Wells and Papageorgiou (1998) tested to see if the forced externalising of attention would help socially anxious individuals overcome their anxiety during an exposure task. Socially anxious participants were presented with two rationales for exposure therapy. One rationale emphasised the importance of staying in the situation in spite of anxiety. The other emphasised the tendency of socially anxious people to pay attention to herself or himself and encouraged them to counter this purposely by attending to their environment. Each person was then briefly exposed to a feared situation for five-minutes. Anxiety and perspective ratings were then collected along with overall effectiveness ratings. Although both groups improved, the externally focused group reported significantly less anxiety in the exposure scenario and rated the overall effectiveness of that rationale as higher than exposure alone.

Wells and Papageorgiou's (1998) study is theoretically linked to meta-perception but it did not test for changes in the construct. Therefore, it is impossible to make any concrete claims in that regard. Nevertheless, changes in meta-perception do provide a plausible explanation for increased treatment effectiveness and the reduction of anxiety in this instance. Moreover, if externalising attention did result in changes in meta-perception, then this data would confirm the interrelationship between meta-perception and social anxiety. Unfortunately, that question was not asked and future research is needed to verify the relationship empirically.



The results of Rapee and Hayman (1996) and Wells and Papageorgiou (1998) suggest that it may be possible to influence or reduce the impact of negative meta-perceptions held by socially anxious people by shifting their attention. Moreover, although the connection is tenuous, changes in these meta-perceptions may be associated with reductions in anxiety (Wells & Papageorgiou, 1998). This supports the theoretical role of meta-perception as a significant contributor to the experience and maintenance of social anxiety. This work is still very preliminary, however, and requires confirmation about the accuracy of meta-perception in social anxiety.

One of the unique characteristics about social anxiety is the necessity of a second party, or at least the anticipation of a second party, in order for the experience of anxiety to occur. This presents an opportunity untapped by many psychopathology researchers. A weakness of much previous research in this area is that the second party is often largely ignored as a source of primary information. Instead, reports are gathered from the anxious person themselves, and the nature of the relationship or interaction is extrapolated from those reports. This methodology makes it impossible to test the validity of meta-perceptions for those individuals. In this respect, the methods of social psychology may be helpful and provide insight into this missing dimension.

#### Assessing Meta-perception in Social Interaction

##### The Social Relations Model

The comprehensive study of interpersonal accuracy in social situations requires both a social interaction and a method of assessing the beliefs of both parties in that interaction. One of the difficulties with this is that the data taken from any social interaction are not independent. Both perceivers are creating responses based on the

same set of experiences. Proper analysis of this data has traditionally been quite difficult due to the complexity of mathematics involved (Gage & Cronbach, 1955). Prior to the computer era, appropriate analyses were frequently thought to be unworkable due to the level of difficulty and time associated with them (Kenny, 1994).

To overcome these obstacles, Kenny (1994) has devised a methodology and statistical analyses package specifically aimed at testing relationships in interpersonal perceptions. The social relations model is designed to study the interpersonal dynamics at work between individuals in a social dyad or group interaction. The methodology has several variations, but one of the most frequently used formats is called a round-robin. This is a group design in which each member of a group interacts with and provides data about every other group member. Thus, measurement occurs at the level of the social dyad rather than at the individual level. The number of dyads increases exponentially with the number of participants in a given group. This can be expressed by the formula  $x = (y-1)(y/2)$  where  $x$  = the number of dyads and  $y$  = the number of group members. Thus, a group of four people has six dyads where a group of ten people has forty-five dyads. The minimum number of people possible for an SRM analysis is four people.

Group members can be posed questions in three frames of reference. First, they may be asked to respond to items in regards to themselves. These are self-ratings. The items can also be re-presented with reference to each of the other group members. These ratings are termed other-ratings. Finally, participants can be asked to extrapolate a guess at how each of the other group members rated them. These are meta-perception ratings. Thus, for every item there may actually be three individual types of ratings: self-, other-, and meta-. The self-rating is only collected once for each item while the

other- and meta-ratings are completed with reference to each of the other group members.

A social relations analysis partitions the variance in other- and meta-ratings into three components. The generic terms for these components are actor, partner, and relationship. More specific terminology can be applied depending upon the type of data that is being analysed, however. In non-verbal communication, actor might be referred to as receiver and partner as sender. Likewise, in social perception data, actor might be more appropriately called perceiver and partner might be called target (Kenny, 1994). Since this study is concerned exclusively with social perceptions, the primary terms used will be perceiver, target, and relationship.

The meanings of perceiver, target and relationship variance differ depending on which rating is being analyzed (see Table 1; Shechtman & Kenny, 1994). For instance, the *perceiver* variance (sometimes called a perceiver effect) in other-perceptions refers to a person's tendency to rate others in specific way. It represents a person's average level of a given behaviour (e.g., criticism) in the presence of a variety of partners. *Target* variance (target effect) refers to a person's tendency to be rated in a specific way by others. Therefore, it represents the average level of a response that a person elicits from a variety of partners. Finally, the *relationship* variance (relationship effect) refers to the tendency of a rater to view a partner in a unique fashion. In other words, it represents a person's behaviour toward another individual in particular, above and beyond their perceiver and target effects.

Meta-perception variance is partitioned into the same three sources but their definitions are different: In this case, perceiver effect refers to the tendency for a person

to think that he or she is viewed the same way by others, target effect refers to the tendency for other people to believe that a person makes particular judgments about them, and relationship effect refers to the unique way that a person thinks that he or she is viewed by others. This can perhaps be best illustrated with an example provided by Kenny and DePaulo (1993):

Jack and Jill interact. Jill forms an impression of Jack, and Jack then attempts to infer Jill's impression of him. According to the SRM, Jill's impression of Jack (which is an other-perception of him, not a meta-perception) is a function of the following three components: (a) perceiver—how Jill views people in general; (b) target—how Jack is generally viewed by others; and (c) relationship—how Jill uniquely views Jack. The meta-perception of how Jack thinks that Jill views him can be correspondingly decomposed as follows: (d) perceiver—how Jack thinks others see him; (e) target—how others think that Jill views people; and (f) relationship—how Jack thinks Jill uniquely views him. (p.147)

Thus, variance in both other-perception and meta-perception ratings are partitioned into separate parts attributable to perceiver, target, and the relationship (see Table 1).

Table 1

Defining Components of the SRM Model for Other- and Meta-Perceptions.

Component	Other-Perceptions	Meta-Perceptions
Perceiver Effect	The extent to which a person sees other people as high or low on a trait.	The extent to which a person thinks that other people view him or her as high or low on a trait.
Target Effect	The extent to which a person is seen by other people as high or low on a trait.	The extent to which a person is seen by other people as perceiving others as high or low on a trait.
Relationship Effect	The degree to which a given person sees a given other as high or low on a trait (with perceiver and target effects controlled)	The degree to which a person thinks that he or she is seen especially favourably or unfavourably by another person.

Note. Information presented here is adapted from Kenny (1994).

The advantage to Social Relations modelling is that it allows researchers to analyze what factors may influence interpersonal perceptions. Thus, if researchers are looking at how much people like each other, they can not only look at ratings, but whether those ratings differ in perceiver, target, and relationship variance. Perceiver variance in other-perception would assess if people saw others as similar in terms of likeability, target variance in other-perception would assess whether people agree with each other in their ratings of liking for specific targets (i.e. how popular is the person), and relationship variance would assess the degree to which perceptions of liking are unique to that relationship.

As described earlier, Kenny & Albright (1987) have identified four different types of accuracy within the framework of the social relations model. Two of these are particularly interesting in the study of meta-perceptive accuracy (Kenny, 1994).

Generalized meta-perceptive accuracy describes people's ability to understand how others generally regard them without reference to any one individual's opinion. Thus, generalized meta-perceptive accuracy is the relationship or correlation between the target effect in other-perception (criterion) and the perceiver effect of the meta-perception (judgement). In the Jack and Jill example above, this would be expressed as the correlation between components b and d. One important statistical consideration for generalized meta-accuracy is consensus or agreement among raters on a given target. Too much variability in the ratings of others means there is no stable criterion with which to compare the meta-perceptions of the individual. It can be difficult or impossible to determine generalized meta-accuracy in this context.

Dyadic meta-accuracy describes people's ability to know how they are regarded by specific other individuals. An accurate dyadic meta-perception, therefore, would allow a person to say which individual in particular regards them in a positive or negative light. This is the correlation between the relationship effect of both variables or the correlation between components c and f in the Jack and Jill example. Successful interpretation of relationship variance, however, requires ratings to be collected at two different periods or with two separate measures of each construct. Without these requirements, all relationship variance is confounded with error.

The present study does not address dyadic accuracy. Many socially anxious individuals report anecdotally that social situations involving unacquainted persons are

most threatening. Since unacquainted individuals have only minimal time to form a relationship, any specific relationship effects would be minimal. Therefore, only the generalized meta-accuracy is of interest. Any potential relationship variance will be held constant by ensuring zero acquaintanceship between all group members.

#### Meta-perception Accuracy Research

As mentioned previously, meta-perception can be divided into two separate categories: generalized meta-perception and dyadic meta-perception. In a review of several studies examining the accuracy of these categories, Kenny and DePaulo (1993) and Kenny (1994) found that accuracy for meta-perception interacted with type of perception (i.e. generalized vs. dyadic), level of acquaintance, and the nature of the perception task in question. They concluded that the accuracy of generalized meta-perception is higher than that associated with dyadic meta-perception. Thus, people are better at judging how they are perceived in general, than in predicting the perceptions of a specific individual around them (Kenny, 1994). This relationship shifts slightly depending on the level of acquaintance in the group and the type of perception being done. With increased acquaintanceship, the accuracy of dyadic meta-perceptions for affective judgements such as liking appears to improve, though not to the same level as generalized meta-perception. This difference does not seem to occur in ratings of trait judgements, however, as the level of dyadic accuracy remains stable across levels of previous acquaintance.

Fluctuations in accuracy are not necessarily reflected in the certainty with which beliefs are held. An individual may be just as certain of their meta-perceptions regarding how one person views them as they are about their self-perceptions. Thus,

although people may believe their actions or thoughts are easily read or transparent, this may not always be the case (Albright & Malloy, 1999; Vorauer & Ross, 1999).

Individuals frequently believe their thoughts, beliefs and feelings are easily read by those around them when, in fact, they are not.

### Social Anxiety Research with the SRM

There have been six studies that have used the SRM to look at social anxiety. DePaulo, Kenny, Hoover, Webb, and Oliver (1987) used a subscale of Self-Monitoring Scale (Briggs, Cheek & Buss, 1980) to measure social anxiety as a correlate of interpersonal ratings of liking and competence in a sample of 42 unacquainted undergraduate females. Each participant interacted with three others to form a total of nine separate dyads for each set of 6 persons. They found that participants who scored higher in social anxiety believed that they were less well liked by others and seen as less competent.

Malloy and Janowski (1992) studied 68 undergraduates in groups of six to eight people. Although primarily focused on perceptions and meta-perceptions of leadership potential, they included a self-consciousness scale (Fenigstein, Scheier, & Buss, 1973) as a measure of social anxiety. Their findings suggest that not only do people high in social anxiety see themselves as less able to lead, but that others perceive them that way as well.

Reno and Kenny (1992) studied the effects of self-consciousness and social anxiety on self-disclosure among unacquainted individuals. They related self-reports and others' reports of self-disclosure to sub-scales on the self-consciousness scale (private self-consciousness; public self-consciousness; social anxiety). Subjects



consisted of 102 college females in 20 groups of 4-6 people in a round robin design. Participant's self-reports of disclosure and their levels of private self-consciousness were correlated positively. External observer's reports of disclosure, however, were not correlated with private self-consciousness. High socially anxious subjects were perceived by others, but not themselves, as having been less open and less willing to convey personal information. This data demonstrates the influence of self-consciousness and social anxiety on the acquaintanceship process and underscores the importance of further research in the area.

In reviewing the research of DePaulo et al (1987), Malloy and Janowski (1992) and Reno and Kenny (1992), Kenny (1994) concluded that SRM results indicate that not only do socially anxious people fear making a negative impression on others, but they also appear to make that negative impression. They are seen as less open or approachable (Reno & Kenny, 1992) and less able to handle positions of authority or leadership (Malloy & Janowski, 1992). Although this data was not collected in a clinical sample, it does provide additional support for an alternative hypothesis to the pre-supposed inaccuracy of meta-perceptions suggested by Clark and Wells (1995) and Rapee and Heimberg (1997). Socially anxious people's meta-perceptions may be as accurate as those of other people.

Marcus and Wilson (1996) used the social relations model to examine 128 female undergraduates on four basic questions in the interpersonal perception of social anxiety. Participants were assigned to groups of four participants and asked to perform either an anxiety-provoking or mundane task. They then rated how anxious they felt and how anxious the other members of the group appeared to be. This data was then used to

assess four SRM concepts: consensus, assimilation, self-other agreement and assumed similarity. Consensus was defined as the agreement among observers in their judgements of how anxious a partner appeared. In order for consensus to be attained, people needed to agree on how anxious others were in the group to the extent that this level of agreement could be used to differentiate between group members. Assimilation referred to the degree to which judgements of anxiety were dependent on who was doing the rating. Self-other agreement was the correlation between self-reports and observer ratings and assumed similarity addressed the question of whether anxious individuals also saw others as anxious. Results suggested both consensus and assimilation for perceptions of anxiety across conditions. Thus, while people tended to agree on who the most anxious person in the group was, ratings also varied as a function of who was doing the rating. Self-other agreement for judgements of state anxiety occurred only in the anxiety provoking condition. Furthermore, both individuals who performed the anxiety provoking task and the mundane task rated themselves as more anxious than they saw others to be. Interestingly, assumed similarity was not significant. Thus, more anxious people were not more likely to assume that others were more anxious as well.

Marcus and Wilson's (1996) finding of stable consensus on anxiety ratings is important to the study of meta-perceptive accuracy in anxiety. This is because consensus is a necessary logical and mathematical condition for the occurrence of generalized meta-accuracy (Albright & Malloy, 1999). To assess the accuracy of one's estimation of others' consensual judgement of oneself, those others must first show some degree of consensus in their judgments. Without this requirement the meta-perceiver would have nothing stable to predict.

Albright and Malloy (1999), in a study similar to Rapee and Hayman (1996), did a series of studies using undergraduates divided into small groups of 3-6 people and given a discussion task. Group members then rated each others' social anxiety. Each group of participants was then randomly assigned to an experimental condition in which they viewed a video tape of their own group's interaction or a control condition in which they viewed a videotape of another group's discussion of the same topic. Subsequent to viewing the videotape, each person was asked to rate how each member of the group judged them. Similar, to Rapee and Hayman's (1996) results, individuals in groups that watched their own behaviour on video-tape were more accurate at perceiving how they were viewed by others, than individuals who did not see themselves on tape. Albright and Malloy's (1999) findings confirmed that self-observation increases the accuracy of meta-perception. Despite using social anxiety as the meta-perceptive trait of measure, however, this research did not look for any differences in meta-perceptive accuracy as a function of that trait. Thus, while videotaped feedback improved the participants' ability to judge how anxious other people perceived them, no statements can be made about how the meta-perceptions of socially anxious people may differ from those of non-anxious individuals. Furthermore, while advocating for the use of videotape in social skills training, the authors provide no evidence for the generalisation of perspective outside the immediate situation.

The most recent study to look at meta-perceptive accuracy in social anxiety is Christensen, Stein and Means-Christensen (2003). This is also the first published study to look specifically at meta-perception in social anxiety using the social relations model. Christensen et al. (2003) used a university sample to create groups consisting of two

socially anxious individuals and two non-socially anxious individuals. Following a five minute “get to know you” session, these individuals were then asked to provide self-, other- and meta-ratings on personality traits such as sociable, likeable, dependable, disagreeable, and distant. In addition to these ratings, participants also completed self-report measures of social anxiety, depression and overall life impairment. Consistent with Kenny’s (1994) previous conclusions, Christensen et al. (2003) reported that perception was influenced mostly by the person making the rating. People with greater social anxiety reported consistently greater levels of negative self- and meta-perceptions than non-socially anxious participants. They were also more likely to rate others as less likeable, dependable and intelligent. Social anxious people did not differ from others in how they rated the sociability of their interaction partners, however. Christensen et al. (2003) also used mediational models to conclude that negative self-perceptions were more influential than the other-perceptions of social partners in the development of meta-perceptions.

As can be seen from these examples, the social relations model may be especially useful in social anxiety research because it allows for the assessment of opinions in an actual social situation and the ability to check the veracity of these opinions against the opinions of others in the situation. Moreover, this methodology permits data to be collected within the context of a naturally occurring group, and it offers a degree of ecological validity that may be lacking in more experimental and manipulative designs. The interactive and social nature of the methodology provides a valuable opportunity to examine interpersonal anxiety behaviour in-vivo.

## Summary and Critique

Cognitive models of social phobia have hypothesised that negative meta-perceptions play a significant role in the development and maintenance of social anxiety. These theories suggest that anxious individuals interpret others in their environment as being very critical of them. These beliefs, in turn, encourage additional distortions in cognition and maladaptive behaviours that serve to augment and perpetuate the anxiety. While research into the role of meta-perception in social phobia has not yet addressed the validity of this hypothesis, current knowledge suggests the utility of such an endeavour.

Research into meta-perception in social anxiety is still in its early stages. The results of this research to date support the presence of a relationship between social anxiety and meta-perception. The exact nature of this relationship is still only tenuously understood, however. There are at least two significant gaps in the literature which hinder a greater understanding of meta-perception. The first problem is that there is no clearly identified mechanism that contributes to the development of negative meta-perceptions. Data suggests that there are two possible contributors to socially anxious negative meta-perceptions. Individuals may be highly biased in their interpretation of others' views due to either increased levels of self-focus, selective attention to signs of social threat in their environment or a combination of these factors. This interpretation presupposes that the meta-perceptions are inaccurate. Conversely, social anxiety may be associated with social skill deficits that actually create negative impressions in others. In this conceptualisation the negative meta-perceptions of socially anxious people would be accurate. Furthermore, the fact that neither of these possibilities has been

demonstrated conclusively leads to two other options. It is conceivable that socially anxious people really do create poorer impressions but that the magnitude of this problem is not as great as the person believes. Alternatively, as Kenny (1994) suggests, the question of meta-perceptive accuracy is spurious since meta-perception is more closely related to self-perception than the actual perceptions that other's hold.

Comprehension of this process is essential to furthering our understanding of social anxiety and how to treat it. For example, the presence of inaccurate beliefs would suggest that negative self-beliefs and maladaptive cognitions are especially important to understanding socially anxious people. On the other hand, if socially anxious people's beliefs are accurate, then lack of knowledge about social skills may be the more salient issue.

The other gap in the research is more of a theoretical one. Kenny and DePaulo (1993) have demonstrated that there is a relationship between the way individuals view themselves and the way they believe others perceive them. Likewise, the empirical relation between social anxiety and both self-focused attention and negative meta-perceptions has been well established (e.g. Pozo et al., 1991; Woody & Rodriguez, 2000). It follows from this that an increased focus of attention on the self would make the self-view even more salient, thus compounding its influence on meta-perception. This would even help to explain how intentionally shifting attentional perspectives could help increase the effectiveness of intervention and influence negative meta-perceptions in a positive direction (Wells & Papageorgiou, 1998). Nevertheless, a statistical link between the constructs of self-focus and meta-perception has not yet been determined. This link is essential to help solidify the connection between the self-attention research

and the proposed meta-perceptive construct underlying social anxiety. As the review demonstrated, there is a variety of research with implications to our understanding of meta-perception. Our ability to apply that research with any certainty is limited, however, because other parts of the theory have not yet been tested. The end result is that the data on meta-perception remains somewhat incomplete. Hence, our understanding of the role of meta-perceptions in social anxiety is confused and disjointed.

Our failure to understand the exact nature of self-perceptions and meta-perception in social anxiety is, in part, the result of a methodological dilemma. Most of the studies examining meta-perception in social anxiety have been focused on self-report studies to establish the presence of these beliefs. The problem with this is that only the beliefs of the anxious individual are usually measured. No effort is made to assess the beliefs of the social partner. For this reason, it has been exceedingly difficult to establish the veracity of meta-perceptive beliefs. The few studies that have looked at the accuracy of meta-perception in social anxiety have been analog studies using artificial and manipulative environments on university students. A methodology designed by Kenny (1994) called the social relations model (SRM) provides a potential solution to this problem. The SRM can be used to study natural social interactions from the perspective of both actors in a dyad. Dividing the variance in different types of ratings (i.e. other- vs. meta-ratings) allows several different types of questions to be asked. Of particular interest to this study is the SRM's ability to assess the relationship between meta-perceptions and other components of interpersonal perception. This facilitates the testing of relationships between meta-perception and self-perception and allows the

determination of how accurate people's meta-perceptions are by comparing them to the other-perceptions reported by the other members of the group.

### The Study

This study is intended to extend our knowledge about how self-directed attention and negative self-perception relate to the accuracy of interpersonal meta-perception in socially anxious people. It is a comparison of two models. Current research supports Clark and Wells' (1995) and Rapee and Heimberg's (1997) argument that social anxiety is related to self-focused attention and negatively valenced self- and meta-perceptions. This understanding suggests that people with social phobia form their meta-perceptions by extrapolating from their self-perceptions. This model assumes, however, that individuals without social phobia build more accurate meta-perceptions based on environmental feedback. This differs markedly from the understanding of meta-perception that is prevalent in the social psychology literature.

According to Kenny (1994), socially anxious people would not differ from others in their tendency to rely on self-perception as a basis for meta-perception. Thus, any accuracy shown by individuals in meta-perceptions is merely a coincidence based on already existing agreement between self-perception and the opinions of others. While this theory has been supported within a normal population, it has not been tested in a clinical population or directly compared to the cognitive models previously described.

The discrepancy between how cognitive models of social phobia and social psychological models of interpersonal perception conceptualize meta-perception leads to the following questions: 1. How does meta-perception relate to other-perception across the spectrum of social anxiety? 2. How much does focus of attention account for



people's meta-perceptive accuracy? 3. How is focus of attention related to social anxiety? 4. Does the relationship between meta-perceptions and self-perceptions differ across the spectrum of social anxiety? 5. Does focus of attention mediate the relationship between self-perception and meta-perception?

These questions are addressed with regard to perceptions of anxiety and likeability across the spectrum of social anxiety. Both anxious and non-anxious women and men were invited to recall their social impressions after participating in a group social situation. Self-ratings, perceptions of other group members and meta-perceptions of anxiety and likeability were collected using the social relations model (SRM) outlined by Kenny (1994). Trait social anxiety and focus of attention were also measured.

### Hypotheses

Based on the aforementioned literature, several contradictory predictions are possible depending on which theory is used. Scientific principles, however, dictate that all hypotheses must be stated positively and seek to reject a null result. To accommodate this requirement, hypotheses have been drawn from both clinical and social theories in an effort to avoid predicting a null-hypothesis. It is anticipated that meta-perception and meta-perceptive accuracy will relate to social anxiety, focus of attention, and self-perception in the following ways:

#### Social Anxiety and Perception

These hypotheses were designed to verify some of the basic assumptions about social anxiety and self-perception.

Hypothesis 1a. Based on clinical definitions of social phobia, it is anticipated that trait social anxiety will be positively related to self-perceptions of anxiety. Thus, as

self-perceptions of anxiety in the group increase, scores on the social anxiety measures will also increase.

Hypothesis 1b. Since social phobia is thought to be based on a fear of negative evaluation in others, it is believed that trait social anxiety will be negatively related to self-perceptions of likeability. Participants high in social anxiety will be more likely to think negatively of themselves.

Hypothesis 1c. Based on cognitive theories of social anxiety put forth by Clark and Wells (1995) and Rapee and Heimberg (1997), a heightened awareness of one's own anxiety should lead individuals to view others as less anxious. Thus, it is anticipated that trait social anxiety will be positively related to other-perceptions of relaxation.

Hypothesis 1d. Since social anxiety is a fear of social interaction and is thought to be related to the over valuation of others opinions and fears of negative evaluation, it is believed that people with higher levels of trait social anxiety will differ from their peers in other-perceptions of likeability. In other words, people with social anxiety will be more likely to rate social partners as likeable.

Hypothesis 1e. Based on cognitive theories of social phobia and previous findings by Pozo et al. (1991) and Leary et al. (1988), it is expected that trait social anxiety will be negatively related to meta-perceptions of relaxation. Therefore, as social anxiety rises, meta-perceptions for relaxation should decrease and meta-perceptions for anxiety should increase.

Hypothesis 1f. Furthermore, these same findings also lead to the prediction that trait social anxiety will be negatively related to meta-perceptions of likeability.

Increased social anxiety should reduce meta-perceptions for likeability and 'goodness of feeling.'

Hypothesis 1g. The high anxiety reported by socially anxious individuals leads to the prediction that social anxiety will be negatively related to other-perceptions of relaxation in social partners. Thus, people with social phobia will be anxious to the point that others perceive them as such.

Hypothesis 1h. Based on previous research by Pozo et al (1991), it is possible that socially anxious people may be correct in their belief that others are evaluating them negatively. Therefore, it is anticipated that trait social anxiety will be negatively related to other-perceptions of likeability in social partners.

Hypothesis 1i. Cognitive theory and previous research by Hope et al. (1990), Woody (1996, 1997, 2000), and others has highlighted the importance of self-focused attention in social anxiety. As a result, it is predicted that increases in social anxiety will correspond with increases in self-focused attention.

Hypothesis 1j. Based on cognitive models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997), it is believed that increases in social anxiety will reduce externally focused attention.

#### Meta-Perceptive Accuracy

Meta-perceptive accuracy plays a significant role in the cognitive model of social phobia. This set of hypotheses seeks to confirm that accuracy is a useful construct in the study of social anxiety and determine how that accuracy is affected by variables associated with social phobia.

Hypothesis 2a. Based on cognitive models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997), it is predicted that meta-perceptions will be positively related to the other-perceptions of social partners (generalized meta-perceptive accuracy) for most participants. Thus, meta-perceptions will be largely accurate for participants as a whole.

Hypothesis 2b. Based on the theories of Clark and Wells (1995) and Rapee & Heimberg (1997), meta-perceptive accuracy is expected to be negatively related to trait social anxiety. The more anxious a participant is, the less accurate that person's meta-perceptions will be.

Hypothesis 2c. On the basis of cognitive models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997) it is anticipated that meta-perceptive accuracy will be negatively related to self-focused attention. Thus, the more internally oriented a person's attention, the less accurate they will be at determining what kind of impression they are making on others.

Hypothesis 2d. Cognitive models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997) suggest that meta-perceptive accuracy will be positively related to externally focused attention. An external orientation should improve a person's ability to read cues from social partners and create accurate meta-perceptions.

Hypothesis 2e. Based on the cognitive model of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997), meta-perceptive accuracy should be moderated by rumination. Therefore, a tendency towards rumination, or negative introspection, should reduce meta-perceptive accuracy.

Hypothesis 2f. Based on the cognitive model of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997), maladaptive self-consciousness, as a construct related to social anxiety, should reduce meta-perceptive accuracy. Consequently, it is anticipated that meta-perceptive accuracy will be moderated by pathological self-consciousness. As self-consciousness scores increase, meta-perceptive accuracy should be reduced.

#### Meta-Perception's Relationship to Self-Perception

The crux of theoretical disagreement between clinicians interested in social anxiety and social psychologists lies in their different conceptualization of how meta-perceptions are influenced in anxious and non-anxious individuals. The following hypotheses are designed to help determine if socially anxious people differ in how they develop meta-perceptive beliefs.

Hypothesis 3a. On the basis of previous findings by Kenny and DePaulo (1993), it is anticipated that meta-perception will be positively related to self-perception. Increases in meta-perceptions will correspond with increases in self-perception on each variable.

Hypothesis 3b. Based on previous findings reported by Kenny (1994) and Christensen et al. (2003), self-perception is predicted to mediate the relationship between social anxiety and meta-perception. Thus, social anxiety will not influence meta-perception directly. Instead, social anxiety will change self-perceptions. These self-perceptions will then influence meta-perceptions. The direction of these relationships will be consistent with the hypotheses outlined in section one.

Hypothesis 3c. On the basis of cognitive models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997), social anxiety is expected to moderate the relationship between meta-perception and self-perception. That is, the relationship between self-perception and meta-perception will be stronger in individuals with greater social anxiety

Hypothesis 3d. On the basis of Clark & Wells (1995) theory, it is believed that self-focused attention will mediate the relationship between meta-perception and self-perception. Therefore, self-perception will influence the degree to which individuals attend to internal stimuli. This will, in turn, predict meta-perceptive responses.

## Method

### Participants

Participants in this study consisted of 98 people tested in groups of 5 to 8 unacquainted persons. More than half of the participants (56%) were female and they ranged in age from 20 to 75 years ( $M = 41.23$ ,  $SD = 11.95$ ). The sample was fairly well educated. Most participants completed high school (82%) and had at least one year of post-secondary education (69%). These individuals were drawn from clients, therapists, and associated family members connected to the St. Boniface General Hospital Anxiety Disorders Program. More specifically, clinically anxious individuals were recruited from clients participating in treatment groups for social phobia or panic disorder. By contrast, individuals with little or no social anxiety were drawn from therapists who facilitated the program and family members or friends invited to an open session of the therapy groups. The 'clinical group' consisted of 62 clients and facilitators participating in treatment groups for panic disorder and social phobia. Facilitators were permitted to

participate only once. Group involvement required a referral by their primary care physician and the completion of a diagnostic interview with a mental health practitioner prior to entry into treatment. The 'control group' consisted of 36 associated family members and friends of clinical participants. This sampling procedure was designed to recruit individuals that were widely variable in their level of social anxiety

### Questionnaires

SRM Items. Two assumptions made by socially phobic individuals are of particular interest for this study. First, socially phobic individuals are thought to frequently believe that their anxiety is obvious to everyone in the outside world. Second, people with social phobia believe they elicit dislike from those with whom they interact. The presence and accuracy of these assumptions was assessed using items modified from previous research on meta-perception and anxiety (see Appendix A; Pozo et al., 1991). Self-ratings of anxiety were given about how anxious participants were (e.g. "How anxious were you?") based on a seven-point Likert scale ranging from very anxious to not at all anxious. A second item also asked, "How relaxed were you?" ranging from very relaxed to not at all relaxed. While addressing the same construct, these items are counter-valenced in an effort to maintain balance. Furthermore, relaxation is a highly salient and potentially visible correlate that is negatively associated with anxiety. This visibility may be useful in improving the applicability of the item to both the experience of anxiety and the perception of anxiety in others.

Positive self-ratings were assessed with "How good did you feel about yourself?" and "How likeable were you?" These items are important to assess the second assumption, namely that people will respond less positively to socially anxious persons.

While drawn from previous research (Pozo et al, 1991), these items have the additional advantage of face validity.

All of the SRM statements were asked in reference to the individual and then rephrased as an other-rating (e.g. "How anxious was person #1?") and as a meta-rating (e.g. "In your opinion, how anxious did person #1 feel you were?").

The Focus of Attention Questionnaire (FAQ; Woody, Chambless and Glass, 1997). The FAQ was used to assess attentional focus during a specific social situation. This measure consists of two 5-item subscales; a self-focus scale and an external-focus scale (see Appendix B). Note that in this context, internal and external foci of attention are discrete and separately measurable entities rather than a bipolar construct. The self-focus scale (FAQ-S) is designed to assess internally directed attention aimed at anxiety, cognition and memory (e.g., "I was focusing on past social failures"). The external-focus scale (FAQ-E) addresses the client's attention to things in their environment (e.g. "I was focusing on what the other person was saying or doing"). Respondents completed the questionnaire items immediately after completing the social interaction. Items were scored on a 5-point scale ranging from "Not at all" to "Totally," indicating the degree to which an individual's focus of attention matched the sentence description. Both subscales have demonstrated acceptable internal consistency coefficients (FAQ-self = .76; FAQ-external = .72), and a factor analysis demonstrated that all items loaded strongly on the subscale to which they were assigned (Woody, Chambless & Glass, 1997). Furthermore, the scales appear to be independent of each other ( $r = -.07$ ), responsive to experimental manipulation and appropriately correlated to related measures of attention.



The Social Interaction Anxiety Scale (SIAS) and Social Phobia Scale (SPS;

Mattick & Clarke, 1998). Social phobia (trait social anxiety) was assessed with two companion measures. The SIAS and the SPS are similar but reflect the distinction between generalized and non-generalized types of social phobia contained in recent editions of the DSM. The SIAS is a 20-item measure of social interaction anxiety (see Appendix C). Items examine distress around such topics as initiating and maintaining conversations with friends, strangers and potential mates. The 20-item SPS is focused on fears of being scrutinized or placed under evaluation (see Appendix D). Responses gauge anxiety to performance-related situations such as eating in a public restaurant or using public toilets. Ratings on both scales range from 0 (not at all characteristic or true of me) to 4 (extremely characteristic or true of me). Total scores range from 0 to 80 with means for a social phobia population around 32.8 ( $SD = 14.9$ ) on the SPS and 49 ( $SD = 15.6$ ) on the SIAS (Heimberg, Mueller, Holt, Hope & Liebowitz, 1992). By comparison, a community sample averaged 12.5 ( $SD = 11.5$ ) on the SPS and 19.9 ( $SD = 14.2$ ) on the SIAS. Both the SIAS and the SPS have been shown to possess sound psychometric properties with internal consistency scores of .86 to .94 for the SIAS and .87 to .94 for the SPS. These measures are frequently used as an indicator of DSM-IV social phobia (Mattick & Clarke, 1998).

Rumination-Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999). The RRQ is a measure of the trait-like tendency to focus attention on internal aspects of the self. Respondents were asked to rate the personal descriptiveness of a variety of introspective cognitive tendencies along a 5-point Likert scale ranging from strongly disagree to strongly agree. The RRQ is an adaptation of the more traditional Private

Self-Consciousness Scale (Fenigstein, Scheier & Buss, 1975) and distinguishes two motivations for attending to the self. The RRQ-Rumination subscale is composed of 12 items and measures dysfunctional self-attention in response to perceived threats or injustices. The RRQ-Reflection subscale assesses adaptive or healthy self-attentiveness motivated by curiosity. Both subscales have demonstrated adequate levels of internal consistency with Cronbach's alpha estimates exceeding .90 (Trapnell & Campbell, 1999). Other methods of reliability and validity have also proved satisfactory. For the purposes of this study only the rumination subscale was used (see Appendix E).

The Pathological Self-Consciousness Scale (SCONS; Christensen, 1982). The SCONS is a 24-item scale that assesses maladaptive patterns of self-focus (see Appendix F). Respondents rate the degree to which they experience self-consciousness in situations such as answering questions for a phone survey. Ratings were made on a 5-point scale ranging from "not at all self-conscious" to "very self-conscious". The SCONS has demonstrated adequate psychometric properties and has been found to be distinct from, but correlated to, the Self-Consciousness Scale (Christensen, 1982). This measure may prove useful at helping to discriminate more normal self-focused attention from the severe levels found in more disabled populations.

Demographics. The questionnaire package asked for demographic information. Specifically, information about age, sex, initials and education level was requested. Individuals were also asked whether or not they were already acquainted with anyone else in their testing group (see Appendix G).

### Procedure

Data was collected at different times for the clinical and control groups. As a result, slightly different procedures were used in each case.

Clinical Group Procedure. The initial data collection strategy used with this group consisted of a two-stage process. Information on social anxiety and ruminative self-focus was collected as part of the regular package of questionnaires given to new patients when they entered the program. This package included the SIAS, the SPS, the RRQ, and the SCONS. Information was provided voluntarily and individuals provided informed consent for the use of this information in research conducted by the Anxiety Disorders Research Program (see Appendix H).

Prior to their first session, group members were also informed that there would be a research opportunity following the session that would take approximately 30 minutes. Social interactions occurred as a normal part of beginning treatment and were not altered for participants of the study. The first session consisted of a 90 minute facilitated group experience with structured social interaction. Sessions typically consist of an orientation to the group, and a discussion about the experience of coming to group and anxiety that may have caused. The group also discussed the types of situations that were difficult for each participant. Upon completion of the session, the study was introduced (see Appendix I) and uninterested individuals were given the opportunity to leave. Informed consent was obtained specifically including permission to match the data collected in that session with the information previously provided to the program (see Appendix J). Individuals were then asked to complete the FAQ and the SRM items. Each group member was assigned an identification number on a nametag to facilitate

confidentiality. SRM items were matched between perceiver and target using these identification numbers.

All participants were debriefed and provided with a rationale for the study. No other details were provided at that time, however, in order not to bias the client's associates or family members who may have chosen to participate in the control group. Participation in this study took approximately 30-40 minutes.

The Control Group Procedure. In the original proposal, clinical group members were informed of an open session of therapy at week eight and encouraged to invite a significant person or spouse to attend if they wished to. A package containing a cover letter (see Appendix K), a consent form (see Appendix L), and the same self-report questionnaires was provided to invite these individuals to participate in the study. This session was also a 90 minute facilitated group experience and included an orientation component similar to that of the clinical sessions. Unlike, the clinical group, however, this session was more focused on what it was like supporting someone else with anxiety rather than describing one's own personal anxious experiences. Group members were encouraged to share any feelings they might have had related to attending the session. These feelings could cover the full range of emotion and often included anxiety. The post-group data collection was then introduced and run in the same manner as previously described for the clinical groups (see Appendix M). Control group participants answered these questions only in relation to other members of the control group in order to maintain the same zero acquaintanceship level found in the clinical group during the first session.

Procedural Modification. The initial approach to data collection became untenable because many individuals did not return the standard self-report package. As a result, nine groups were lost due to incomplete data. The data collection strategy was re-structured to maximize the amount of useful data collected. In this new approach, participants were introduced to the study and asked to complete the FAQ and SRM items as described in phase two above. Participants then finished the SIAS, the SPS, the RRQ, and the SCONS immediately afterwards. This shift in testing order was deemed to be an acceptable risk due to the nature of the measures being used. The SIAS, the SPS, the RRQ, and the SCONS are all trait measures with established test-retest reliability. Consequently, it was not anticipated that this shift in testing order would precipitate different results in respondents. This was verified by comparing the mean responses on self-report measures from both strategies. No significant difference was found (SPS:  $t(1, 96) = -1.25, p > .05$ ; SIAS:  $t(1, 96) = -.81, p > .05$ ; RRQ rumination:  $t(1, 96) = -1.79, p > .05$ ; SCONS:  $t(1, 91) = -.18, p > .05$ ; FAQ external:  $t(1, 91) = -1.61, p > .05$ ; FAQ self:  $t(1, 91) = -1.01, p > .05$ ).

### Data Analysis

Data analysis was conducted in two phases. In phase one, data from the self-report measures and the round-robin interpersonal judgments were analyzed using software specifically designed for the social relations model (SOREMO; Kenny, 1996). This analysis uses the raw ratings from the round robin procedure to calculate the variance associated with perceiver and target effects for each SRM item. It also computes the basic correlations between these components and the self-report measures. SOREMO was also used in this step to generate effect estimates for each participant.

These estimates were then entered into SPSS along with the original self-report measures and demographic data.

The second stage of analysis incorporated these effect estimates into an SPSS database with the original self-report measures and demographic data to calculate more complex analyses such as mediated and moderated regressions. Mediation and moderation analyses were done in accordance with procedures described by Baron and Kenny (1986).

Mediation. Mediation is a form of causal modeling in which the perceived relationship between two variables is actually the result of their mutual relationship to a third variable. For example, an intervention (I.V.) that is perceived to prevent smoking (D.V.) may actually change social norms (Mediator) and this change in social norms was the mechanism that prevented smoking (see Figure 1). Therefore, the causal relationship between the intervention and smoking is indirect and mediated by their mutual relationship with social norms.

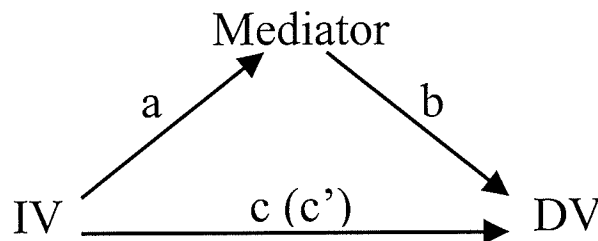


Figure 1. A conceptual model of mediation.

Mediation is tested in three separate regressions with the aim of meeting four criteria. To use the example above, a regression analysis is conducted to confirm the apparent relationship between the intervention and smoking behaviour (path c). This is followed by a regression confirming the relationship between the intervention and

social norms (path a). In the final analysis a multiple regression is done with smoking behaviour regressed on both the intervention and social norms. Provided the first two tests were significant, mediation requires a significant result for social norms in the third regression (path b) along with a significant reduction in the influence of the intervention (path c'). If the intervention's influence has been reduced to zero in the last analysis, then full mediation has occurred. If the intervention is still influential, but significantly less predictive of smoking behaviour than previously established in the first regression equation, then partial mediation has occurred. A Sobel test of z-scores is conducted to do determine if social norms significantly altered the relationship between the intervention and smoking behaviour (Dudley, Benuzillo, Carrico & Mineh, 2004).

Moderation. Moderation, by comparison, occurs when the relationship between two variables depends on the level of a third variable. This is commonly called a statistical interaction. The third variable modifies or moderates the relationship but no causal relationship is assumed. For example, a smoking intervention may be effective for women, but not for men. Thus, sex moderates the relationship between treatment and smoking cessation. There is no causal relationship implied, however. Moderation is tested in a single regression analysis. To use the above example, smoking behaviour (D.V.) is regressed on the intervention (I.V.), sex (I.V.) and a created variable representing the multiplication of sex scores with intervention scores (I.V.). A significant result for this third term confirms the presence of moderation.

Statistical Assumptions. All of the analyses used in this study are based on linear regression. The basic regression model (as well as more complicated ones) is a relatively robust test. Nevertheless, it does have certain underlying assumptions.

Violations of these assumptions have an impact on the optimum utility of the final model, i.e., the extent to which the model and its parameters approach best performance in the task of representing the relationship between the dependent variable and the independent variables. These four main assumptions are: constant error variance (homoscedasticity), normality of residuals, independent residuals, and independence of explanatory variables (multicollinearity; Pedhazur & Schmelkin, 1991). Since the multiplication procedure in moderated regression frequently creates multicollinearity, all variables were centered to help offset this problem. Compliance with assumptions was tested using diagnostic procedures found within SPSS. Data fell within acceptable limits for all assumptions.

Controlling Alpha. Given the number of analyses being pursued in this study, it was necessary to implement a strategy to control for the rising probability of a false positive result. Hypotheses were clustered into three categories and a Bonferroni correction was applied to alpha within each group of analyses. Thus, alpha was modified as follows for each cluster: group one,  $p < .005$ ; group two,  $p < .008$ ; group three,  $p < .012$ . Analyses that failed to meet these criteria were considered unsuccessful at rejecting the null-hypothesis.

## Results

### Descriptive Statistics

As anticipated, the levels of social anxiety varied widely across participants. Social phobia measures varied significantly depending on the group from which participants were recruited ( $F(2, 93) = 138.18, p < .001$ ). Social anxiety group members reported mean SPS scores of 35.97 (SD = 19.79) compared to 34.72 (SD



=18.96) for panic group members and 11.70 ( $SD = 11.77$ ) for family group members.

Likewise, SIAS scores varied from 46.00 ( $SD = 19.69$ ) for social anxiety group members to 39.59 ( $SD = 16.86$ ) for panic group members and 19.72 ( $SD = 14.26$ ) for family group members. Thus, individuals in control groups reported significantly fewer symptoms of social anxiety than members of treatment groups. Within the active treatment groups, there were no significant differences although social phobia groups reported consistently more symptomology. Since no analyses were conducted using group comparisons, however, this was not a problem. Variability in anxiety was treated continuously in order to understand the relations of interest across the spectrum of anxiety. The data collection procedure was successful in sampling individuals with a broad range of social anxiety. Mean SPS scores for participants as a whole were 26.08 ( $SD = 20.22$ ) with a range of 0 to 76. Overall mean scores on the SIAS were 34.41 ( $SD = 19.98$ ) with a range of 2 to 76. Participants did not differ across the spectrum of social anxiety on age, sex, or post secondary education. Fewer years of grade school, however, was associated with social anxiety, with lower education predicting higher scores on both the SIAS ( $r = -.20$ ;  $F(1, 96) = 4.21, p < .05$ ) and the SPS ( $r = -.30$ ;  $F(1, 96) = 9.66, p < .01$ ). Performance on other measures can be seen in Table 2.

Table 2

Descriptive Statistics for Non-SRM Measures.

Descriptive Statistics	Trait Measures					
	SPS	SIAS	FAQ-S	FAQ-E	RRQ	SCONS
Mean	26.08	34.41	2.67	2.52	38.22	71.85
<i>SD</i>	20.22	19.98	0.75	0.62	11.64	23.79
<i>n</i>	98	98	93	93	98	93

Table 3 displays the means and sources of variance for each of the SRM perceptions. All of the means hovered around the scale midpoint of four, which suggests that on average, people were relatively neutral about their feelings towards other group members and themselves. In addition to examining the means, it is important to evaluate the variance estimates for each component of the SRM effects. Insufficient variation (i.e. variance that is not statistically different from zero) suggests that the given effect is unlikely to be correlated with other variables. As a result, any correlations found using effects with non-significant variance should be interpreted cautiously.

The proportion of variance due to perceiver, target and relationship effects was not distributed evenly within perceptions. Consistent with previous research on social perceptions (Christensen et al., 2003; Kenny, 1994), perceiver effects contributed significant variation across most traits. Consequently, perceptions were influenced most by the person making the rating and not by the target of that rating. Where some participants typically viewed others positively, others were more prone to make negative interpersonal ratings. In general, people showed little discrimination between targets.

Table 3

Means and relative proportions of explained variance for perceiver, target, and relationship/error effects in perceptions of SRM items.

SRM Item	Mean	Variance		
		Perceiver	Target	Relationship/Error
<b>Anxious (reversed)</b>				
Self-perception	3.99	-----	-----	-----
Other-perception	4.10	0.21*	0.20*	0.59
Meta-perception	4.41	0.73*	0.01	0.26
<b>Relaxed</b>				
Self-perception	3.89	-----	-----	-----
Other-perception	4.35	0.15	0.25*	0.59
Meta-perception	4.42	0.71*	0.00	0.29
<b>Good</b>				
Self-perception	4.46	-----	-----	-----
Other-perception	5.13	0.51*	0.06	0.43
Meta-perception	4.47	0.53*	0.04	0.43
<b>Likeable</b>				
Self-perception	4.46	-----	-----	-----
Other-perception	5.23	0.50*	0.07	0.43
Meta-perception	4.42	0.58*	0.03	0.39

Note: Asterisks indicate that a significant proportion of the variance is due to associated effect ( $p < .05$ ). Self-perceptions do not have proportional variance because the perceiver and target is the same person. Relationship effects include error variance and the statistical significance can not be estimated. ( $n = 98$ )

The lack of significant target variation, also called consensus, for other ratings of likeability and goodness of feeling has implications for analyses of meta-perceptive accuracy. These low levels of significance indicate a lack of consensus between group members rating a given individual and make it impossible for participants to achieve

generalized meta-perceptive accuracy. As a result, generalized meta-perceptive accuracy was only tested for ratings of relaxation and anxiety.

### Social Anxiety and Perception

Hypothesis 1a. *Trait social anxiety will be positively related to self-perceptions of anxiety:* This hypothesis served largely as a validity check since socially anxious people, by definition, would rate themselves as anxious following a social interaction. It was tested by correlating the SIAS and the SPS with self-perceptions of anxiety. As expected, results indicate that self-perceptions of anxiety were higher in participants who scored higher on trait measures of social anxiety. Likewise, self-perceptions of relaxation were lower in these same people. Thus, hypothesis 1a was supported (see Table 4).

Table 4

Correlations between social anxiety measures and self-perceptions, perceiver effects in other-perception and perceiver effects in meta-perceptions.

Perceiver Effects	Anxious (reversed)	Relaxed	Good	Likeable
		SPS ( $n = 98$ )		
Self-	-0.69 **	-0.66 **	-0.67 **	-0.60 **
Other-	-0.26	-0.30 **	-0.10	-0.00
Meta-	-0.52 **	-0.60 **	-0.47 **	-0.48 **
		SIAS ( $n = 98$ )		
Self-	-0.65 **	-0.61 **	-0.69 **	-0.64 **
Other-	-0.22	-0.28 **	-0.12	-0.05
Meta-	-0.51 **	-0.59 **	-0.48 **	-0.50 **

\*\*  $p < .005$

Hypothesis 1b. *Trait social anxiety will be negatively related to self-perceptions of likeability:* This was tested by correlating the SIAS and the SPS with self-perceptions of likeability. Results indicate that self-perceptions of likeability were lower in

participants who scored higher on trait measures of social anxiety. Participants with higher scores on trait measures of social anxiety were also more likely have critical feelings about themselves on ratings of goodness. Thus, hypothesis 1b was supported (see Table 4).

Hypothesis 1c. *Trait social anxiety will be positively related to other-perceptions of relaxation:* This was tested by correlating the SIAS and the SPS with perceiver variance in other-perceptions of anxiety. This hypothesis was not supported. While the relationship was significant, participants scoring higher on the SPS and the SIAS were more likely to rate others as anxious and less likely to rate others as relaxed (see Table 4).

Hypothesis 1d. *Trait social anxiety will be positively related to other-perceptions of likeability:* This was tested by correlating the SIAS and the SPS with perceiver variance in other-perceptions of likeability and goodness of feeling. No support was found for this hypothesis (see Table 4).

Hypothesis 1e. *Trait social anxiety will be negatively related to meta-perceptions of relaxation:* This was tested by correlating the SIAS and the SPS with perceiver variance in meta-perceptions of anxiety and relaxation. This hypothesis was supported. Participants scoring higher on the SPS and the SIAS were more likely to think others viewed them as less relaxed and more anxious (see Table 4).

Hypothesis 1f. *Trait social anxiety will be negatively related to meta-perceptions of likeability:* This was tested by correlating the SIAS and the SPS with perceiver variance in meta-perceptions of likeability and ratings of good feeling. This hypothesis was supported. Participants scoring higher on the SPS and the SIAS were

less likely to think others reported good feelings about them or viewed them as likeable (see Table 4).

Hypothesis 1g. *Trait social anxiety will be negatively related to other-perceptions of relaxation in social partners:* This was tested by correlating the SIAS and the SPS with target variance in other-perceptions of anxiety and relaxation. This hypothesis was supported (see Table 5). Participants scoring higher on the SPS and the SIAS were more likely to be viewed by others as anxious and less relaxed.

Table 5

Correlations between social anxiety measures and target effects in other-perception.

Social Anxiety Measures	Target Effects in Other-Perceptions			
	Anxious (reversed)	Relaxed	Good	Likeable
SPS	-0.62**	-0.70**	-0.22	-0.08
SIAS	-0.55**	-0.61**	-0.24	-0.13

\*\*  $p < .005$  ( $n = 98$ )

Hypothesis 1h. *Trait social anxiety will be negatively related to other-perceptions of likeability in social partners:* This was tested by correlating the SIAS and the SPS with target variance in other-perceptions of likeability and ratings of good feeling. As shown in Table 3, the variance in target effects for other perceptions of likeability and goodness of feeling were not significant. Thus, it is not surprising that correlations using these variables were also non-significant (see Table 5). There was a trend for participants to report fewer good feelings for individuals with higher scores on the SPS and the SIAS, but this finding did not meet criteria for significance with the Bonferroni correction. There was no noteworthy relationship between the perceived

likeability of participants and their social anxiety scores. This hypothesis was not supported.

Hypothesis 1i. *Trait social anxiety will be positively related to self-focused attention:* Both the SIAS and the SPS were positively correlated with the FAQ-S (see Table 6). This hypothesis was supported.

Table 6

Correlations between the SPS, SIAS, FAQ-S and FAQ-E.

Measures	SPS	SIAS	FAQ-S	FAQ-E
SPS		0.87**	0.69**	-0.12
SIAS	0.87**		0.69**	-0.10
FAQ-S	0.69**	0.69**		0.16
FAQ-E	-0.12	-0.10	-0.16	

\*\*  $p < .005$  ( $n = 93$ )

Hypothesis 1j. *Trait social anxiety will be negatively related to externally focused attention:* While correlations for the SIAS and the SPS with the FAQ-E suggest that the relationship is negative, neither correlation was significant (see Table 6). Thus, this hypothesis was not supported.

Meta-Perceptive Accuracy

Hypothesis 2a. *Meta-perception will be positively related to the other-perceptions of social partners.* Generalized meta-perceptive accuracy can be tested by a regression to see if people's meta-perceptions accurately reflect the views others hold of them. It was tested by entering individual differences in perceiver effect associated with meta-perception as a dependent variable with individual differences in the target effect for other-perception as the predictor. The measurement of accuracy for judgments of goodness of feeling and likeability was hampered by a relatively small variance in target

effects for other ratings of likeability and goodness of feeling. This means that the criterion for these variables was less stable across raters. Only ratings of likeability and relaxation were tested. Results indicate that participants did show meta-perceptive accuracy for ratings of relaxation and anxiety (see Table 7). The regression equation for relaxation showed a strong significant relationship between meta-perceptions for relaxation and the other-perceptions of social partners ( $r = .64, p < .008$ ). Meta-ratings for anxiety were also related to perceptions of others ( $r = .47, p < .008$ ). Thus, hypothesis 2 was supported for ratings of relaxation and anxiety. Accuracy ratings for goodness of feeling and likeability could not be assessed because of the lack of a stable criterion.

Table 7

Linear regression results predicting perceiver effects in meta-perception ratings:  
Standard Regression coefficients,  $R^2$  and adjusted  $R^2$ .

Predictor	Interpersonal ratings			
	Anxious	Relaxed	Good	Likeable
Target effect in other-perception	0.473**	0.635**	---	---
Total $R^2$	0.224	0.403	---	---
Adjusted $R^2$	0.216	0.397	---	---

\*\*  $p < .008$  ( $n = 98$ ) Note: A lack of criterion consensus prevented analysis for ratings of goodness of feeling and likeability.

This conclusion was supported by a test of elevation accuracy. Though less refined than a test of generalized meta-perceptive accuracy, this test uses raw score grand means (see Table 3) collapsed across raters and judges. It does not rely exclusively on target variance to establish a criterion. There was no difference between the means for meta- and other-ratings of relaxation ( $t(1, 97) = -0.39, p > .008$ ) and



anxiety ( $t(1, 97) = -2.19, p > .008$ ). This replicated the previously established regression relationship. Conversely, means were significantly different for likeability ( $t(1, 97) = 5.83, p < .008$ ) and goodness of feeling items ( $t(1, 97) = 4.36, p < .008$ ).

These results underline the relativity of accuracy. As shown in the provided graphs (see Figures 2 through 5), this statistical test of accuracy does not necessarily imply a perfect one to one relationship between the judgment and the criterion. While generalized meta-perceptive accuracy for ratings of anxiety and relaxation were statistically significant, an element of scatter between judgment and criterion remains.

Anxiety and relaxation ratings resulted in relatively tight clustering between criterion and judgment around the regression line (see Figure 2 and 3). Comparatively, the discrepancy between criterion and judgment is much greater for ratings of likeability and goodness of feeling (see Figure 4 and 5). In general, participants in the study appeared to believe that others saw them less positively than they actually did.

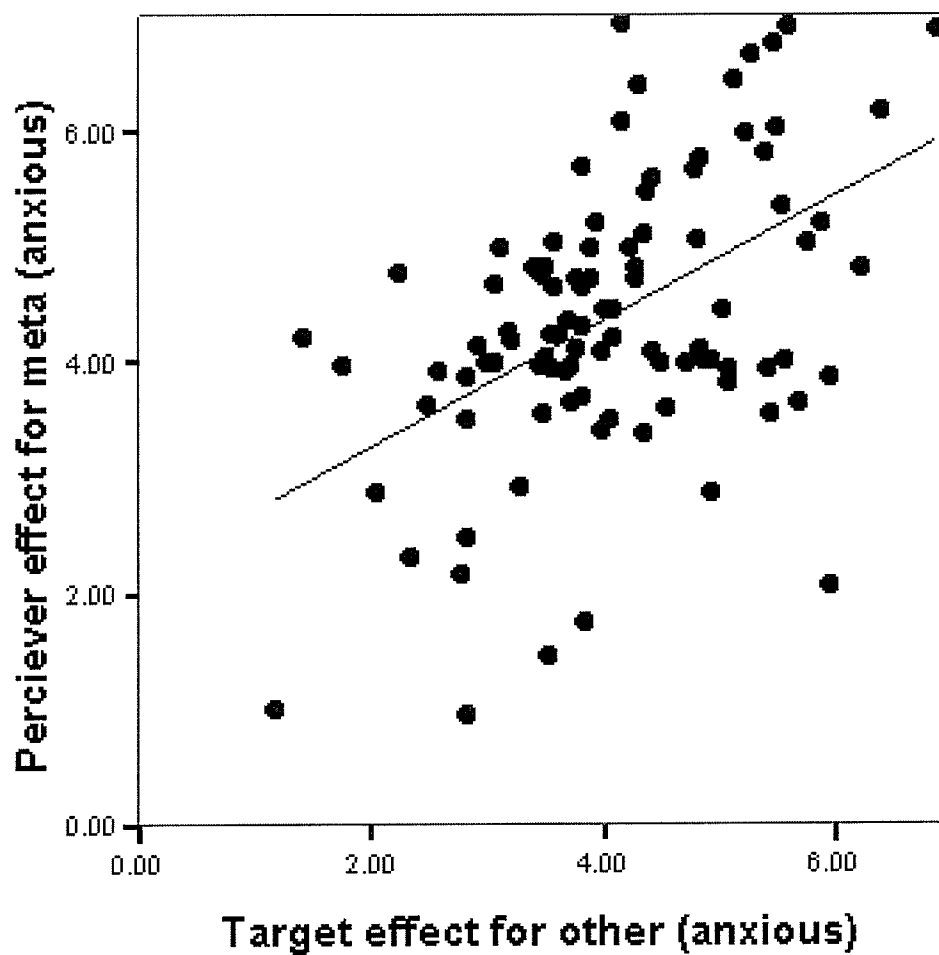


Figure 2. Individual differences in perceiver effects for Meta-perceptions ( $M = 4.41$ ) and target effects for Other-perceptions ( $M = 4.10$ ) of anxiety (reversed) for all participants ( $n = 98$ ).

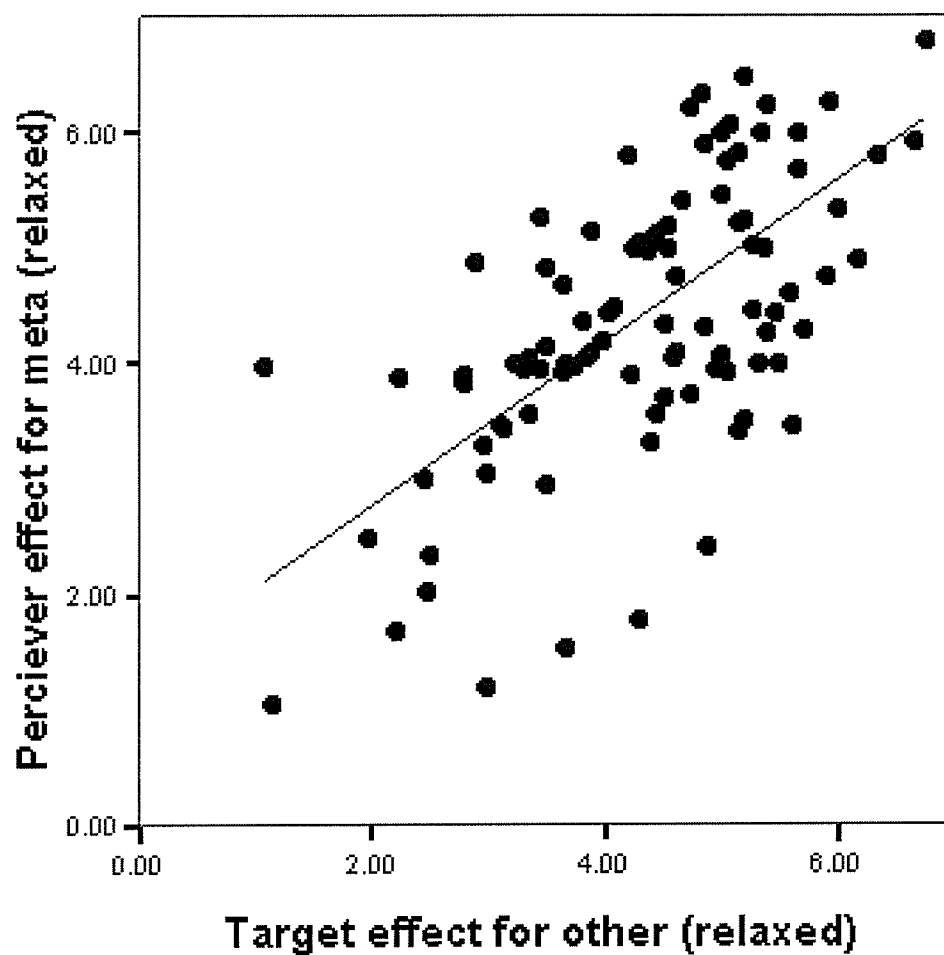


Figure 3. Individual differences in perceiver effects for Meta-perceptions ( $M = 4.42$ ) and target effects for Other-perceptions ( $M = 4.35$ ) of relaxation for all participants ( $n = 98$ ).

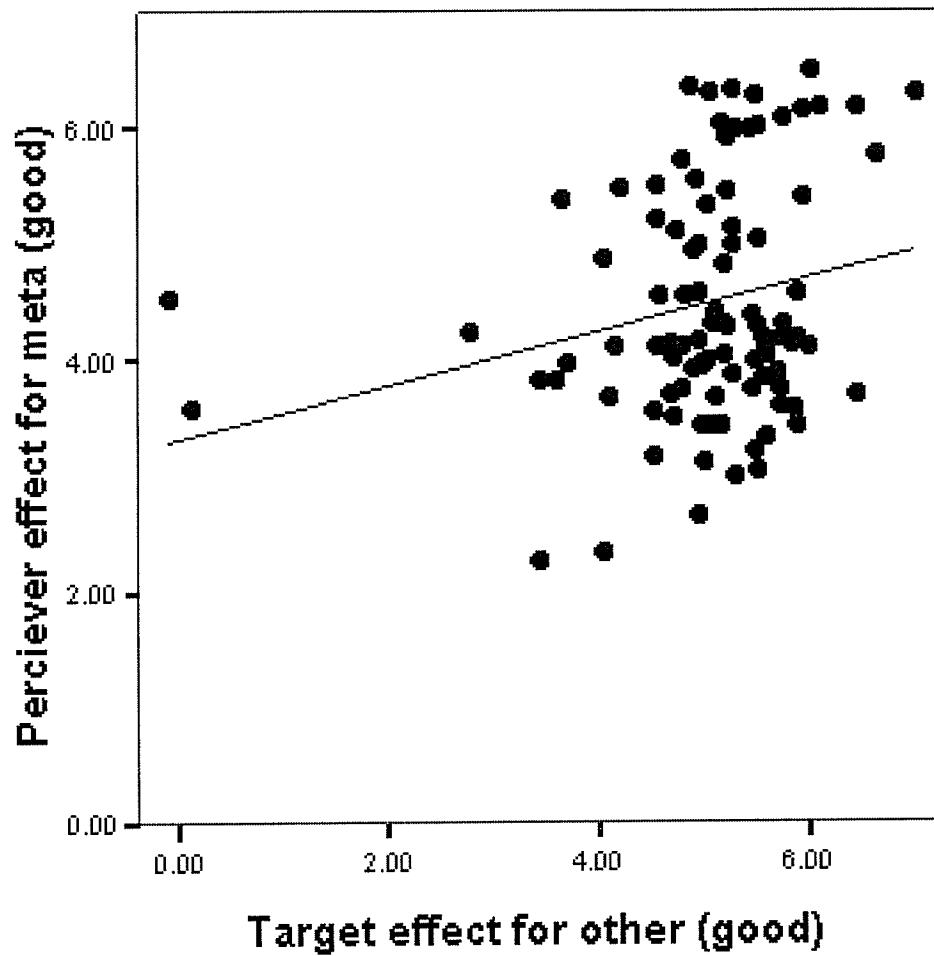


Figure 4. Individual differences in perceiver effects for Meta-perceptions ( $M = 4.47$ ) and target effects for Other-perceptions ( $M = 5.13$ ) of goodness of feeling for all participants ( $n = 98$ ).

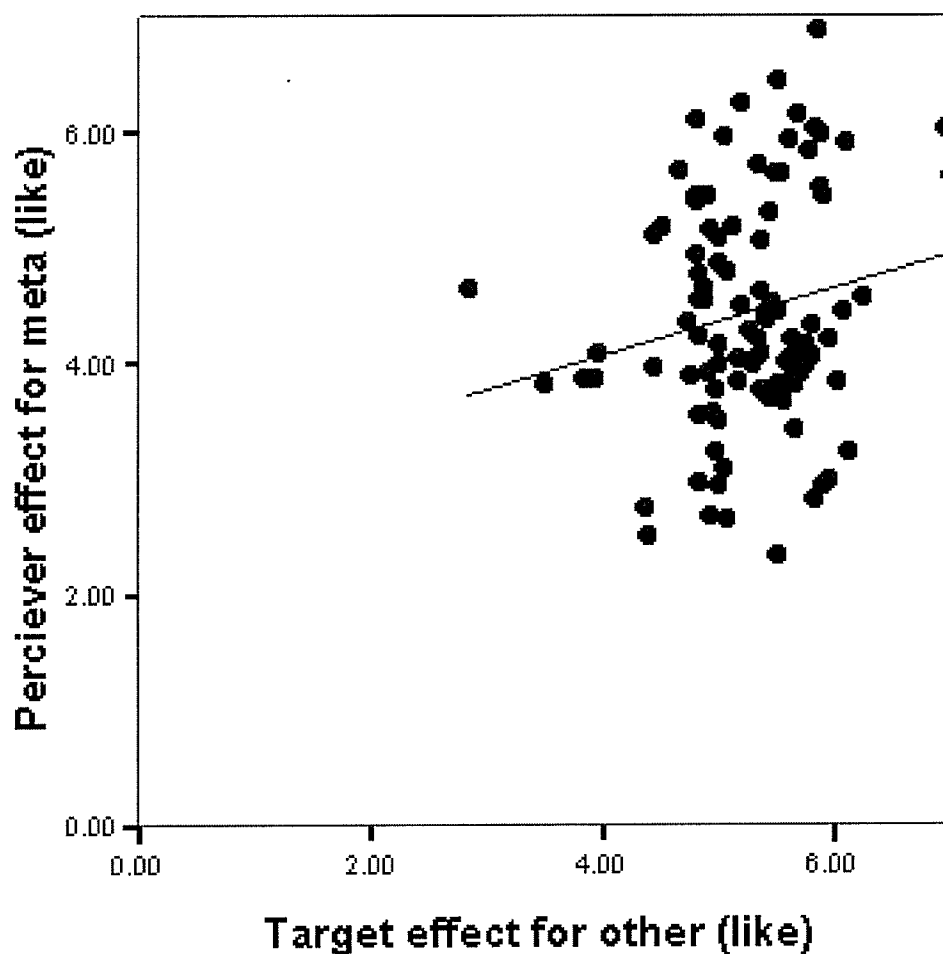


Figure 5. Individual differences in perceiver effects for Meta-perceptions ( $M = 4.42$ ) and target effects for Other-perceptions ( $M = 5.23$ ) of likeability for all participants ( $n = 98$ ).

Hypothesis 2b. Meta-perceptive accuracy will be negatively related to trait

*social anxiety:* This is a moderated analysis to see if meta-perceptive accuracy changed as a function of social anxiety. Elevation accuracy was not tested for moderator effects due to limitations in the data analysis soft-ware and research design. Analyses were only conducted on variables that had demonstrated generalized meta-perceptive accuracy in the previous analysis. As described previously, moderation was tested by regressing the individual differences in perceiver effect associated with meta-perception on the individual differences in the target effect of other-perception, social anxiety and the cross-product of these two variables. The analysis was replicated using both the SPS (see Table 8) and the SIAS (see Table 9) as measures of social anxiety. Grade school achievement was also entered to control for possible effects of education. All predictors were centred prior to analysis to help attenuate multicollinearity. No support for this hypothesis was found.

Table 8

Moderated Regression Results predicting perceiver effects in meta-perception ratings: Standard Regression coefficients,  $R^2$ , and adjusted  $R^2$  controlling for grade school education.

Predictor	Interpersonal ratings			
	Anxious	Relaxed	Good	Likeable
SPS	-0.386**	-0.302**	---	---
Target effect in other-perception	0.270	0.422**	---	---
SPS x target effect in other-perception	0.117	-0.008	---	---
Total $R^2$	0.348	0.492	---	---
Adjusted $R^2$	0.318	0.468	---	---

\*\*  $p < .008$  ( $n = 98$ ) Note: A lack of criterion consensus prevented analysis for ratings of goodness of feeling and likeability.

Table 9

Moderated Regression Results predicting perceiver effects in meta-perception ratings:  
Standard Regression coefficients,  $R^2$ , and adjusted  $R^2$  controlling for grade school  
education.

Predictor	Interpersonal ratings			
	Anxious	Relaxed	Good	Likeable
SIAS	-0.365**	-0.307**	---	---
Target effect in other-perception	0.306**	0.441**	---	---
SIAS x target effect in other-perception	0.136	-0.011	---	---
Total $R^2$	0.351	0.506	---	---
Adjusted $R^2$	0.321	0.483	---	---

\*\*  $p < .008$  ( $n = 98$ ) Note: A lack of criterion consensus prevented analysis for ratings of goodness of feeling and likeability.

Hypothesis 2c. *Meta-perceptive accuracy will be related to self-focused attention.* This was an analysis to see if internally focused attention moderated the relationship between meta-perceptions in the perceiver and other-perceptions in the target. As in the previous analysis, only ratings for 'anxious' and 'relaxed' were ultimately eligible for moderation. Moderation was tested by regressing individual differences in perceiver effect associated with meta-perception on the individual differences in target effect for other-perception, the FAQ-S and the cross-product of these two variables (see Table 10). All predictors were centred prior to analysis to help attenuate multicollinearity. No support for this hypothesis was found.

Table 10

Moderated Regression Results predicting perceiver effects in meta-perception ratings:  
Standard Regression coefficients,  $R^2$  and adjusted  $R^2$ .

Predictor	Interpersonal ratings			
	Anxious	Relaxed	Good	Likeable
FAQ-S	-0.330**	-0.365**	---	---
Target effect in other-perception	0.366**	0.491**	---	---
FAQ-S x target effect in other-perception	0.062	-0.027	---	---
Total $R^2$	0.352	0.530	---	---
Adjusted $R^2$	0.330	0.514	---	---

\*\*  $p < .008$  ( $n = 93$ ) Note: A lack of criterion consensus prevented analysis for ratings of goodness of feeling and likeability.

Hypothesis 2d. *Meta-perceptive accuracy will be positively related to externally focused attention.* This was an analysis to see if externally focused attention moderated the relationship between meta-perceptions in the perceiver and other-perceptions in the target. Analyses were only conducted on variables that had demonstrated generalized meta-perceptive accuracy in hypothesis 2a. Moderation was tested by regressing individual differences in perceiver effect associated with meta-perception on individual differences in target effect for other-perception, the FAQ-E and the cross-product of these two variables (see Table 11). All predictors were centred prior to analysis to help attenuate multicollinearity. No support was found for this hypothesis.



Table 11

Moderated Regression Results predicting perceiver effects in meta-perception ratings:  
Standard Regression coefficients,  $R^2$  and adjusted  $R^2$ .

Predictor	Interpersonal ratings			
	Anxious	Relaxed	Good	Likeable
FAQ-E	-0.060	-0.138	---	---
Target effect in other-perception	0.508**	0.683**	---	---
FAQ-E x target effect in other-perception	-0.006	-0.037	---	---
Total $R^2$	0.251	0.445	---	---
Adjusted $R^2$	0.226	0.427	---	---

\*\*  $p < .008$  ( $n = 93$ ) Note: A lack of criterion consensus prevented analysis for ratings of goodness of feeling and likeability.

Hypothesis 2e. *Meta-perceptive accuracy will be negatively related to*

*rumination*: This was an analysis to see if rumination moderated the relationship between meta-perceptions in the perceiver and other-perceptions in the target. Analyses were only conducted on variables that had demonstrated generalized meta-perceptive accuracy in hypothesis 2a. Moderation was tested by regressing individual differences in perceiver effect associated with meta-perception on the individual differences in target effect for other-perception, the RRQ-Rumination scale and the cross-product of these two variables (see Table 12). All predictors were centred prior to analysis to help attenuate multicollinearity. This hypothesis was not supported.

Table 12

Moderated Regression Results predicting perceiver effects in meta-perception ratings:  
Standard Regression coefficients,  $R^2$  and adjusted  $R^2$ .

Predictor	Interpersonal ratings			
	Anxious	Relaxed	Good	Likeable
RRQ	-0.290**	-0.213	---	---
Target effect in other-perception	0.326**	0.529**	---	---
RRQ x target effect in other-perception	0.144	0.021	---	---
Total $R^2$	0.283	0.440	---	---
Adjusted $R^2$	0.260	0.422	---	---

\*\*  $p < .008$  ( $n = 98$ ) Note: A lack of criterion consensus prevented analysis for ratings of goodness of feeling and likeability.

Hypothesis 2f. *Meta-perceptive accuracy will be negatively related to pathological self-consciousness:* This was an analysis to see if pathological self-consciousness moderated the relationship between meta-perceptions in the perceiver and other-perceptions in the target. Analyses were only conducted on variables that had demonstrated generalized meta-perceptive accuracy in hypothesis 2a. Moderation was tested by entering the individual differences in perceiver effect associated with meta-perception as a dependent variable in a moderated regression analysis. The predictors were the SCONS, individual differences in target effect for other-perception and a variable representing the product of SCONS scores and the target effects in other-perception (see Table 13). All predictors were centred prior to analysis to help attenuate multicollinearity. No support for this hypothesis was found.

Table 13

Moderated Regression Results predicting perceiver effects in meta-perception ratings:  
Standard Regression coefficients,  $R^2$  and adjusted  $R^2$ .

Predictor	Interpersonal ratings			
	Anxious	Relaxed	Good	Likeable
SCONS	-0.329**	-0.340**	---	---
Target effect in other-perception	0.350**	0.425**	---	---
SCONS x target effect in other-perception	0.009	0.036	---	---
Total $R^2$	0.363	0.465	---	---
Adjusted $R^2$	0.341	0.447	---	---

\*\*  $p < .008$  ( $n = 93$ ) Note: A lack of criterion consensus prevented analysis for ratings of goodness of feeling and likeability

#### Meta-Perception and Self-Perception

Hypothesis 3a. *Meta-perception will be positively related to self-perception:*

The relationship between meta-perception and self-perception was calculated for each item by correlating the self-measures with the perceiver-effect in meta-perception for each item. These results are presented in Table 14. Ratings of anxiety were reversed so that higher scores on all variables indicate more positive ratings. The strong positive correlations provide substantial support for the hypothesis. Furthermore, this positive relationship does not seem to be limited to matched pairs of items. Thus, participants who rated themselves as more relaxed were more likely to think others saw them as more relaxed and were also more likely to think that others had good feelings about them and saw them as less anxious and more likeable.

Table 14

Pearson Correlations for Self-Perceptions and Perceiver Effects in Meta-Perceptions.

	Meta-anxious (reversed)	Meta- relaxed	Meta- good	Meta-likeable
Self-anxious (reversed)	0.562 **	0.582 **	0.388 **	0.354 **
Self-relaxed	0.540 **	0.612 **	0.488 **	0.408 **
Self-good	0.581 **	0.645 **	0.573 **	0.522 **
Self-likeable	0.514 **	0.534 **	0.486 **	0.493 **

\*\*  $p < .012$  ( $n = 98$ )

Hypothesis 3b. *Self-perception will mediate the relationship between social anxiety and meta-perception:* Both self-perception and the other-perceptions of social partners represent potential mediators between social anxiety and meta-perception. Consequently, for those variables with a significant target effect (see Table 3), this analysis was done for both mediators to control for the influence of target effect in other-perceptions. Analyses were done across all four SRM items: goodness of feeling, likeability, relaxation and anxiety. Furthermore, it was replicated using both the SPS (see Table 15) and the SIAS (see Table 16). Given the correlation between grade school education and social phobia, this variable was controlled for in all analyses. All predictors were centered prior to analysis to help attenuate multicollinearity.

As described previously, mediation requires three regressions (see Figure 2 below). The first analysis regressed individual differences in the perceiver effect for meta-perceptions on trait social phobia scores (path c). The next tested the relationship between social anxiety and both mediators. Thus, self-perception and target effects in other-perception were regressed separately on social phobia scores (see paths a1 and a2). Finally, a third regression analysis entered self-perception (path b1), target effects in

other-perception (path b2), and the social anxiety measure (path c') as predictors of the perceiver effect in meta-perception.

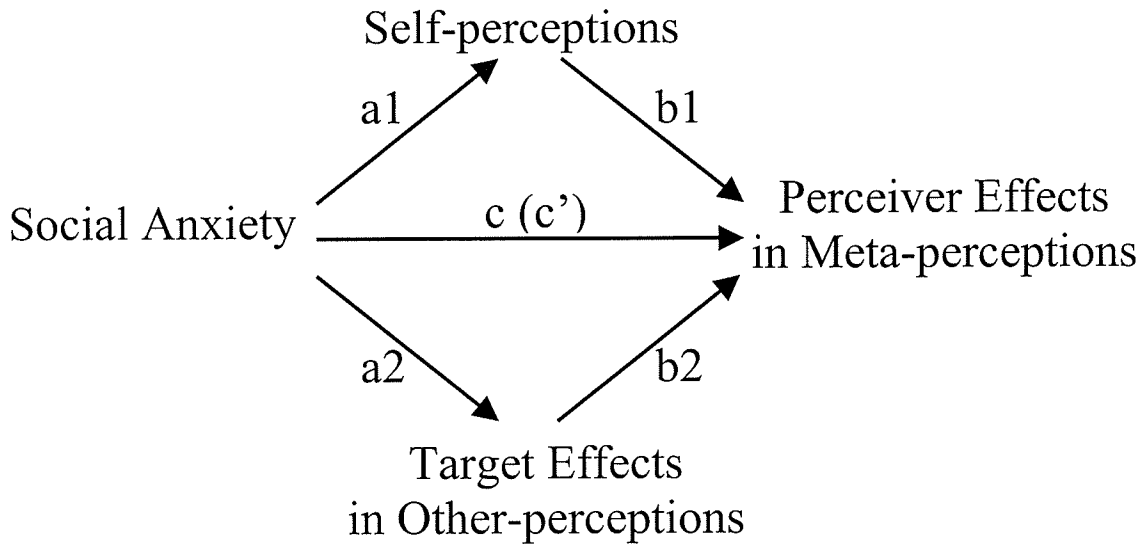


Figure 6. Two mediational models of the relationship between social anxiety and perceiver effects in meta-perception.

Partial mediation for self-perception was supported for all interpersonal ratings at the  $p < .05$  level regardless of which social phobia measure was used. The Bonferroni correction, however, limited statistical significance and ruled out partial mediation for ratings of relaxation. Thus, self-perception ultimately met criteria for partial mediation in ratings for 'goodness of feeling', 'likeability', and anxiety. Other-perceptions, by contrast, were only significant in the partial mediation of relaxation ratings. These results are very similar to previous findings by Christensen et al. (2003) and support the primacy of self-perception as a mediator between social anxiety and meta-perceptions. Thus, while the data should be interpreted cautiously, there is evidence in favour of the hypothesis. Social anxiety is related to negative self-perceptions during social interaction. Self-perception, in turn, is related to the development of meta-perceptive beliefs.

Table 15

Mediation of the relationship between social anxiety (SPS) and perceiver effects in meta-perceptions.

(Standard Regression Coefficients and Z-scores)

Measure	Step 1	Step 2		Step 3		Step 4	Z-test of mediation	
	(c)	Self- (a1)	Other- (a2)	Self- (b1)	Other- (b2)	(c')	Self-	Other-
Anxious	-0.523**	-0.663**	-0.532**	0.319**	0.179	-0.216	-2.54**	-1.59
Relaxed	-0.569**	-0.640**	-0.632**	0.250*	0.330**	-0.200	-2.27*	-2.79**
Good	-0.464**	-0.638**	-----	0.456**	-----	-0.173	-3.42**	-----
Likeable	-0.474**	-0.588**	-----	0.341**	-----	-0.273	-2.69**	-----

Note: Step 1 is the relationship between social anxiety and perceiver effects in meta-perceptions. Step 2 is the relationship between social anxiety and the mediator. Step 3 is the relationship between the mediator and perceiver effects in meta-perceptions, controlling for social anxiety. Step 4 is the relationship between social anxiety and perceiver effects in meta-perceptions, controlling for the mediators and perceiver effects in meta-perceptions. Z-mediation tests the mediation for each mediator. Other-perceptions were not tested for variables which lacked a significant target effect. All analyses were done controlling for grade school education.

\*\*  $p < 0.012$

\*  $p < 0.029$

( $n = 98$ )

Table 16

Mediation of the relationship between social anxiety (SIAS) and perceiver effects in meta-perceptions.

(Standard Regression Coefficients and Z-scores)

Measure	Step 1	Step 2		Step 3		Step 4	Z-test of mediation	
	(c)	Self- (a1)	Other- (a2)	Self- (b1)	Other- (b2)	(c')	Self-	Other-
Anxious	-0.489**	-0.592**	-0.457**	0.324**	0.188	-0.211	-2.62**	-1.68
Relaxed	-0.538**	-0.557**	-0.526**	0.240*	0.334**	-0.228*	-2.22*	-2.85**
Good	-0.447**	-0.632**	-----	0.461**	-----	-0.156	-3.36**	-----
Likeable	-0.476**	-0.595**	-----	0.322**	-----	-0.285*	-2.59**	-----

Note: Step 1 is the relationship between social anxiety and perceiver effects in meta-perceptions. Step 2 is the relationship between social anxiety and the mediator. Step 3 is the relationship between the mediator and perceiver effects in meta-perceptions, controlling for social anxiety. Step 4 is the relationship between social anxiety and perceiver effects in meta-perceptions, controlling for the mediators and perceiver effects in meta-perceptions. Z-mediation tests the mediation for each mediator. Other-perceptions were not tested for variables which lacked a significant target effect. All analyses were done controlling for grade school education.

\*\*  $p < 0.012$

\*  $p < 0.029$

( $n = 98$ )

Hypothesis 3c. *Trait social anxiety will moderate the relationship between meta-perception and self-perception:* Moderation was tested by entering the individual differences in perceiver effect associated with meta-perception as a dependent variable in a moderated regression analysis. The predictors were social anxiety as measured by the SIAS and the SPS, individual differences in perceiver effect for self-perception, grade school level completed and a variable representing the product of social anxiety and the perceiver effects in self-perception. Grade level was controlled for because it was shown to be related to social anxiety in a previous analysis. All predictors were centered prior to analysis to help attenuate multicollinearity. Support for the hypothesis, as indicated by a significant interaction term, did not occur. The severity of SPS scores (see Table 17) and SIAS scores (see Table 18) made no impact on the relationship between self-perceptions and perceiver effects in meta-perceptions.

Table 17

Moderated Regression Results predicting perceiver effects in meta-perception ratings:  
Standard Regression coefficients,  $R^2$  and adjusted  $R^2$  controlling for grade school  
education.

Predictor	Interpersonal ratings			
	Anxious	Relaxed	Good	Likeable
SPS	-0.267	-0.376**	-0.197	-0.313**
Self-perception	0.366**	0.338**	0.517**	0.342**
SPS x Self-perception	-0.066	-0.160	-0.193	-0.091
Total $R^2$	0.357	0.486	0.381	0.306
Adjusted $R^2$	0.330	0.464	0.354	0.276

Note: Analyses were conducted controlling for the effects of grade school education.

\*\*  $p < .012$  ( $n = 98$ )



Table 18

Moderated Regression Results predicting perceiver effects in meta-perception ratings:  
Standard Regression coefficients,  $R^2$  and adjusted  $R^2$  controlling for grade school  
education.

Predictor	Interpersonal ratings			
	Anxious	Relaxed	Good	Likeable
SIAS	-0.253	-0.328**	-0.153	-0.310**
Self-perception	0.378**	0.372**	0.529**	0.312**
SIAS x Self-perception	-0.070	0.110	-0.136	-0.048
Total $R^2$	0.363	0.485	0.364	0.301
Adjusted $R^2$	0.336	0.462	0.337	0.271

Note: Analyses were conducted controlling for the effects of grade school education.

\*\*  $p < .012$  ( $n = 98$ )

Hypothesis 3d. *Self-focused attention will mediate the relationship between*

*meta-perception and self-perception:* This relationship was tested across the four measures of goodness of feeling, likeability, relaxation and anxiety. All predictors were centered prior to analysis to help attenuate multicollinearity. A first regression analysis was conducted regressing individual differences in the perceiver effect of meta-perceptions on of individual differences in self-perception. The next phase regressed FAQ-S scores on self-perceptions. Finally, a third regression analysis entered both self-perception and FAQ-S as predictors of the perceiver effect in meta-perception.

Mediation requires the first two analyses to be significant, along with a significant result for self-focused attention in the third regression. If perceiver effects in self-perception have become non-significant in the last analysis, then full mediation has occurred. If perceiver effects in self-perception have become less predictive, then partial mediation has occurred. Finally, a z-test was done on successful mediation candidates to determine

if self-focused attention significantly altered the relationship. Results indicate that self-focused attention was a significant mediator for the relationship between self-perceptions of relaxation and meta-perceptions of relaxation (see Table 19,  $z = -3.32, p < .012$ ). Correlations indicate that higher levels of self focused attention contributed to reductions in both self-perceptions of relaxation ( $r = -.57, p < .012$ ) and meta-perceptions of relaxation ( $r = -.58, p < .012$ ). This result did not generalize to the variables of anxiety, goodness and likeability.

Table 19

Standardized regression coefficients from analyses of self-focused attention as a mediator of the relationship between self-perceptions and perceiver effects in meta-perceptions.

Measure	Step 1	Step 2	Step 3	Step 4
Anxious	0.562**	-0.564**	-0.238	0.443**
Relaxed	0.612**	-0.573**	-0.344**	0.418**
Good	0.573**	-0.557**	-0.049	0.545**
Likeable	0.493**	-0.506**	-0.175	0.398**

Note: Step 1 is the regression of self-perceptions on perceiver effects in meta-perceptions. Step 2 is the regression of self-perceptions on the self-focused attention (mediator). Step 3 is the relationship between self-focused attention and perceiver effects in meta-perceptions controlling for self-perception. Step 4 is the relationship between self-perception and perceiver effects in meta-perceptions, controlling for self-focused attention.

\*\*  $p < .012$  ( $n = 93$ )

## Discussion

This study was designed to compare two models of meta-perception in social phobia. Clinical models of social phobia have suggested that social anxiety predisposes individuals to an abnormally high level of self-focus and thus lowers meta-perceptive accuracy (Clark & Wells, 1995; Rapee & Heimberg, 1997). By contrast, perception models from social psychology have suggested that meta-perceptions are strongly influenced by self-perceptions in all people and generalized meta-perceptive accuracy is unrelated to the accurate interpretation of environmental cues (Kenny, 1994). This discrepancy has led to several interconnected questions: Do people with social phobia have more negative meta-perceptions than non-socially anxious people? Do socially anxious people rely on self-perception to develop meta-perceptions? Does this process differ from meta-perceptive strategies adopted by non-socially anxious people? If so, do people with social phobia differ in the generalized accuracy of their meta-perceptions when compared to less-socially anxious people? And finally, does focus of attention play a role in generalized meta-perceptive accuracy? The answers to these questions can help to determine whether the cognitive strategies of socially anxious individuals differ from those used by their less anxious peers.

Social Anxiety and Perception

Since, by definition, socially anxious people fear negative evaluation, it would be expected that they report more negative meta-perceptions than their less socially anxious peers. Consistent with previous studies (Norton & Hope, 2001; Stopa & Clark, 2000), this study confirmed that socially anxious people have negative self- and meta-perceptions following a social event. People with higher scores on social anxiety

measures clearly rated themselves as less likeable and more anxious in social situations. Furthermore, they believed that the people they interacted with also disliked them and noticed that they were very anxious.

It was expected that socially anxious individuals would be prone to underestimating the anxiety experienced by their social partners. A focus on personal anxiety should theoretically limit one's ability to perceive anxiety in others. This theory was not borne out in the current sample. Contrary to expectation, socially anxious people were more likely to rate their social partners as anxious. There is no theoretical rationale for this pattern in the existing literature. An examination of the study methodology may provide one possible explanation, however. While several control group members also reported elevated levels of social anxiety, the bulk of anxious respondents were found in the clinical groups. Since the social partners of anxious participants were drawn from the same group, clinical group members were aware of the inherent potential for other group members to be experiencing anxiety. This knowledge may have countered any natural tendency in socially anxious people to discount the anxiety they may witness in others. The presence of social anxiety in an individual appeared to exercise no influence on how positive that person felt about their social partners. Liking and positive feelings were reported with equal frequency by people across the spectrum of social anxiety.

As evidenced by their meta-perceptions, socially anxious people often worry about the impression they make on others. They worry that others may recognize their anxiety and they worry that others may dislike them. These worries were only partially substantiated in the present sample. Anxiety was typically recognized as such by social

partners. People with higher levels of social anxiety were rated as more anxious and less relaxed than their non-anxious peers. This knowledge did not translate into dislike, however. In contradiction to their fears, socially anxious people were generally just as liked as non-socially anxious people.

As expected, there were strong inter-correlations between social anxiety, rumination, maladaptive self-consciousness, and self-focused attention. Higher levels of social anxiety were related to more negative rumination and self-focus. Externally focused attention, however, was independent from self-focused attention and showed no significant relationship with social anxiety. These results are consistent with previous studies linking self-focused attention and rumination with social anxiety and they fit nicely with the cognitive model of social phobia (Woody, Chambless & Glass, 1997; Woody & Rodriguez, 2000).

#### Meta-Perceptive Accuracy

The question of meta-perceptive accuracy is central to the understanding and treatment of social phobia. Social anxiety has typically been conceptualized as an *unrealistic* fear about the opinions of others (Amin et al, 1998; Winton et al., 1995). As mentioned previously, however, this study has determined that people with social anxiety actually are perceived as more anxious than others. Thus, determining whether socially anxious people differ from others in the accuracy and origin of their meta-perceptions is central to determining if meta-perception may play a role in the development of their pathology.

Current theory maintains that socially phobic individuals are inaccurate in their meta-perceptions as a result of a maladaptive self-focus. Data from this study suggests

some significant flaws with the current cognitive models of social phobia. Results indicate that people were generally accurate in their predictions of how anxious they appeared to others. Analyses for both elevation accuracy and generalized accuracy proved significant for these factors. The relationships between how much people were liked, however, and their meta-perceptions of likeability and goodness of feeling were less clear. There was no significant level of agreement between group members on how they felt about a particular target. This lack of a stable criterion measure prevented the assessment of generalized meta-perceptive accuracy. An elevation accuracy analysis confirmed that all participants were prone to overestimate the level of criticism leveled at them by social partners. Contrary to expectation, generalized meta-perceptive accuracy was not influenced by social anxiety. It was also unconnected to the related concepts of rumination and maladaptive self-consciousness. Socially anxious people were no less accurate than their peers at determining the ratings of others.

While internal focus of attention was related to social anxiety, it was unrelated to a participant's ability to predict what other people thought of them. Interestingly, an external focus of attention was also unrelated to generalized meta-perceptive accuracy. This is contrary to Clark and Wells (1995) suggestion that self-focus plays a significant role in meta-perceptive inaccuracy. It should be noted, however, that there was no effort to manipulate focus of attention. Mean responses for both internal and external attention were very close to the midpoint and showed limited variation in responses. There appears to have been little difference in attentional focus across the sample. Thus, present results do not support the theory that socially phobic individuals have maladaptive and inaccurate meta-perceptions as a result of hyper self-focus.

In fact, evidence suggests that meta-perceptive accuracy, as a global construct, may be misleading in the conceptualization of social phobia. There were differences in accuracy depending on what was being rated. This may reflect the separate processes involved with different forms of judgment. The rating task being asked of participants seems fundamentally different for anxiety and likeability. On the surface, meta-perceptive ratings for likeability require a decision about the internal thoughts of a social partner. Anxiety ratings, by contrast, reflect an inference about how obvious one's own internal state was to that social partner. Thus, generalized meta-perceptive accuracy in this context may actually represent a reliance on internal knowledge rather than the correct interpretation of other's beliefs. Within this scenario, however, accuracy (as defined by the correlation between meta-perceptions and the beliefs of others) remains a moving target that may be largely irrelevant to the understanding and treatment of social phobia. Self-perception, on the other hand, may be a powerful heuristic in the formation of meta-perceptions.

#### Meta-perceptions relationship to self-perception

One of the primary goals of this study was to determine if cognitive models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997) were correct in assuming that socially anxious people were more reliant on self-perception than their non-anxious peers when developing meta-perceptions. Results were largely supportive of the alternative hypothesis proposed by the social psychology literature (Kenny, 1994). Meta-perceptions were highly related to self-perceptions in all participants regardless of their anxiety level. Perhaps the most interesting characteristic of this finding was that this relationship was not limited to ratings for the same characteristic. For instance,

while meta-perceptive ratings for relaxation were highly correlated with self-ratings for relaxation, they were also correlated with self-ratings for anxiety, goodness of feeling and likeability. One possible explanation for this intermingled relationship is the theoretical connection between these four ratings. SRM items were chosen because they have close theoretical ties to the constructs of likeability and anxiety as they relate to social anxiety. It would be expected that self-perceptions of anxiety might be correlated to meta-perceptions of relaxation. Furthermore, individuals who feel good about themselves may also be expected to think that others see them as more relaxed. Unfortunately, this theory would have to be confirmed with analyses on more theoretically independent variables and is outside the scope of this project. A mediated regression analysis does suggest an alternative hypothesis, however.

Mediated regression analyses confirmed the relationship between social anxiety and meta-perception, but suggested that self-perception played an important role in this relationship. Again, this is consistent with previous results from the social psychology literature (Christensen et al. (2003), DePaulo, Kenny, Hoover, Webb & Oliver, 1987; Kenny & DePaulo, 1993). It must be noted that significant results for partial mediation were split with self-perceptions influencing ratings of 'goodness of feeling', likeability and anxiety while other-perceptions influenced ratings of relaxation. This differs from previous findings reported by Christensen et al. (2003) in which relaxation was also mediated by self-perception. A secondary examination of strong trends in the present study, however, indicated that self-perception would also have been a significant mediator across all SRM items without the Bonferroni correction. As a result, this data



may be cautiously interpreted to re-confirm that negative meta-perceptions in social anxiety have more to do with self-perceptions than with cues from their environment.

Subsequent analyses were conducted to determine if the relationship between self-perception and meta-perception might differ across levels of social anxiety and self-focused attention. Contrary to the cognitive models of social phobia, social anxiety did not play a role in modifying this relationship for any of the SRM items. In the absence of additional evidence, it appears that social anxiety must be reconsidered as a variable connecting self-perception and meta-perception.

In light of the theoretical importance of self-focus in cognitive models for social phobia, this variable was also tested as a potential mediator between self-perceptions and meta-perceptions. Results indicated that self-focus partially mediated self- and meta-perceptive ratings for relaxation. High levels of self-focus increased the association between self-perceptions and meta-perceptions of relaxation. This must be interpreted with some caution, however, since it did not generalize to the paired item on anxiety or either of the items of likeability.

This study is consistent with previous findings linking self-perception and meta-perception. Furthermore, this relationship was unrelated to differing levels of social anxiety and self-focus appeared to have only a limited influence in this relationship. This influence was not consistent across items, however. Thus, the impact of self-focus on meta-perceptions should be interpreted cautiously and replicated prior to any final conclusions. Since anxious individuals did not significantly differ from their peers in terms of accuracy, self-perception is clearly the more relevant construct in understanding and even treating social phobia.

Modifying Existing Models

This study was designed to examine two models of meta-perceptive development in the context of social phobia. The pathological model suggested that socially anxious people engage in maladaptive meta-perceptions based on abnormally selective and internally focused attention. The social psychological model suggested that all people develop meta-perceptions based on selective and internally focused attention. Present findings are strongly supportive of the social psychological model. There is some irony, however, in the realization that cognitive models are not wrong in the way they conceptualize social anxiety. Instead, they appear to be wrong about how ordinary people develop meta-perceptions.

Participants in the current study did not differ in the source of the information used to develop meta-perceptions referencing non-acquainted individuals. All of them relied heavily on self-perceptions to gauge the opinions of others. What differed for socially anxious people was the valence of those self-perceptions. It is incorrect, in this context, to assume that socially anxious meta-perceptions are the result of maladaptive cognitive processes. It is not the process that is flawed. At the least, it can be argued that the process is not flawed at the juncture previously argued by cognitive models of social phobia. Anxious meta-perceptions seem rooted in the raw beliefs about self. Therefore, if there is flawed cognitive process, it does not seem to be a skill deficit in environmental processing that effects meta-perceptions. Given a different self-concept, socially anxious people may use the same kinds of strategies they always use and arrive at a very different conclusion. These results suggest that professionals may not need to

“teach” as much as has been assumed in the past. Instead, interventions targeting self-perception may be a useful alternative route to alter meta-perception.

### Implications for Treatment

If socially anxious people have negative meta-perceptions by definition, then of course, social anxiety will be related to meta-perception. Likewise, the relationship between social anxiety and negative self-perceptions is also unsurprising. Both self-perception and meta-perception represent potential areas for intervention. Since self-perception appears to influence meta-perception, however, it may be a more efficient target under some circumstances. Self-perception is predictive of meta-perceptions in all participants; not just the socially anxious ones. Furthermore, anxious individuals did not differ in the accuracy of their meta-perceptive judgements. Thus, it makes sense that the active contributor to socially anxious people’s negative meta-perceptions is not self-focus, but *negative* self-focus. This may be particularly useful in the treatment of social anxiety.

The implications of this study speak less to what clinicians do than why they do it. Some clinicians have suggested that training clients to focus their attention externally and look for positive feedback corrects a maladaptive strategy that results in negative meta-perceptions. This is clearly not the case. Nevertheless, this does not mean that attentional training is not a useful tool. As mentioned previously, this study showed little variation in the allocation of attention across the sample. This does not mean, however, that efforts to intentionally redirect attention would have no impact on meta-perceptions. In fact, research has suggested that this form of intervention is reasonably effective at helping individuals manage their anxiety (e.g. Wells & Papageorgiou, 1998).

Video feedback may also help people alter their self-perceptions and self-esteem more effectively (Rapee & Hayman, 1996; Rodebaugh & Chambless, 2002). Interestingly, these video manipulations of meta-perception were done by altering the individual's perspective about the self. By putting participants into the role of observer they were forced to re-evaluate their self-perceptions and subsequent meta-perceptions. While these skills and situations may not occur naturally, the interventions appear useful in targeting maladaptive meta-perceptions for change. The interconnected nature of interpersonal perceptions appears to allow us to put the proverbial "cart before the horse" and alter sources of self-perception indirectly. Attentional training, while not necessarily natural, does appear to be an effective way to modify meta-perception and, by extension, self-perception.

#### Original Contributions

This study fills an important gap in the existing literature. Previous research on meta-perception in social anxiety has had several potential drawbacks. While the presence of self-focused attention and negative meta-perceptions in social anxiety have been well established in the literature (e.g. Hope et al, 1990; Leary et al, 1988; Lundh & Öst, 1996a), they typically have not been addressed together. Furthermore, although the perceptions of socially anxious people do seem to change based on social feedback (Pozo et al, 1991), the accuracy of those perceptions has never been tested in a naturalistic setting with a clinical population as done in this study. Previous participants have largely been drawn from university populations and screened into groups to emphasize extremes of social anxiety. Interpersonal situations have also been typically artificial and contrived specifically as part of the study.

This is the first study to test the relationship between self-focused attention and negative meta-perceptions in social anxiety. It is also the first use of the social relations model to study social phobia using participants seeking psychological services. The broad spectrum of social impairment and uncontrived social interaction increase external validity and make these results more applicable to the population as a whole.

#### Limitations and Future Directions

Methodology and interpretability force compromises that inevitably limit the applicability of results. Several potential limitations should be considered when interpreting this study and planning future research.

This study took a cross-sectional approach to observing socially anxious people in-vivo. Using a cross-sectional design with zero-acquaintance ensured that participants did not have a significant history with their social partners. While this advantageously helps to control the number of variables that must be accounted for, it addresses a very brief period in the inter-personal relationships of most people. Time and multiple exposures obviously have the potential to influence relationships and interpersonal perceptions. As a result, these findings may not be applicable to longer-term relationships. Additional research is necessary to determine how familiarity and length of acquaintance may influence meta-perceptive development. Nevertheless, since socially anxious people likely make decisions about later social contact based on these initial meeting, these findings are still important to our understanding of social anxiety. Snap decisions that lead to avoidance may also preclude any further opportunity for other-perceptions to influence meta-perception.

Finally, the use of clinical and non-clinical groups presents several possible challenges and limitations to the interpretation of the data. Many of the patients seeking treatment for anxiety at St. Boniface Hospital struggle with several different mental health issues. Participation in appropriate clinical groups is typically determined by the primary diagnosis. Negativity of self- and other-perceptions for likeability and anxiety are not unique to social anxiety, however. Thus, it is currently undetermined whether these traits are associated with social phobia specifically, or if they are related a larger cluster of psychopathological traits (e.g. depression and panic). This is especially relevant given the high rates of comorbidity between social phobia and major depression (Kessler, Stang, Wittchen, Stein & Walters, 1999; Stein, Fuetsch, Muller, Höfler, Lieb & Wittchen, 2001). The inclusion of measures for depression and other types of anxiety would allow better statistical control. In the event that other diagnoses play an active role, future studies may also examine the possible joint and interactive effects of these conditions on social perceptions and meta-perceptions.

Likewise, the data collection procedure dictated that most individuals in a given group were similar in their level of social anxiety. Participants with social anxiety were interacting primarily with other socially anxious people. The non-clinical and panic groups also rated individuals from primarily within their own category. Furthermore, the differing needs of clinical and non-clinical groups (i.e. clinical intervention vs. information and support) dictated that the group experiences they participated in also varied systematically. Unfortunately, the homogeneity of group and the differing agendas may also have had an influence on the personal perceptions of group members and their ability to accurately intuit the perceptions of others. Since clinical group

members were actively encouraged to disclose feelings of anxiety, social partners would have little doubt about how anxious they might have been feeling in the group. Non-clinical group members also often shared these feelings, but the agenda was less purpose driven in this regard. It is possible that these differences may have served to prime participants and create systematic bias in the data. While there was some natural variability within groups, there were significant differences between the levels of anxiety reported by clinical and non-clinical groups. This may have reduced the target variance in the SRM analyses in a couple of ways. Socially anxious people are generally more reluctant to be expressive, thus making it difficult for others to form consensual judgments of them. Additionally, the homogeneity of social anxiety in the groups may have worked against the formation of distinct judgments about individuals.

The self-disclosure of anxiety encouraged in the clinical groups presents a potential challenge to data interpretation. The differing group agendas may be hypothesized to affect the outcome in two possible ways. A systematic bias introduced by differences between clinical and non-clinical groups, the homogeneity of groups, or differences in comorbidity might be expected to create differences where none previously existed. This hypothesis is unlikely, however, since the results clearly argue against the idea of group differences. Alternatively, if socially anxious participants were likely to overestimate the anxiety perceived by others, than the exercise of disclosing anxiety may have worked against this tendency. A systematic improvement in the accuracy correlations for this variable may have obscured an existing moderating effect for social anxiety. This is a serious issue that should be controlled for in replication efforts.

Nevertheless, mitigating factors exist that continue to support the conclusions of this study. Since disclosure in clinical groups was self-focused, there was no systematic effort to elicit other-ratings of anxiety or likeability in the session. Thus, despite discussing the topic, any effect on meta-perceptive accuracy would still be indirect at best. Furthermore, if disclosure had increased accuracy, this should have increased the influence of social partners' other-perceptions on meta-perception. With the exception of the relaxation item, however, other-perceptions were largely unimportant to the development of meta-perceptions. This was the case even after factoring social anxiety into the equation. Thus, the group experience of socially anxious participants did not appear to influence their tendency to rely on self-perception when creating meta-perceptions.

Future studies may benefit from mixing groups to include more variability in social anxiety while ensuring uniformity of the group experience. This would allow researchers to determine if socially anxious individuals are perceived differently by socially anxious and non-socially anxious individuals while reducing possible confounds.

### Conclusions

Understanding how self-focused attention and self-perceptions relate to meta-perceptions and establishing the accuracy of those meta-perceptions is fundamental to our conceptualization of social phobia. Consistent with previous research, this study re-confirmed that people with social phobia have more negative meta-perceptions than non-socially anxious people. There was no evidence, however, that socially anxious people differed from the norm in the accuracy of their meta-perceptions. Furthermore, contrary



to the cognitive model of social phobia, variables such as self-focus and external attention were not influential in changing meta-perceptive accuracy. Socially anxious people were no more or less accurate in their estimate of how others regarded them than their less anxious peers. Accuracy was influenced more by the nature of the judgement being made and less by the person making that judgement. Participants demonstrated statistically significant accuracy in their meta-perceptions of relaxation and anxiety. Generalized meta-perceptive accuracy for likeability and goodness of feeling could not be tested because of a lack of consensus among social partners. An examination of data trends revealed, however, that it was not only socially anxious people who underestimated how positively people felt about them. Most people in the study appeared to show a bias in this direction. Consistent with the social psychological model, all participants were largely reliant on self-perceptions to determine what others thought of them. Therefore, while socially phobic meta-perceptions may be maladaptive, it is no longer reasonable to conceptualize them as pathological in their development.

Ultimately, the social psychological model of meta-perception provides valuable insight into our understanding of social anxiety. Integrating this understanding into the existing cognitive model of social phobia informs treatment, while creating a clearer picture of the disorder and its etiology.

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[illegible]

In your opinion, how anxious or nervous did person 1 believe you were?

During today's meeting...

Questions about Person #2

How good did you feel about person 2?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all	-----					very
good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	good

In your opinion, how good did person 2 feel about you?

How relaxed was person 2?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all	-----					very
relaxed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	relaxed

In your opinion, how relaxed did person 2 believe you were?

How much did you like person 2?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not	-----					very
at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	much

In your opinion, how much do you think person 2 liked you?

How anxious or nervous was person 2?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all	-----					very
anxious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	anxious

In your opinion, how anxious or nervous did person 2 believe you were?

Questions about Person #3

How good did you feel about person 3?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all	-----					very
good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	good

In your opinion, how good did person 3 feel about you?

How relaxed was person 3?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all	-----					very
relaxed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	relaxed

In your opinion, how relaxed did person 3 believe you were?

How much did you like person 3?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not	-----					very
at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	much

In your opinion, how much do you think person 3 liked you?

How anxious or nervous was person 3?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all	-----					very
anxious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	anxious

In your opinion, how anxious or nervous did person 3 believe you were?

During today's meeting...

Questions about Person #4

How good did you feel about person 4?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all	-----					very
good						good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how good did person 4 feel about you?

How relaxed was person 4?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all	-----					very
relaxed						relaxed
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how relaxed did person 4 believe you were?

How much did you like person 4?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not	-----					very
at all						much
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how much do you think person 4 liked you?

How anxious or nervous was person 4?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all	-----					very
anxious						anxious
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how anxious or nervous did person 4 believe you were?

Questions about Person #5

How good did you feel about person 5?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all	-----					very
good						good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how good did person 5 feel about you?

How relaxed was person 5?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all	-----					very
relaxed						relaxed
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how relaxed did person 5 believe you were?

How much did you like person 5?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not	-----					very
at all						much
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how much do you think person 5 liked you?

How anxious or nervous was person 5?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all	-----					very
anxious						anxious
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how anxious or nervous did person 5 believe you were?

During today's meeting...

Questions about Person #6

How good did you feel about person 6?

☐ ☐ ☐ ☐ ☐ ☐ ☐  
 not at all ----- very  
 good good  
☐ ☐ ☐ ☐ ☐ ☐ ☐

In your opinion, how good did person 6 feel about you?

How relaxed was person 6?

☐ ☐ ☐ ☐ ☐ ☐ ☐  
 not at all ----- very  
 relaxed relaxed  
☐ ☐ ☐ ☐ ☐ ☐ ☐

In your opinion, how relaxed did person 6 believe you were?

How much did you like person 6?

☐ ☐ ☐ ☐ ☐ ☐ ☐  
 not ----- very  
 at all much  
☐ ☐ ☐ ☐ ☐ ☐ ☐

In your opinion, how much do you think person 6 liked you?

How anxious or nervous was person 6?

☐ ☐ ☐ ☐ ☐ ☐ ☐  
 not at all ----- very  
 anxious anxious  
☐ ☐ ☐ ☐ ☐ ☐ ☐

In your opinion, how anxious or nervous did person 6 believe you were?

Questions about Person #7

How good did you feel about person 7?

☐ ☐ ☐ ☐ ☐ ☐ ☐  
 not at all ----- very  
 good good  
☐ ☐ ☐ ☐ ☐ ☐ ☐

In your opinion, how good did person 7 feel about you?

How relaxed was person 7?

☐ ☐ ☐ ☐ ☐ ☐ ☐  
 not at all ----- very  
 relaxed relaxed  
☐ ☐ ☐ ☐ ☐ ☐ ☐

In your opinion, how relaxed did person 7 believe you were?

How much did you like person 7?

☐ ☐ ☐ ☐ ☐ ☐ ☐  
 not ----- very  
 at all much  
☐ ☐ ☐ ☐ ☐ ☐ ☐

In your opinion, how much do you think person 7 liked you?

How anxious or nervous was person 7?

☐ ☐ ☐ ☐ ☐ ☐ ☐  
 not at all ----- very  
 anxious anxious  
☐ ☐ ☐ ☐ ☐ ☐ ☐

In your opinion, how anxious or nervous did person 7 believe you were?

During today's meeting...

Questions about Person #8

How good did you feel about person 8?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all						very
good						good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how good did person 8 feel about you?

How relaxed was person 8?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all						very
relaxed						relaxed
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how relaxed did person 8 believe you were?

How much did you like person 8?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not						very
at all						much
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how much do you think person 8 liked you?

How anxious or nervous was person 8?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all						very
anxious						anxious
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how anxious or nervous did person 8 believe you were?

Questions about Person #9

How good did you feel about person 9?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all						very
good						good
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how good did person 9 feel about you?

How relaxed was person 9?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all						very
relaxed						relaxed
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how relaxed did person 9 believe you were?

How much did you like person 9?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not						very
at all						much
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how much do you think person 9 liked you?

How anxious or nervous was person 9?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not at all						very
anxious						anxious
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your opinion, how anxious or nervous did person 9 believe you were?

## Appendix B – Focus of Attention Questionnaire (FAQ)

Please fill in the bubble that best corresponds to your experience during the preceding group session for each question.

	Not at all	Somewhat	To a moderate degree	Mostly	Totally
1. I was focusing on the other people's appearance or dress.	1. <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I was focusing on the features or conditions of the physical surroundings (e.g. appearance, temperature).	2. <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I was focusing on what I would say or do next.	3. <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I was focusing on the impression I was making on the other people.	4. <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I was focusing on how the other people might be feeling about themselves.	5. <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I was focusing on what I thought of the other people.	6. <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I was focusing on my level of anxiety.	7. <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I was focusing on what the other people were saying or doing.	8. <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I was focusing on my internal bodily reactions (for example, heart rate).	9. <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I was focusing on my past social failures.	10. <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## Appendix C – Social Interaction Scale (SIAS)

For each question, please fill in a bubble to indicate the degree to which you feel the statement is characteristic or true of you. The rating scale is as follows:

- 0 = Not at all characteristic or true of me  
 1 = Slightly characteristic or true of me  
 2 = Moderately characteristic or true of me  
 3 = Very characteristic or true of me  
 4 = Extremely characteristic or true of me

	Not at all 0	Slightly 1	Moderately 2	Very 3	Extremely 4
1. I get nervous if I have to speak with someone in authority (teacher, boss).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I have difficulty making eye-contact with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I become tense if I have to talk about myself or my feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I find difficulty mixing comfortably with the people I work with.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I find it easy to make friends of my own age.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I tense up if I meet an acquaintance in the street.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. When mixing socially, I am comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I feel tense if I am alone with just one person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I am at ease meeting people at parties, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I have difficulty talking with other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I find it easy to think of things to talk about.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I worry about expressing myself in case I appear awkward.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I find it difficult to disagree with another's point of view.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I have difficulty talking to attractive persons of the opposite sex.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I find myself worrying that I won't know what to say in social situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. I am nervous mixing with people I don't know well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. I feel I'll say something embarrassing when talking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. When mixing in a group, I find myself worrying I will be ignored.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. I am tense mixing in a group.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I am unsure whether to greet someone I know only slightly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix D – Social Phobia Scale (SPS)

For each question, please fill in a bubble to indicate the degree to which you feel the statement is characteristic or true of you. The rating scale is as follows:

- 0 = Not at all characteristic or true of me  
 1 = Slightly characteristic or true of me  
 2 = Moderately characteristic or true of me  
 3 = Very characteristic or true of me  
 4 = Extremely characteristic or true of me

	Not at all 0	Slightly 1	Moderately 2	Very 3	Extremely 4
1. I become anxious if I have to write in front of other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I become self-conscious when using public toilets.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I can suddenly become aware of my own voice and of others listening to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I get nervous that people are staring at me as I walk down the street.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I fear I may blush when I am with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I feel self-conscious if I have to enter a room where others are already seated.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I worry about shaking or trembling when I'm watched by other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I would get tense if I had to sit facing other people on a bus or a train.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I get panicky that others might see me faint or be sick or ill.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I would find it difficult to drink something if in a group of people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. It would make me feel self-conscious to eat in front of a stranger at a restaurant.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I am worried people will think my behavior odd.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I would get tense if I had to carry a tray across a crowded cafeteria.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I worry I'll lose control of myself in front of other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I worry I might do something to attract the attention of other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. When in an elevator, I am tense if people look at me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. I can feel conspicuous standing in a line.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I can get tense when I speak in front of other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. I worry my head will shake or nod in front of others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I feel awkward and tense if I know people are watching me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix E – Rumination Questionnaire (RRQ)

Please rate the level of self-consciousness that you feel in each situation according to the scale provided.

	strongly disagree	disagree	neutral	agree	strongly agree
1. My attention is often focused on aspects of myself I wish I'd stop thinking about.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I always seem to be "re-hashing" in my mind recent things I've said or done.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Sometimes it is hard for me to shut off thoughts about myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Long after an argument or disagreement is over with, my thoughts keep going back to what happened.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I tend to "ruminate" or dwell over things that happen to me for a really long time afterward.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I don't waste time re-thinking things that are over and done with.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Often I'm playing back over in my mind how I acted in a past situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I often find myself re-evaluating something I've done.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I never ruminate or dwell on myself for very long.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. It is easy for me to put unwanted thoughts out of my mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I often reflect on episodes in my life that I should no longer concern myself with.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I spend a great deal of time thinking back over my embarrassing or disappointing moments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix F – Pathological Self-Consciousness Scale (SCONS)

Please rate the level of self-consciousness that you feel in each situation according to the scale provided.

	Not at all self-conscious	Very self-conscious
1. You are being interviewed for a job.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
2. You are giving an oral presentation in a class.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
3. You are eating lunch and a person you don't know very well has just joined you.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
4. You are out on a date with a person for the first time.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
5. You are taking a walk and find that you must pass several houses where there are people sitting on the front porches.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
6. You are at a party where you don't know very many people.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
7. You are with a group of casual acquaintances and someone has just asked your point of view on an issue.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
8. You are waiting in a line and the person next to you strikes up a conversation.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
9. A person whom you see occasionally, but is not a close friend, has just telephoned you to chat.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
10. You are trying to obtain some information about a product from a salesperson.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
11. A stranger has just asked you for directions to a location.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
12. You are in class and the professor has just asked you a question.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
13. Your are being introduced to a person for the first time.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	

Not at all  
self-conscious      Very  
self-conscious

- Not at all self-conscious                      Very self-conscious
14. You are walking and another pedestrian is approaching. You are the only two persons on the sidewalk. ☐ ☐ ☐ ☐ ☐
15. You are meeting with an employer to discuss your work. ☐ ☐ ☐ ☐ ☐
16. A friend has just asked you to give a ride to a person you don't know very well. The two of you have just gotten into your car. ☐ ☐ ☐ ☐ ☐
17. You have just answered your telephone. The caller is taking a survey and wants to ask you some questions. ☐ ☐ ☐ ☐ ☐
18. A friend is taking your photograph. ☐ ☐ ☐ ☐ ☐
19. You are with a group of people who are playing charades and it is your turn to act out a word. ☐ ☐ ☐ ☐ ☐
20. You are in a public place and you suddenly notice that the person sitting across from you is looking at you. ☐ ☐ ☐ ☐ ☐
21. You are approached on the street by a person with a microphone from a local TV news show, who wants to ask your opinion about an issue. ☐ ☐ ☐ ☐ ☐
22. You have just walked into a crowded restaurant alone for dinner. ☐ ☐ ☐ ☐ ☐
23. A friend has just dropped by unexpectedly to ask you if you would like some company. ☐ ☐ ☐ ☐ ☐
24. You are sitting in a crowded study room in a library. ☐ ☐ ☐ ☐ ☐
- Not at all self-conscious                      Very self-conscious



Appendix H – Information and Consent Form

**For an Anxiety Disorders Clinical database and permission to be contacted for future research at the Anxiety Disorders Clinics at Health Sciences Centre and St. Boniface General Hospital**

You have been referred to the Anxiety Disorders Clinic at Health Sciences Centre or St. Boniface General Hospital for an assessment.

**Part I: Clinical Database**

You are being asked to complete the enclosed questionnaires about the symptoms of your mental health problem, social supports, quality of life, and health care utilization. The objectives of these questionnaires are to help assess the nature and extent of your emotional condition. It is entirely up to you whether or not you decide to complete the questionnaires. These questionnaires will take approximately 30-60 minutes to complete.

The answers to the questions will be stored in a computer database in coded form. The code identifying you will be stored separately in a secure place. Only authorized staff of the Anxiety Disorders Clinics will have access to the information in the database. Your decision to allow your information to be in the database is completely voluntary.

With your permission, the information in the database may be used for research purposes. While there may be no benefit to you, the information in the database may help researchers to quickly identify individuals who may be suitable for a particular research study. Any research publications that use this data will not identify you in any way.

If you change your mind after agreeing to allow your information to be in the database, your information can be removed from the database. You will not be penalized in any way if you refuse to participate, or if change your mind and ask that your information be removed.

**Part II: Permission to be contacted for future research:**

You are being asked for permission to be contacted in the future for participation in research studies. If you agree to be part of the database, you are not obligated to participate in any future studies.

Please take your time to review this consent form and discuss any questions you may have. You are free to discuss this form with your friends, family and others before you make your decision.

This consent form and the information in the database may be inspected by a University of Manitoba Research Ethics Board to ensure that your information is being collected and maintained in an ethical manner.

If you have any questions about this database, please contact:

*Dr. Jitender Sareen, Dr. Mark Lander at 787-7949, or Dr. Kevin Kjernisted, Dr. John Walker or Dr. Laine Torgrud at 237-2335.*

If you have questions about your rights as a research participant, you may contact The University of Manitoba, Bannatyne Campus Research Ethics Board Office at (204) 789-3389.

**Do not sign this consent form unless you have had a chance to ask questions and have received satisfactory answers to all of your questions.**

**Statement of Consent**

I have read this consent form. I have had the opportunity to ask questions and discuss what is involved. I understand that my personal information will be kept confidential. By signing this consent form, I have not waived any of my legal rights.

- I. I consent to allowing the information I provide to be entered into a clinical database  
Yes ☐ No ☐
- II. I consent to allowing the information in the database to be used for research purposes  
Yes ☐ No ☐
- III. I consent to being contacted in the future for possible participation in research studies  
Yes ☐ No ☐

Participant signature \_\_\_\_\_ Date \_\_\_\_\_

Participant printed name: \_\_\_\_\_

I, the undersigned, attest that the information in the Participant Information and Consent Form was accurately explained to and apparently understood by the participant and that consent to participate was freely given by the participant or the participant's legally acceptable representative.

Investigator's signature \_\_\_\_\_ Date \_\_\_\_\_

Investigator's Printed name: \_\_\_\_\_



Appendix I – Clinical Group Script

Good Afternoon/ Evening

My name is \_\_\_\_\_. Thank you for your interest in our Study. This study is being conducted by Dr. Ed. Johnson, Dr. John Walker and Jason Ediger to better understand how people with anxiety problems interact with other others and interpret their environment. This study is being conducted jointly through the St. Boniface Hospital Anxiety Disorders Research Program and the University of Manitoba.

We are interested in how people suffering from anxiety problems differ from others in the way they view themselves and others around them. In particular, how do people interpret cues from others in their environment and draw conclusions about the impressions they are making on those around them.

This is a fairly simple study. Participants are asked to fill out questionnaires about what they were thinking about in their first group session and to describe some of their thoughts about themselves and the other group members. All answers are confidential and the whole process should take about 30 minutes.

I would like to direct your attention now to the consent form you have in your hand. Please note two things. First of all, this consent form allows us to use the data you give us today in the study. Secondly, you all filled out some questionnaires when you entered the program. Signing this form allows us to match the data you provided today with some of that data.

Any questions?

Feel free to sign the form and go on to the next questionnaire. The directions for each questionnaire are at the top of the page.

## Appendix J – Clinical Consent Form

This study is looking at how people with anxiety problems view themselves and others. We are particularly interested in how accurate people with anxiety are at judging the impressions they make on others. Those agreeing to participate in this study will complete a variety of questionnaires designed to assess how you view yourselves, the people around you, and how you believe they view you. This information may be quite helpful in assessing future directions for the treatment of anxiety. We cannot do this research without your help, however. Should you decide to participate, the data collected today will be matched to the research questions you have already filled out to help us to better understand the experience and treatment of anxiety problems.

Completion of these questionnaires is strictly voluntary. You may choose not to participate or discontinue participating at any time without any effect on your therapy.

All questionnaire information will remain strictly confidential. Your name appears only on this consent form which will be stored separately from all other data. The only identifying information on the questionnaires themselves will be initials, sex and age. This information is used to match your answers in this stage with your previously completed questionnaires. Completed questionnaires will be stored in a locked room until they are destroyed and be accessible only by authorized hospital staff. Privacy will be further protected by only reporting group data. No individual responses will be identified at all.

There are no known risks associated with completing these questionnaires. If, however, completing the questionnaires is in any way distressing, you are encouraged to discontinue and discuss it with the experimenter or your clinician.

Knowledge gained in this study may be used to improve the effectiveness of therapeutic groups in the future.

Should you have any further questions regarding this study please feel free to call Jason Ediger, M.A. Ed. Johnson, Ph.D 474-8331

This research has been approved by the Research Ethics Board at the University of Manitoba. Any complaints may be directed to Human Ethics Secretariat at 474-7122.

Signing this form declares that you understand the information above and willingly agree to participate in today's study. Furthermore, you give the above named experimenters permission to match this information with information you have previously supplied for research purposes.

I have read all of the above and willingly agree to participate in this study.

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Sign Name

\_\_\_\_\_  
Date

Appendix K – Control Group Cover Letter

Dear Sir or Madam

If you are reading this letter, it means that someone close to you is currently attending a group program for anxiety problems. This individual has invited you to attend a group meeting at St. Boniface Hospital. If you are able to attend this meeting we would like you to consider participating in a research project that will take place following the meeting. The aim of this research is to help us better understand how people with anxiety disorders interact with other others and interpret their environment. This study is being conducted jointly through the St. Boniface Hospital Anxiety Disorders Research Program and the University of Manitoba. Research is important to help professionals better understand the nature of anxiety problem and thereby develop more effective treatments. Volunteers, such as yourself, contribute a great deal to this process.

This study is interested in how people with anxiety problems differ from others in the way they view themselves and others around them. In particular, we are interested in how people interpret cues from others in their environment and draw conclusions about the impressions they are making on those around them. We would appreciate your help in this project.

The requirements are simple. Participants will be asked to complete the attached consent form and questionnaires, which are expected to take approximately 45 minutes. Then, after they have attended the open group meeting at St. Boniface Hospital Anxiety Disorders Program, they will invited to complete another pair of questionnaires. This second package takes about 30 minutes to complete.

If you are interested in participating in this study, please read the attached consent form carefully and sign it at the bottom. You may then complete the attached questionnaires. Then, please bring this completed package with you when you attend the group meeting on (DATE).

Please call any of the following numbers if you have any questions.

Jason Ediger

Ed Johnson 474-8331

John Walker 237-8055

Sincerely:

Appendix L – Control Group Consent Form

This study is looking at how people with anxiety problems view themselves and others. We are particularly interested in how accurate people with anxiety are at judging the impressions they make on others and comparing that to judgement by non-anxious individuals. Volunteers are valuable as part of a control group to make this comparison possible. Those agreeing to participate in this study will complete a variety of questionnaires designed to assess how you view yourselves, the people around you, and how you believe they view you. Your participation will help us to better understand the experience and treatment of anxiety problems.

Should you decide to participate, you will be asked to complete questionnaires at two separate times. The first set of questionnaires are attached to this form and must be completed prior to your attending the group session at St. Boniface Hospital. This should take approximately 45 minutes. The second set of questionnaires will be given in a brief meeting immediately following that group session. This meeting should take approximately 30 minutes. Completion of these questionnaires is strictly voluntary.

All questionnaire information will remain strictly confidential. Your name appears only on this consent form which will be stored separately from all other data. The only identifying information on the questionnaires themselves will be initials, sex and age. This information is used to match your answers for each questionnaire. Completed questionnaires will be stored in a locked room until they are destroyed and be accessible only by authorized hospital staff. Privacy will be further protected by only reporting group data. No individual responses will be identified at all.

There are no known risks associated with completing these questionnaires. If, however, completing the questionnaires is in any way distressing, you are encouraged to discontinue and discuss it with the experimenter or your clinician.

Knowledge gained in this study may be used to improve the effectiveness of therapeutic groups in the future.

Should you have any further questions regarding this study please feel free to call  
Jason Ediger, M.A. or Ed. Johnson, Ph.D 474-8331

This research has been approved by the Research Ethics Board at the University of Manitoba. Any complaints may be directed to Human Ethics Secretariat at 474-7122.

Signing this form declares that you understand the information above and willingly agree to participate in this study. Please bring this form and the attached questionnaires with you to the hospital when you attend the therapy session.

I have read all of the above and willingly agree to participate in this study.

---

Print Name

Sign Name

Date

Appendix M – Control Group Script

Good Afternoon/ Evening

My name is \_\_\_\_\_. Thank you for your interest in our Study. This study is being conducted by Dr. Ed. Johnson, Dr. John Walker and Jason Ediger to better understand how people with anxiety problems interact with other others and interpret their environment. This study is being conducted jointly through the St. Boniface Hospital Anxiety Disorders Research Program and the University of Manitoba.

We are interested in how people suffering from anxiety problems differ from others in the way they view themselves and others around them. In particular, how do people interpret cues from others in their environment and draw conclusions about the impressions they are making on those around them.

This is a fairly simple study. You've already filled out the consent form and the first set of questionnaires. This next group of questions ask about what you were thinking about in the group session and to describe some of your thoughts about yourselves and the other group visitors. Again, all answers are confidential and the whole process should take about 30 minutes.

Any questions?

The directions for each questionnaire are at the top of the page and let me know if you have any questions?