

BETTER SAFE THAN SORRY?

AN EXAMINATION OF SAFETY BEHAVIOUR REDUCTION INTERVENTIONS IN  
SOCIAL ANXIETY DISORDER

by

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## Abstract

Contemporary cognitive theories argue that socially anxious individuals adopt self-protective behavioural strategies under conditions of perceived social threat in order to prevent or diminish the likelihood of negative social outcomes. When performed in an anxiety-provoking but otherwise innocuous situation, however, safety behaviours are posited to facilitate biased processing of threat-relevant information, disrupt behavioural performance, elicit negative social responses, and ultimately prevent disconfirmation of fear-relevant beliefs. This dissertation project was designed to evaluate the effects of safety behaviour reduction strategies on a number of the core processes relevant to the persistence of pathological social fear. Two studies were conducted to address the following issues: Do safety behaviour reduction strategies influence socially anxious individuals' (1) self- and social-judgments, (2) social performance, (3) the interpersonal reactions of oneself and others, and (4) appraisals of future social events.

In study 1, *in vivo* safety behaviours were manipulated in a sample of 50 socially anxious students during a laboratory social interaction. Participants were randomly assigned to either a safety behaviour reduction (SB,  $n = 25$ ) or exposure alone (control,  $n = 25$ ) condition, and subsequently took part in two conversations with a trained experimental assistant. Results revealed that participants in the SB group displayed more accurate self-judgments of anxiety-related behaviour, improved social performance, and evoked more positive partner reactions.

Study 2 was designed to replicate and extend the findings of study 1 in a sample of 80 patients seeking treatment for social anxiety disorder (SAD). Following a baseline conversation, participants were randomly assigned to the graduated exposure (GE,  $n = 40$ ) or safety behaviour reduction condition (SB,  $n = 40$ ). Consistent with the findings of study 1, the SB group displayed more accurate self-judgments about visible displays of anxiety, more effective social behaviour,

and were better liked by their interaction partner relative to GE participants. Moreover, relative to controls, participants in the SB group made less negative judgments about the likelihood of previously identified feared outcomes pertaining to future social events. Implications of the present findings for elucidating the role of safety behaviours in the maintenance of SAD, and its treatment outcome will be considered.

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## Introduction

Social Phobia, or Social Anxiety Disorder (SAD), is a prevalent and often incapacitating anxiety disorder characterized by a marked and persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others (American Psychiatric Association, 1994). People with SAD fear that they will act in way or show anxiety symptoms that will be embarrassing or humiliating, or that may result in negative evaluation by others. Consequently, the feared social interaction or performance situations are avoided, or else endured with intense distress and anxiety. Commonly feared situations include attending parties or social gatherings, meeting new people, initiating or maintaining conversations, participating in group meetings, being the centre of attention, interacting with authority figures, being assertive, public speaking, and eating or drinking in public. Patients often report significant anxiety in anticipation of feared social events, and may report panic attacks upon exposure to such situations.

SAD occurs at a lifetime prevalence of approximately 12% in the general population, making it the fourth most prevalent psychiatric disorder (Kessler, Berglund, Demler, Jin, & Walters, 2005). SAD typically has an early age of onset surfacing in either childhood or adolescence, and often persists well into adulthood following a chronic, unremitting course that significantly interferes with the afflicted individual's life (e.g., Ballenger et al., 1998). This condition is associated with educational and occupational underachievement, impaired social relationships, and social isolation (e.g., Schneier et al., 1994). SAD frequently co-occurs with depression, substance abuse, and other anxiety disorders, and it has been shown to increase the risk of these conditions (e.g., Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992). All in

all, the extant literature suggests that for many, SAD is a lifelong illness that causes significant functional impairment and an overall diminished quality of life. Those striking facts highlight the need for research directed at better understanding the factors that lead to the development and maintenance of this condition so that effective treatment interventions can be developed.

A defining feature of SAD is a fear of negative evaluation (American Psychiatric Association, 1994). Social anxiety is thought to arise when individuals are motivated to make a positive impression on others, but doubt their ability to do so (e.g., Leary, 2001; Leary & Kowalski, 1995; Schlenker & Leary, 1982). On the basis of past experiences involving repeated criticism, disapproval, or rejection, socially anxious individuals fear that they will be unsuccessful at eliciting other peoples' approval and acceptance (e.g., Clark, 2001; Rapee & Heimberg, 1997). It is assumed that because people possess a fundamental need for acceptance and belonging, anxiety serves to warn the individual of threats to their social well-being (e.g., Baumeister & Tice, 1990). Under conditions of perceived threat, individuals naturally seek out safety. The pursuit of self-protection has long been recognized as a core feature of social anxiety. It has been argued that the characteristic inhibited and reticent behaviour of socially anxious individuals reflects a behavioural repertoire that is designed to minimize the likelihood of disapproval or rejection (Arkin, 1981; Arkin, Lake, & Baumgardner, 1986; Clark, 2001; Clark & Wells, 1995; Rapee & Heimberg, 1997). Theories highlighting the role of self-protection in social anxiety have been distributed across a variety of perspectives and will be reviewed in brief below.

#### *Self-Protection and Social Anxiety*

Arkin (1981) was among the first to propose that socially anxious individuals adopt a protective style of self-presentation intended to avoid negative social outcomes. He argued that

socially anxious people perform behaviours that are moderate or subdued to deflect attention away from themselves, and are careful to avoid potentially risky behaviours such as stating an opinion or revealing personal information (e.g., Arkin et al., 1986). In a similar vein, Leary and colleagues suggested that the behaviours that tend to accompany social anxiety often reflect a general interpersonal strategy intended to minimize threat, i.e., rejection, in social encounters where a person's social image is at stake (Schlenker & Leary, 1982; Leary & Kowalski, 1995). Leary argued that socially anxious people doubt their ability to convey an impression to others that will result in positive evaluation and therefore engage in passive affiliative behaviours in order to reduce the likelihood of disapproval or rejection (e.g., Leary, 2001).

A similar perspective is seen in evolutionary accounts of fearful submissive behaviour and social anxiety (e.g., Gilbert & Trower, 2001; Trower & Gilbert, 1989). Trower and Gilbert (1989) propose that the behaviours of socially anxious persons (e.g., gaze aversion, inhibition) function as a safety system designed to reduce the threat of disapproval or conflict from dominant members of a social group. In this way, submissive behaviours allow the person to remain a part of the group, thereby averting potentially costly outcomes associated with ostracism. All in all, the various theories share the common principle that socially anxious individuals are motivated to avoid negative social outcomes, and adopt behavioural strategies intended to manage perceived social threat and diminish the likelihood of disapproval or rejection. Although self-protective strategies may not elicit obviously positive evaluations, from the perspective of the socially anxious person, they are less likely to lead to overt rejection.

#### *Cognitive Theories of Self-protection*

At a fundamental level, the pursuit of safety under conditions of *objective* threat would seem adaptive. What happens, however, when safety behaviours are performed in fear-

provoking, but otherwise innocuous situations? Cognitive behavioural models have integrated the above perspectives on self-protection into a cohesive theoretical framework to understand the processes involved in the etiology and persistence of SAD (Clark, 2001; Clark & Wells, 1995; Rapee & Heimberg, 1997). Those theories have also drawn on work regarding the role of safety behaviours in the maintenance of other anxiety-related conditions such as panic and agoraphobia (e.g., Rachman, 1983, 1984; Salkovskis, 1991). Broadly defined, safety behaviours are strategic acts, either cognitive or behavioural, designed to protect the anxious individual from perceived threat (e.g., Clark, 1999; Salkovskis, 1991; Thwaites & Freeston, 2005). Safety behaviours are said to arise when anxious individuals appraise a social situation as potentially dangerous. Contemporary cognitive theories provide a comprehensive account of the way in which self-protective behaviours operate to maintain social anxiety by delineating their relationship with other key cognitive and behavioural processes purported to be central to SAD. Further, those theories have directly informed our most effective psychological treatments for SAD (e.g., Clark et al., 2006; Heimberg et al., 1998). Accordingly, cognitive behavioural formulations of SAD will provide the conceptual framework for the proposed work.

### *Overview of Study*

The present work set out to explore the relationship between safety behaviours and social fears. The primary aim of this dissertation research was to examine the effect of experimental manipulations designed to reduce safety behaviours on a number of core cognitive, behavioural, and interpersonal processes in SAD. The introductory section will begin by outlining the central components of contemporary cognitive formulations of SAD. The extant empirical literature relevant to those models will be summarized, with a particular focus on relating those findings to what is known about safety behaviours and the persistence of SAD. An overview of the theory

behind cognitive and behavioural interventions designed to modify pathological fear will then be presented, while highlighting the role of safety behaviours in contemporary treatment regimens. The introduction will conclude with a critical evaluation of existing research examining safety behaviour reduction strategies in SAD, with the goal of highlighting unresolved issues and future areas of study.

### *Cognitive Models of SAD*

The development of social anxiety is believed to arise from an interaction between an innate anxious or inhibited disposition and a social environment that either fails to help vulnerable individuals overcome their innate timidity or exacerbates their fears through negative social interactions (e.g., Alden & Taylor, 2004; Burgess, Rubin, Cheah, & Nelson, 2001; Schmidt, Polak & Spooner, 2001). Cognitive theorists propose that on the basis of past negative social experiences, socially anxious individuals develop negative beliefs about the self and their social world, i.e., social threat schemas (e.g., Clark, 2001; Clark & Wells, 1995; Rapee & Heimberg, 1997). These writers posit that contemporary social cues then activate those negative schemas, or beliefs, which leads the anxious individual to appraise social situations as threatening or dangerous, and to anticipate negative social outcomes (e.g., “I will say something foolish”, “The other person will reject me”). Once activated, negative schemas are believed to elicit a constellation of cognitive and behavioural changes, namely excessive processing of threat-relevant cues and the adoption of behavioural strategies intended to protect the individual from perceived social catastrophe. According to the theory, however, those processes ultimately lead to negative biases in the processing of social information, heighten anxiety, prevent disconfirmation of fear-related beliefs, and may actually create the negative social outcomes the anxious individual is trying to avoid. An accumulating body of research supports many of the

key tenets outlined in cognitive formulations of SAD, and the empirical evidence relevant to those models will be reviewed below.

### *Negative Social Predictions*

The first tenet of cognitive models is that people with SAD make negative predictions about the outcome of social events (e.g., “I will appear anxious and other people will judge me negatively”) (e.g., Clark, 2001; Clark & Wells, 1995; Rapee & Heimberg, 1997). In support of this proposition, research using thought-listing techniques reveals that people with SAD report negative self-related thoughts (e.g., “I will sound stupid”) prior to engaging in a social encounter (e.g., Glass & Furlong, 1990; Hofmann, Moscovitch, Kim, & Taylor, 2004). Moreover, social anxiety symptoms were found to correlate significantly with the number of negative self-related thoughts reported by phobic patients both before and after treatment (Hofmann et al., 2004). Similarly, other research found that prior to a social task, people with SAD were more likely to catastrophize about what might happen in the situation compared to low anxious individuals (Hinrichsen & Clark, 2003). Wallace & Alden (1997) found that people with SAD predicted that their performance would fall short of their partner’s expectations, which implies that the phobic participants anticipated negative social outcomes.

Researchers have also found that patients with SAD report experiencing negative images prior to and during a social event that involve seeing one’s self as if from an external observer’s perspective (Hackmann, Surawy, & Clark, 1998; Hinrichsen & Clark, 2003). It is notable that the content of the image appears to be closely related to the anxious individual’s feared outcomes, i.e., their negative predictions, and that negative self-imagery is often based on a memory of an earlier traumatic social experience (e.g., being bullied or embarrassed) that occurred near the onset of the SAD (Hackmann, Clark, & McManus, 2000; Hackmann et al., 1998). Finally, a

considerable body of work has demonstrated that people with SAD overestimate the likelihood (i.e., probability) and cost (or consequence) of negative social outcomes compared to non-anxious controls and individuals with other anxiety disorders (Foa, Franklin, Perry, & Herbert, 1996; Gilboa-Schechtman, Franklin, & Foa, 2000; Lucock & Salkovskis, 1988; McManus, Clark, & Hackmann, 2000; Poulton & Andrews, 1994; Voncken, Bogels, & deVries, 2003; Wilson & Rapee, 2005). It is notable that these biases were found to be specific to social, but not non-social events (e.g., Foa et al., 1996). Taken as a whole, the extant research is consistent with the cognitive proposition that negative early social experiences lead to development of negative beliefs about the self, which in turn lead the anxious individual to anticipate negative social outcomes.

#### *Processing of Threat-Relevant Cues*

The second tenet of cognitive models is that individuals with SAD selectively attend to and process threat-relevant cues (e.g., Beck et al., 1985; Clark, 2001; Clark & Wells, 1995; Rapee & Heimberg, 1997). Threat-relevant information can relate to the self (e.g., anxiety-related cues, negative cognitions) or other people (e.g., verbal and nonverbal cues from others).

*Self-Related Cues.* Cognitive writers argue that given their desire to convey a favourable impression to others and their doubts about being able to do so, people with SAD shift their attention to a detailed monitoring and observation of themselves (e.g., Clark, 2001; Rapee & Heimberg, 1997). Preferential processing of self-related information can be problematic because it is believed to increase the salience of those cues (e.g., anxiety-related sensations and behaviours), while external information becomes inaccessible or is ignored. Consequently, this negative self-related information figures prominently into the SAD individual's evaluations of their performance, thereby skewing judgments of the social event.



Several studies support the proposition that people with SAD selectively attend to self-related as opposed to other-related (external) information (e.g., Hope, Rapee, Heimberg, & Dombek, 1990; Mansell, Clark, & Ehlers, 2003; Mellings & Alden, 2000). Similarly, other research found that social anxiety was associated with reduced processing of external social cues (e.g., Chen, Ehlers, Clark, & Mansell, 2002; Mansell, Clark, Ehlers, & Chen, 1999). For instance, under conditions of social-evaluative threat, socially anxious individuals were found to exhibit an attentional bias away from faces (Mansell et al., 1999). In a similar vein, socially anxious individuals have been shown to display memory omissions for partner-related information following a conversation situation, suggesting reduced processing of that information (Daly, Vangelisti, & Lawrence, 1989; Hope, Heimberg, & Klein, 1990; Mellings & Alden). It is notable that recall of partner-related information was poorest in individuals reporting the greatest levels of self-focus during the interaction (e.g., Mellings & Alden). All in all, this line of work suggests that people with SAD dedicate increased attentional resources to the self at the expense of external or other-related information.

*External (Other-Related) Cues.* In addition to increased processing of negative self-related information, some research supports the notion that socially anxious individuals process external information in a negatively biased fashion as well. For instance, Veljaca and Rapee (1998) found that during a public speaking task, socially anxious individuals displayed selective attention to negative audience cues and selectively ignored positive social cues. Another study demonstrated that patients with SAD were more likely to attend to and remember critical faces than neutral faces in a laboratory task (Lundh & Ost, 1996). Finally, Gilboa-Schechtman, Foa, and Amir (1999) found that patients with SAD were faster at detecting angry faces than happy faces in a neutral crowd using the “face-in-the-crowd paradigm”. Taken together, this research is

consistent with cognitive theorists who suggest that individuals with SAD may be more likely to notice and remember responses from others that they interpret as signs of disapproval or rejection (e.g., Clark & Wells, 1995).

#### *Interpretation of Threat-Relevant Cues*

The third cognitive tenet is that selective processing of threat cues leads to biased interpretations of social events (e.g., Clark, 2001; Clark & Wells, 1995; Rapee & Heimberg, 1997). In support of this tenet, the extant research demonstrates that people with SAD display negative biases in their self-related judgments. They underestimate their social performance and overestimate negative aspects of their behaviour (e.g., visible anxiety) during conversation and speech tasks (e.g., Alden & Wallace, 1995; Ashbaugh, Antony, McCabe, Schmidt, & Swinson, 2005; Norton & Hope, 2001; Rapee & Lim, 1992; Stopa & Clark, 1993; Taylor & Alden, 2005). Importantly, researchers have found that socially anxious individuals use negative self-related information to make overly negative judgments about how they appear to others (e.g., Arntz, Rauner, & van den Hout, 1995; Mansell & Clark, 1999; McEwan & Devins, 1983; Mellings & Alden, 2000). For instance, in a sample of socially anxious individuals, Mansell and Clark found a significant positive association between participants' awareness of their own bodily sensations while giving a speech and the extent to which those individuals overestimated negative aspects of their appearance (e.g., appearing awkward). Those findings imply that the anxious participants were using their anxiety-related sensations to infer how they appeared to others.

If people with SAD also preferentially process negative external social cues (e.g., Veljaca & Rapee, 1998), then one would expect to see those individuals exhibit biased interpretations of other people's behaviour and responses. Research on *social* interpretation bias is inconsistent. In support of biased interpretations, Leary, Kowalski, & Campbell (1988) found that socially

anxious students assumed that people depicted in social vignettes would judge both themselves and others more negatively, suggesting that the anxious participants displayed a generalized bias toward viewing others as inherently critical. Other research found that socially anxious students interpreted videotaped interviewers as having a more negative response to them compared to controls (Pozo, Carver, Wellens, & Scheier, 1991). Similarly, Alden and Wallace (1995) found that individuals with SAD underestimated their partner's liking for them relative to their partner's own ratings following a laboratory conversation.

In contrast, other work found that people with SAD did not interpret their partner's behaviour more negatively than did controls during a laboratory-based social interaction (Alden & Wallace, 1995; Stopa & Clark 1993; Taylor & Alden, 2005). Those findings suggest that interpretation bias may exist more in the judgments of others' perceived responses to oneself (i.e., judgments which ultimately reflect negative evaluations of the self), rather than judgments of other people's actual behaviour and characteristics (see Alden & Taylor, 2004 for a review). Finally, one recent study found that negative social interpretation biases were specific to phobic individuals reporting a social developmental history marked by parental emotional and physical abuse, and that those biases were evident only for interpretations of ambiguous social cues (Taylor & Alden, 2005). Taken as a whole, research supports the existence of negative biases in the self-related judgments of people with SAD, whether based on judgments of one's own performance or in terms of others' responses in relation to oneself. Biases in social interpretations are less clear, and may be found primarily in phobic individuals with traumatic social learning histories.

### *Safety Behaviours*

A fourth tenet of cognitive models is that individuals with SAD engage in a variety of self-protective, or *safety* behaviours during social events that are intended to prevent or diminish the likelihood of the feared outcome (e.g., negative evaluation, criticism) (e.g., Arkin et al., 1986; Clark, 2001; Clark & Wells, 1995; see also Salkovskis, 1991). For instance, an individual who fears saying something inappropriate and being evaluated negatively as a result, may engage in a series of behaviours designed to prevent each feared outcome such as mentally rehearsing what they are about to say, censoring what they talk about, or saying little or nothing during a conversation. In-situation safety behaviours operate to protect the individual, not from the feared situation itself, but from the anticipated negative *outcomes* or *consequences* associated with those situations (e.g., Salkovskis, 1991). Thus, the particular safety behaviours used can be seen as a direct extension of the phobic individual's fear-related predictions (see Salkovskis, Clark, & Gelder, 1996 for example). Other common safety behaviours in people with SAD include avoiding eye contact, minimizing self-disclosures, speaking only briefly, and talking quietly. An important contribution of the cognitive perspective is the recognition that safety behaviours can be either internal mental acts (e.g., monitoring one's speech) or overt behaviours (e.g., avoiding eye contact).

In support of cognitive theories, several studies demonstrated that when perceived social threat is heightened, socially anxious individuals engage in more self-protective behaviours during the task (e.g., minimizing self-disclosure) (Alden & Bieling, 1998; DePaulo, Epstein, & LeMay, 1990). Similarly, participants high in social anxiety and patients with SAD were found to endorse more self-protective and fewer acquisitive social goals or behavioural strategies during conversation tasks with a trained confederate (Meleshko & Alden, 1993; Wallace &

Alden, 1997). Interestingly, anxious participants in both studies adopted a protective style regardless of the social cues displayed by their partner, implying the existence of a generalized pattern of self-protection.

In-situation safety behaviours are believed to contribute to the maintenance of social anxiety in several ways. First, an important recognition by Salkovskis (1991) was that safety behaviours can prevent the disconfirmation of an individual's fears (see also Clark, 2001; Clark & Wells, 1995). He proposed that anxious individuals often fail to benefit from the non-occurrence of a feared outcome because they attribute the absence of danger in the situation to the use of the safety behaviours, rather than inferring that the situation was less threatening than initially predicted. For example, a socially anxious person may believe that they avoided being humiliated during a social gathering only because they were careful to not draw attention to themselves. In this way, the anxious person fails to learn that their feared outcome may not have occurred even without use of the safety behaviours, thereby inadvertently preserving their negative beliefs and reinforcing reliance on the safety behaviours during future encounters with the feared stimuli. Preliminary support for this proposition comes from two studies which found that people with SAD reported reductions in anxiety and fear-related belief ratings following a behaviour test when they were instructed to refrain from using their usual safety behaviours (Kim, 2005; Wells et al., 1995).

Cognitive models also recognize that because many safety behaviours require the anxious person to carefully monitor their behaviour, these acts often lead to excessive processing of self-related cues. In turn, increased self-preoccupation is posited to heighten the salience of negative information about the self such as anxiety-related sensations, thereby intensifying the individual's anxiety and biasing judgments of contemporary social events. Research supports the

anxiety-inducing effect of increased self-monitoring and suggests that heightened self-preoccupation is associated with distorted self-perceptions (e.g., Mansell & Clark, 1999; Wells & Papageorgiou, 1998; Woody, 1996; Woody & Rodriguez, 2000). However, the relationship between *in vivo* safety behaviours and judgment biases in socially anxious populations has yet to be established.

Safety behaviours are also hypothesized to create the actual symptoms or negative outcomes that the social phobic individual fears (Clark, 2001; Clark & Wells, 1995). For example, holding one's arms close to one's body to prevent other people from noticing the appearance of sweat can actually increase sweating in the anxious individual. Several studies have demonstrated that the use of safety behaviours is associated with negative perceptions by objective observers (Alden & Bieling, 1998; Hirsch, Meynen, & Clark, 2004; Stangier, Heidenrich, & Schermelleh-Engel, 2006). In turn, those negative social outcomes are likely to be interpreted as a confirmation of the phobic individual's fears, thereby contributing to the preservation of fear-related beliefs and leading to continued safety behaviour use in future interactions.

#### *Summary of the Cognitive Model*

To summarize, cognitive models of SAD propose that social cues activate negative social beliefs, or schema, which arise from consistencies in past learning experiences (e.g., Clark, 2001; Clark & Wells, 1995; Rapee & Heimberg, 1997). Schema-activation leads to selective processing of threat-relevant cues, including negative self-related (e.g., anxiety sensations) and other-related information (e.g., signs of disapproval), while schema-inconsistent aspects of the environment are ignored. In turn, excessive processing of negative social cues is believed to increase the salience of that information, thereby leading to biased interpretations. Negative

social predictions also lead to the adoption of self-protective behavioural strategies designed to prevent the occurrence of negative social outcomes. Those behaviours, however, facilitate biased processing of threat-relevant information, elicit negative responses from others, and impede prediction disconfirmation. Taken as a whole, those processes lead the person with SAD to be caught in a negative cognitive and behavioural cycle, which serves to maintain social anxiety and prevent disconfirmation of that person's fears.

### *The Modification of Social Fears*

According to cognitive theorists, to overcome social anxiety it is necessary to reduce activation of the social threat schema that gives rise to negative social predictions (e.g., Foa & Kozak, 1986). This change occurs when new, schema-inconsistent information is incorporated into existing fear-relevant memory structures (e.g., Beck et al., 1985; Clark, 2001; Clark & Wells, 1995; Rapee & Heimberg, 1997). For example, a common strategy employed by cognitive behavioural therapists is to have patients identify their fear-related predictions prior to engaging in a feared situation, and then have those patients evaluate the accuracy of their predictions following a behavioural experiment by noticing what the situation is really like, i.e., that it is not as threatening as originally predicted (e.g., Clark, 1999, 2001; Heimberg & Becker, 2002). It is believed that *new learning* will occur through repeated experiences with the non-occurrence of the feared outcome, thereby decreasing anxiety and fear in that situation over time (e.g., Foa & Kozak, 1986; Ledoux, 1996; Rodebaugh, Holaway, & Heimberg, 2004). The sum of new experiences is thought to create a new cognitive representation of those events, which then competes with the automatic activation of the threat schema during future social events (e.g., Bouton, 2002; LeDoux, 1996). Thus, it is assumed that the phobic individual will eventually take the disconfirmatory evidence into account when appraising future social events.

How might the habitual use of safety behaviours during exposure to feared social encounters impact emotional processing and the acquisition of new learning? As previously discussed, cognitive theorists argue that the assimilation of new, belief-inconsistent information can be impeded when the anxious person misattributes the absence of the feared outcome to the use of safety behaviours, rather than inferring that the situation was less dangerous than originally predicted (e.g., Salkovskis, 1991). An alternative perspective suggests that safety behaviours redirect an individual's attention away from threat, leading to reduced processing of threat-relevant information that could be used to disconfirm fear-related beliefs (e.g., Kamphuis & Telch, 2000; Sloan & Telch, 2002). In a sense, both accounts would argue that safety behaviours result in the phobic individual being both "present" and "not present" in the feared situation, thereby diminishing the effectiveness of environmental cues associated with safety in modifying pre-existing fear structures in memory (e.g., Foa & Kozak, 1986; Rachman, 1980). Although the concept of safety in relation to the modification of fear is not new (see Bandura, Jeffrey, & Wright, 1974; Rachman, 1983, 1984 for example), little empirical work had been conducted in this domain until the past decade.

### *Safety Behaviours and SAD*

Only three studies have directly manipulated the use of safety behaviours in individuals with SAD. The first attempt to experimentally manipulate in-situation safety behaviour use was conducted by Wells et al. (1995) in a sample of eight patients with SAD. Those researchers found that encouraging participants to drop safety behaviours during exposure to idiosyncratic feared situations resulted in significantly greater reductions in patients' self-reported anxiety and fear-related beliefs compared to exposure alone. Kim (2005) replicated those findings and, in addition, demonstrated that the effectiveness of eliminating safety behaviours was enhanced



when students with SAD were given a cognitive rationale highlighting prediction disconfirmation. Findings from these two laboratory studies were confirmed in a three-week cognitive behavioural trial. Patients with SAD who were instructed to drop safety behaviours demonstrated greater improvement on a measure of social anxiety compared to patients who received the standard treatment protocol (Morgan & Raffle, 1999). It is notable, however, that significant between-group differences were only found on one of two specific measures of social anxiety symptoms. Although promising, work on safety behaviour reduction has been limited either by small sample sizes, single group designs, absent manipulation checks, single-item dependent measures, and the use of non-interpersonal social tasks.

Aside from the general association between safety behaviours and fear reduction (Kim, 2005; Wells et al., 1995), little is known about how reducing safety behaviours influences the processes purported to be central to SAD. For the socially anxious person, safety behaviours are hypothesized to facilitate biased processing of threat-relevant information, disrupt behavioural performance, and lead to negative social outcomes, thereby further perpetuating their social fears (e.g., Alden, 2001; Clark, 2001; Clark & Wells, 1995; Rapee & Heimberg, 1997). The role of safety behaviours in the maintenance and treatment of social fears will be reviewed below, with the goal of highlighting unresolved issues in this domain.

### *Safety Behaviours and Cognitive Change*

Cognitive theories of SAD argue that safety behaviour use during exposure to fear-provoking situations interferes with threat disconfirmation and impedes cognitive change (e.g., Clark, 2001; Salkovskis, 1991). Although empirical support for this proposition comes from two studies in people with SAD (Kim, 2005; Wells et al., 1995), those studies are limited by their use of only one, single-item measure of cognitive change, namely change in idiosyncratic fear-

related beliefs. Little is known, however, about the way in which safety behaviours influence other cognitive processes relevant to social anxiety. As reviewed earlier, people with SAD have been shown to display negative biases in their self- and social-judgments (e.g., Alden & Wallace, 1995; Rapee & Lim, 1992; Stopa & Clark, 1993), which purportedly contribute to the maintenance of social fears (e.g., Clark, 2001; Rapee & Heimberg, 1997). Research, however, has yet to examine the relationship between safety behaviours and judgment processes in people with SAD.

As previously discussed, safety behaviours are posited to disrupt processing of threat-relevant information, either through heightened processing of negative self-related cues such as anxiety-related sensations and behaviours (e.g., Clark, 2001; Clark & Wells, 1995) or limited access to disconfirmatory information (e.g., Sloan & Telch, 2002). In turn, biased processing of social information is thought to negatively skew the judgments of the phobic individual. Thus, one might expect that procedures designed to decrease safety behaviour use would facilitate more complete and accurate processing of threat-relevant cues, and therefore modify biased social judgments. Those speculations, however, have yet to receive empirical support. All in all, it would seem important to address whether *in vivo* safety behaviour manipulations affect cognitive biases and ultimately the assimilation of corrective social information necessary for threat disconfirmation.

### *Safety Behaviours and Behaviour Change*

Although research provides some support for the utility of safety behaviour manipulations in facilitating belief change in people with SAD, no work has established whether those manipulations influence *in vivo* social performance. This issue is of particular importance, given that socially anxious individuals have been shown to display ineffective social behaviour

during a variety of social tasks (e.g., Beidel, Turner, & Dancu, 1985; Meleshko & Alden, 1993). Although earlier models of SAD emphasized social skills deficits as the central maintaining feature of this condition (e.g., Trower, Yardley, Bryant, & Shaw, 1978), contemporary cognitive models argue that dysfunctional social behaviour is a cue activated, self-protective strategy adopted to prevent feared outcomes (e.g., Arkin et al., 1986; Clark & Wells, 1995). One corollary of those theories is that we would expect to see the emergence of more functional social behaviour in situations where people with SAD refrain from using safety behaviours.

Two studies have demonstrated that the use of safety behaviours is associated with negative perceptions by objective observers (Hirsch et al., 2004; Stangier, et al., 2006). In a laboratory-based study examining the effects of a negative self-imagery manipulation, Hirsch et al. (2004) found that safety behaviours that involved avoidance of social engagement (e.g., avoiding eye contact) led to negative ratings from observers, but only on global, not specific, behavioural dimensions. Interestingly, other types of safety behaviours (e.g., impression management) did not result in negative observer judgments. Stangier et al. (2006) also found that overall use of safety behaviours by SAD patients was associated with negative behavioural ratings from observers. Taken together, those findings provide some support for the proposition that the behavioural deficits observed in socially anxious individuals are related to their use of in-situation safety behaviours. These studies, however, did not manipulate actual *in vivo* safety behaviour use. Research is needed to determine whether safety behaviour use per se or some other factor was responsible for poor performance.

It is also notable that the behaviour measures used in previous studies failed to distinguish dimensions of social performance found to be of particular relevance to socially anxious populations. Research supports the utility in measuring anxiety-related and prosocial

behaviours separately, and suggests that prosocial behaviours (e.g., self-disclosure, appearing actively engaged in the conversation) may play a more important role in the development of social relationships compared to how anxious a person appears (e.g., Taylor & Alden, 2006; Papsdorf & Alden, 1998; see Alden & Taylor, 2004 for a review). Research is needed to address whether the separate dimensions found to commonly underlie the behaviour of socially anxious individuals is related to in-situation safety behaviour use.

### *Safety Behaviours and Interpersonal Responses*

Cognitive writers posit that safety behaviours may inadvertently contribute to the negative social outcomes that the socially anxious individual is attempting to avoid (Clark, 2001; Clark & Wells, 1995; Rapee & Heimberg, 1997). Emerging models of SAD are increasingly considering the role of interpersonal processes in the development and maintenance of social fears (e.g., Alden, 2001; Alden & Taylor, 2004). An important contribution of the interpersonal perspective is the recognition that social anxiety can adversely affect social relationships and conversely, that interpersonal responses from others can contribute to the exacerbation and maintenance of social fears. Consistent with this perspective, research has demonstrated that people with social anxiety can elicit negative responses from others (e.g., Alden & Wallace, 1995; Creed & Funder, 1998). For example, following a laboratory-based conversation, others were less likely to desire future interactions with socially anxious as opposed to non-anxious students (e.g., Meleshko & Alden, 1993; Papsdorf & Alden, 1998), a finding replicated in clinical samples of patients with SAD (Alden & Wallace, 1995; Taylor & Alden, 2006). Notably, several studies found that the absence of prosocial behaviour (e.g., reciprocal self-disclosure) was more salient in eliciting negative partner reactions compared to visible signs of anxiety (e.g., appearing awkward) (see Alden & Taylor, 2004 for a review).

Of particular relevance to the proposed study are interpersonal and cognitive theories which argue that self-protective strategies can have the unintended effect of eliciting negative responses in others (e.g., Alden & Taylor, 2004; Clark, 2001). For example, intensive monitoring of one's speech can make it difficult for the anxious individual to follow the conversation and keep track of what the other person has said, thereby increasing the likelihood that the individual will appear disinterested and aloof. Others may interpret those behaviours as a sign that the phobic individual does not like them, and subsequently respond in a less warm and friendly manner towards that person. In turn, those negative responses may reduce the availability of positive social cues from others that could be used to disconfirm the anxious individual's negative beliefs. To the extent that safety behaviour reduction produces improvements in social performance, one would expect to see a corresponding change in the responses of others. Research has yet to examine that possibility.

A related issue is whether safety behaviours influence one's own interpersonal reactions during social encounters. Little work has addressed socially anxious individuals' internal reactions to others. The few studies that have been conducted found that shy and socially anxious individuals tended to be critical and non-affectionate toward their friends and others (Jones & Briggs, 1984; Jones & Carpenter, 1986). Judgments of interpersonal liking require the integration of multiple sources of information including perceptions of both self-related (e.g., one's own attributes) and other-related information (e.g., other peoples' behaviour, degree of similarity, how much one is liked by the other person) (e.g., Curtis & Miller, 1986). It could be argued that habitual concerns with self-protection interfere with the processes relevant to making interpersonal judgments, for instance, through biased processing of social cues. If so, reducing safety behaviours might allow the socially anxious individual to more effectively process and

assimilate information pertinent to judgments of their own interpersonal liking. Research is needed to address that issue.

### *Safety Behaviours and Situational Context*

The few studies that have manipulated safety behaviours in people with SAD have done so primarily in the context of performance situations such as public speaking tasks (e.g., Kim, 2005). Given their ability to arouse considerable levels of anxiety in phobic individuals, such tasks provide a useful paradigm for studying cognitive and behavioural processes relevant to social anxiety. Despite this, the generalizability of public speaking tasks to other social situations remains tenuous. Although formal speaking is a commonly reported feared situation by people with SAD (e.g., Holt, Heimberg, Hope, & Liebowitz, 1992), those situations occur relatively infrequently, if at all, in the day-to-day lives of socially anxious individuals. On the other hand, social situations involving direct interpersonal contact with other people such as initiating and maintaining conversations, speaking with unfamiliar people, and participating in class or work discussions, are much more common. For instance, first-meeting situations would be particularly relevant to the study of social fears because these types of interactions are necessary to develop close relationships. They have also been shown to be particularly problematic for socially anxious individuals (e.g., Holt et al., 1992; Stravynski & Shahar, 1983). Social interaction situations are also unique in that the complexity of those interactions may elicit different types of safety behaviours compared to performance-related situations (e.g., public speaking), which may in turn have a different impact on the nature of the interaction. For example, during conversation situations, people are required to keep track of what the other person is saying, pay attention to nonverbal social cues, provide appropriate responses such as asking questions or providing comments, and display nonverbal signs of attentive listening and interest. All in all, it would

seem important to understand how safety behaviours operate in more complex interpersonal situations. No research, however, has examined the impact of safety behaviour manipulations in the context of a social interaction situation.

### *Safety Behaviours and Modifying Social Fears – Summary*

To summarize, prevailing models of SAD argue that repeated exposure to feared situations is necessary to correct negative social beliefs and ultimately help anxious individuals overcome their social fears (e.g., Beck et al., 1985; Clark, 2001; Foa & Kozak, 1986; Heimberg & Becker, 2002). Those writers posit that behavioural exposures create the opportunity for new learning, which will eventually lead to the correction of negative cognitive processing biases and the modification of fear-relevant beliefs. For new learning to occur, the anxious individual must experience a difference in the feared situation, namely that between what they predict or fear will happen and that which actually occurs (e.g., Rodebaugh, Holaway, & Heimberg, 2004).

However, cognitive theorists acknowledge that subtle avoidance in the form of *in vivo* safety behaviours can prevent new learning, and lead to the preservation of fear-related beliefs.

Furthermore, cognitive theories of SAD argue that safety behaviours interfere with the processing of threat-relevant information and effective social behaviour, and ultimately impair interpersonal relationships. Although it is increasingly recognized that procedures designed to decrease safety behaviours during exposure to feared situations are important in modifying pathological fear, surprisingly little work has evaluated those interventions in people with SAD.

### *Overview of Current Research*

The purpose of this dissertation research was to empirically examine the role of safety behaviours in the maintenance and modification of social fears. The present work set out to expand the extant literature by evaluating the effect of safety behaviour reduction strategies on a

number of the core cognitive, behavioural, and interpersonal processes relevant to the persistence of social anxiety. Specifically, changes in judgment biases, *in vivo* social behaviour, and the interpersonal reactions of oneself and others were evaluated in individuals with high levels of social anxiety and patients diagnosed with SAD instructed to refrain from using safety behaviours during a conversation with a trained confederate compared to participants who did not receive the experimental manipulation. This work also serves as the first study to manipulate safety behaviours in the context of a complex interpersonal interaction.



## Study 1

Although safety behaviour reduction strategies are increasingly used in treatments of SAD (e.g., Clark et al., 2006), little is known about how reducing safety behaviours influences the processes purported to be central to social anxiety. As a first step toward examining this issue, the present study manipulated *in vivo* safety behaviours in a sample of socially anxious participants in the context of a laboratory social interaction and examined the effects of safety behaviour reduction on judgment biases, social performance, and interpersonal outcomes.

Socially anxious students participated in two conversations with an experimental confederate. Prior to the initial interaction, participants were randomly assigned to either the (1) exposure alone (control) condition or (2) safety behaviour reduction (experimental) condition. The second interaction permitted an examination of whether any outcomes resulting from the safety behaviour intervention generalized to a subsequent interaction. The following three issues were addressed: Does decreasing *in vivo* safety behaviour use influence socially anxious individuals' (1) judgments of self and others, (2) *in vivo* social behaviour, and (3) the interpersonal reactions of oneself and others?

## Hypotheses

Consistent with cognitive models suggesting that safety behaviours interfere with the processing of threat-relevant information (e.g., Clark, 2001; Clark & Wells, 1995; Sloan & Telch, 2002), I predicted that participants encouraged to eliminate safety behaviours would exhibit more accurate self- and social-judgments compared to participants in the exposure alone group. Second, following the cognitive proposition that the dysfunctional social behaviour of people with SAD is a result of safety behaviour use during feared situations (e.g., Arkin et al., 1986; Clark & Wells, 1995), I predicted that participants in the safety behaviour reduction group

would display more effective social behaviour compared to control participants. In keeping with cognitive and interpersonal propositions that safety behaviours inadvertently elicit negative social reactions (e.g., Alden & Taylor, 2004; Clark, 2001), I predicted that the safety behaviour reduction group would be better liked by their conversational partner compared to control participants. Finally, I predicted that reducing safety behaviours would lead to more favourable interpersonal reactions from socially anxious participants themselves.

## Method

### *Participants*

Participants were 50 undergraduate psychology students (33 females, 17 males) selected on the basis of their scores on the Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969)<sup>1</sup>. See Appendix 1. The FNE is a commonly used 30-item true-false screening inventory that assesses apprehension about social-evaluative situations, a central feature of SAD. Previous work has established that the FNE displays excellent internal consistency (Cronbach's  $\alpha = .94 - .98$ ), good one-month test-retest reliability ( $r$  range =  $.78 - .94$ ), and correlates well other indices of social anxiety and avoidance (e.g., Friend & Gilbert, 1973; Watson & Friend, 1969). To be eligible for the study, participants were required to score 17 or higher on the FNE, a well-established cut-off associated with high levels of social anxiety in previous research (e.g., Harvey, Clark, Ehlers, & Rapee, 2000; Hirsch et al., 2004). Additionally, given that the experimental design required participants to hold a brief conversation with an unknown experimental assistant, individuals were required to complete a self-report version of the Anxiety Disorders Interview Schedule – IV (ADIS-IV; Brown, Di Nardo, & Barlow, 1994), and to report at least mild levels of anxiety when speaking with unfamiliar people. Items were rated on a 0 to 8

scale, with a rating of 2 indicating mild anxiety. See Table 1. Students were offered either bonus course credit or \$15 for their participation.

### *Personnel*

*Experimenter.* The dissertation author, a graduate student in the clinical psychology program, served as the experimenter for all participants. The experimenter was trained to follow a scripted protocol to deliver instructions to participants, and was responsible for implementing the laboratory procedures, administering questionnaires, rating confederate behaviour, and conducting debriefing at the conclusion of the experiment.

*Confederates.* Two senior undergraduate students (1 man, 1 woman) served as experimental confederates. Confederates were trained to provide a set of scripted verbal and nonverbal behaviours designed to convey a reserved, but not unfriendly social response. Confederates were also provided with a list of prearranged conversation topics to maintain consistency across participants. The current protocol was modeled after prior research (Alden & Wallace, 1995; Stopa & Clark, 1993; Taylor & Alden, 2005). In addition to learning how to maintain consistent performances across participants, the confederates were trained to deliver their role in a natural, rather than staged, manner. Confederates were blind to the study hypotheses and participants' experimental condition.

*Observer.* To assess inter-rater agreement, one additional undergraduate student served as an independent observer who was trained to rate participant behaviour using the same measures as those used by the confederates. Similar to confederates, the observer remained blind to the study hypotheses and participants' experimental condition.

### *Procedure*

Upon arriving to the laboratory, participants were greeted by the experimenter, informed about the study procedures, and provided written informed consent<sup>2</sup>. Participants were told that they would spend some time getting to know one of our assistants, after which they would rate their impressions of the interaction.

*Identification of Negative Social Predictions and Safety Behaviours.* Prior to the interaction, participants were asked to identify their primary feared outcomes pertaining to the upcoming conversation, i.e., their negative predictions (e.g., “What are you concerned or afraid might happen during the conversation?”). Participants were asked about both self-related predictions, i.e., their own behaviour or performance (e.g., “I will say something stupid”), and other-related predictions, i.e., their partner’s behaviour or responses to them (e.g., “My partner will think badly of me”)<sup>3</sup>.

Once idiosyncratic predictions were identified, the experimenter used this information to compile a comprehensive list of the safety behaviours that participants reported using for preventing those particular feared outcomes during typical first-meeting social interaction situations (e.g., Clark, 2001; see also Kim, 2005; Wells et al., 1995). To assist with safety behaviour identification, participants were also provided with a list of safety behaviours commonly reported by individuals with SAD, and were asked to rate the extent to which they use those behaviours during a typical conversation situation with a stranger. Items on this list comprised the Safety Behaviours Questionnaire (SBQ; described below, See Appendix 6). Once completed, the experimenter reviewed the SBQ with participants, and confirmed the participant’s primary safety behaviours.

*Experimental Rationale.* Prior to the first interaction, participants were randomly assigned to either the (1) exposure alone (control) condition (16 females, 9 males) or (2) the safety behaviour (SB) reduction (experimental) condition (17 females, 8 males). The experimenter provided the following experimental rationales.

#### *Exposure Alone*

As part of this study, we are looking at some ways to help people overcome their social fears. We need to explore why you remain anxious in social situations. You have said that you expect that [*social prediction/feared outcome*] will happen during the upcoming conversation. Normally, when you have been in situations like this before, you may have not remained in the situation for a sufficient amount of time. In order to help overcome your anxiety, it is important that you remain in the anxiety-provoking situation for a set period of time, even if you may feel quite anxious. It works like getting into a bath of hot water: When you first get in it feels unpleasant, but after a while you get used to it and it feels better. So, during the conversation, no matter what happens to your anxiety, do not try to end the conversation early. By doing this, you will be better able to see what happens to your anxiety.

#### *Safety Behaviour Reduction*

As part of this study, we are looking at some ways to help people overcome their social fears. We need to explore why you remain anxious in social situations. You have said that you expect that [*social prediction/feared outcome*] will happen during the upcoming conversation. Normally, when you have been in situations like this before, you have attempted to prevent your fears from happening by [*safety behaviours*]. Because you have done this, you have not really discovered whether [*feared outcome*] can actually happen. In order to help overcome your anxiety, it is important to discover whether what you fear can actually happen. To accomplish this, you should try not to do the things you normally do to prevent [*feared outcome*]. For example, during the conversation, do nothing to save yourself, do not [*safety behaviours*]. Just think that you want to discover what will happen when you don't do [*safety behaviours*]. By doing this, you will be better able to see if your expectations are confirmed.

The experimental rationales were modeled after previous work (Kim, 2005; Wells et al., 1995). Following presentation of the experimental instructions, participants completed ratings pertaining to their expectations about the credibility and effectiveness of their respective experimental strategy (see Expectancy Scale, described below, see Appendix 5).

It is important to note that it is common for people with SAD to report a large number of specific safety behaviours used to protect them from perceived social threat (e.g., Clark, 2001). However, providing participants with a large list of individual unconnected safety behaviours to eliminate may create a considerable memory load, thereby exacerbating the negative effects of increased self-monitoring. To avoid this problem, cognitive researchers recommend that the *theme* underlying the primary safety behaviours be identified. Then, the manipulation is directed at the theme, rather than individual behaviours (D. M. Clark, personal communication). For example, encouraging participants to avoid “doing things you normally do to prevent yourself from saying something foolish” would be more beneficial than instructing participants to refrain from “mentally rehearsing what you are about to say, sticking to a pre-determined list of conversation topics, censoring what you say, and saying little or nothing”. This recommended procedure was followed in the experimental condition.

*Practice Session.* Eliminating in-situation safety behaviours is a novel experience for most socially anxious individuals. Cognitive researchers recommend that participants in the experimental condition have an opportunity to practice dropping their safety behaviours during a ‘practice conversation’ with the experimenter prior to the experimental session (e.g., D. M. Clark, personal communication). To control for practice effects, participants in the exposure alone condition also engaged in a similar practice conversation, the only difference being that they were not encouraged to refrain from using their usual safety behaviours. To maintain consistency across all participants, a pre-determined conversation topic was selected for the practice conversation, where participants were asked about their opinions regarding the University of British Columbia’s new plan for campus development. The duration of the practice session was limited to two minutes. At the completion of the practice session, participants’

understanding of the experimental instructions was assessed, and further clarification was provided when necessary. Participants then completed a measure of state anxiety (described below).

*Exposure Session 1.* Following the practice session, the confederate entered the room and was introduced to the participant. After explaining the nature of the conversation, the experimenter left the room to rate the confederate's behaviour from behind a one-way mirror. The interaction itself consisted of a 5-minute open-ended 'getting acquainted' conversation (e.g., Alden & Wallace, 1995; Taylor & Alden, 2005). Specifically, the participant and confederate were encouraged to talk about the things they would normally talk about when meeting someone for the first time (e.g., at a social gathering), with the stipulation that they were not discuss the study itself. Following the interaction, the experimenter returned to the room, thanked the confederate for their assistance, and asked the participant to complete the dependent measures (described below). After leaving the room, the confederate rated the participant's behaviour and their desire to interact with the participant again.

*Exposure Session 2.* After completing the dependent measures pertaining to the first interaction, participants were informed that they would be engaging in a second conversation with the same partner. This exposure session was identical to the first conversation, except that participants were asked to initiate this conversation. Before the confederate entered the room, participants were encouraged to use their respective experimental strategy (i.e., exposure or refrain from using safety behaviours). Following the conversation, the participant and confederate again completed the same dependent measures as in the first interaction.

### *Measures*

*Social Anxiety.* The Social Phobia Scale (SPS; Mattick & Clarke, 1998) and the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) are 20-item inventories commonly used to assess social anxiety symptoms. The SPS reflects fears of being observed or evaluated by others in social situations (see Appendix 2), while the SIAS reflects anxiety when engaging in social interactions with different kinds of companions (see Appendix 3). Items are rated on a five-point Likert-type scale ranging from 0 (not at all) to 4 (very much). Both measures have demonstrated high levels of internal consistency in SAD samples (e.g., Cronbach's  $\alpha = .89$  and  $.93$  for the SPS and SIAS, respectively) and good test-retest reliability over 4 and 12 weeks ( $r$  range =  $.91 - .93$ ) (Mattick & Clarke; see also Brown et al., 1997; Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992). Furthermore, those scales were found to discriminate between people with SAD, agoraphobia, simple phobias, and community controls, and correlated well with established measures of social anxiety, but not with measures of general distress or social desirability (e.g., Mattick & Clarke). The Cronbach's  $\alpha$  for the present sample was  $.89$  and  $.85$ , for the SPS and SIAS, respectively.

*Depression.* The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item self-report inventory that was used to assess symptoms of depression. See Appendix 4. Items are rated on a 4-point scale ranging from 0 to 3, and are summed to yield a total score reflecting severity of depression over the past two weeks (range 0 to 63). The BDI-II demonstrates high internal consistency among college samples and psychiatric outpatients (Cronbach's  $\alpha = .93$  and  $.92$ , respectively), and evidence of diagnostic discrimination has been found (Beck et al., 1996; see also Dozois, Dobson, & Ahnberg, 1998). The BDI-II also correlates highly with the original BDI ( $r = .93$ ), supporting the convergent validity of this measure



(Dozois et al., 1998). The Cronbach's  $\alpha$  for the present sample was .92. The BDI-II was used to ensure that the two experimental groups were comparable in terms of depressive symptomatology.

### *Dependent Measures*

*Social Behaviour.* The participant, confederate, and observer rated the participant's behavioural performance during each conversation. Items were written to reflect two dimensions commonly found to underlie the behaviour of socially anxious individuals (e.g., Papsdorf & Alden, 1998; Taylor & Alden, 2005): (1) Anxiety-Related Behaviour (5 items; show signs of anxiety, speak fluently/clearly, tremble or shake, create uncomfortable pauses, fidget), and (2) Prosocial Behaviour (5 items; talk openly about yourself, convey interest in your partner, appear actively engaged in the conversation, appear friendly, were talkative). Each item was rated on a 7-point scale with anchors of *not at all* and *very much*. Earlier research has confirmed the utility in measuring these constructs separately (see Taylor & Alden, 2005). Internal consistency of the two sets of items was adequate in this sample (Cronbach's  $\alpha$  range = .67 – .87, and .73 – .88 for the Anxiety-Related Behaviour and Prosocial Behaviour ratings, respectively). It should be noted, however, that the alpha for participant ratings of their own Anxiety-Related Behaviour during the first interaction was somewhat low (.67), and accordingly, should be interpreted with caution. Inter-rater agreement for ratings of participant behaviour was also satisfactory (Intraclass correlation coefficients for the Anxiety-Related Behaviour and Prosocial Behaviour scales were .77, .85 and .69, .80, respectively, all  $p < .01$ ). The inter-rater reliability for participant Prosocial Behaviour was slightly below conventional standards for the first interaction (.69); however, confederate and observer ratings converged to a greater extent during

the second interaction (.80), suggesting that in general, adequate levels of inter-rater agreement were obtained for this measure. See Appendix 7.

*Social Judgment.* Following each interaction, participants and observers rated confederates on a scale developed to reflect Partner Warmth (5 items; friendly, talkative, disinterested, distant, self-disclosive). Items for the social judgment scale were selected from earlier studies examining interpersonal judgments and social anxiety (e.g., Alden & Wallace, 1995; Stopa & Clark, 1993; Taylor & Alden, 2005). Ratings were made on a 7-point scale with anchors of *not at all* and *very much*. Internal consistency was acceptable for this sample (Cronbach's  $\alpha$  range = .67 – .73 for participants, and .72 – .74 for observers). The alpha for participant ratings of Partner Warmth during the first interaction was low (.67) and should be interpreted with caution. See Appendix 8(A).

*Desire for Future Interaction.* To assess interpersonal reactions following each social encounter, confederates and participants rated the extent to which they would be willing to engage in a variety of future social activities with their interaction partner. Items comprising this scale were taken from the Desire for Future Interaction Scale (DFI; Coyne, 1976), an inventory used extensively in interpersonal studies of depression. The individual items of the DFI have been shown to reliably load on a single factor (e.g., Segrin, 1993), which is generally interpreted as reflecting liking versus rejection of the target individual. The eight DFI items were rated on a 7-point scale with anchors of *not at all* and *very much*. The Cronbach's  $\alpha$  range for this sample was .97 – .98 for confederates, and .87 – .88 for participants. See Appendix 9.

*State Anxiety.* The Brief State Anxiety Measure (BSAM; Berg, Shapiro, Chambless, & Ahrens, 1998) was used to assess change in participants' emotional state over the course of the experimental exposure sessions. The BSAM contains six of the 20 items (relaxed, steady,

strained, comfortable, worried, tense) of the State-Trait Anxiety Inventory, State subscale (STAI-S; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), which is a commonly used measure of current anxiety. Participants rated their anxiety immediately before and after both conversations in order to evaluate the influence of the experimental manipulation on participants' subjective feelings of anxiety. Earlier work provides support for the psychometric properties of the BSAM, which demonstrates a high correlation with the original 20-item scale ( $r = .93$ ), and good internal consistency (Cronbach's  $\alpha = .86$ ) (e.g., Berg et al., 1998). Moreover, this scale has been shown to be sensitive to changes in anxiety in socially anxious individuals following a laboratory treatment intervention (e.g., Rodebaugh, 2004). Internal consistency of this scale was adequate in this sample (Cronbach's  $\alpha$  range = .80 – .89). See Appendix 10.

#### *Experimental Checks*

*Confederate check.* To ensure that confederates behaved in a consistent manner across all participants, conditions, and interactions, the experimenter rated the confederate's behaviour from behind a one-way mirror using the same social judgment scale, i.e., Partner Warmth, used by participants (talkative, disinterested, self-disclosive, distant, friendly). Ratings were made on a 7-point scale with anchors of *not at all* and *very much*. Items were combined to create a total score representing overall confederate warmth and openness (Cronbach's  $\alpha$  range = .72 – .74). See Appendix 8(A).

*Safety behaviours.* To evaluate safety behaviour use during each conversation, participants completed the Safety Behaviours Questionnaire (SBQ), a 20-item list of in-situation safety behaviours commonly reported by individuals with SAD. Items for this measure were selected from an unpublished *Social Behaviour Questionnaire* developed by Clark and colleagues for use in treatment trials of SAD (Clark, Wells, Hackmann, Butler, & Fennell, 1994),

and from clinical observations made during our own treatment of patients with SAD. Participants completed the SBQ prior to the initial interaction, and following both conversations. For the pre-interaction ratings, participants were asked about the safety behaviours they use during a *typical* first-meeting situation with a stranger. For both post-interaction ratings, participants rated the extent to which they used each safety behaviour during the laboratory conversation. Items were rated on a 9-point scale ranging from 0 *not at all* to 8 *all the time* and were summed to create a total safety behaviour score (see Hirsch et al., 2004). The Cronbach's  $\alpha$  for the total scale in this sample was .68 (pre-interaction), and .80 and .83 (post- initial and second interactions, respectively). The low alpha for the pre-interaction rating may be explained in part by the retrospective nature of those ratings, which asked participants to reflect on safety behaviours used in past social encounters. On the other hand, higher alphas were obtained when assessing *in vivo* safety behaviours pertaining to a current social interaction. See Appendix 6.

*Expectancy scale.* Following presentation of the experimental rationale, participants rated their expectations about the effectiveness of their respective treatment strategy in overcoming their anxiety and fear during the conversation. To this end, three questions were taken from Borkovec and Nau's (1972) treatment expectancy scale, a commonly used measure in treatment outcome studies. Those items ask about the logic of the intervention, and its likelihood of helping the participant and other people. This scale was used to evaluate whether participants in each experimental condition viewed their respective experimental manipulation as equally credible. The three-item scale has demonstrated good internal consistency in past research with socially anxious individuals,  $\alpha > .80$  (Rodebaugh, 2004). The Cronbach's  $\alpha$  for the present sample was .75. See Appendix 5.

## Results

### *Preliminary Analyses*

*Demographics.* Separate one-way (condition) analyses of variance (ANOVA) conducted on participant age and years of university revealed no between-group differences,  $F(1, 48) = .013, .076$ , respectively, both  $p > .10$ , both  $\eta_p^2 = .00$ . Chi-square analyses revealed no differences between participants in the two conditions in terms of the number of men and women participants, and whether participants were born in North America or not,  $\chi^2(1, N = 50) = .77, .37$ , respectively, both  $p > .10$ . See Table 1.

*Symptom Measures.* A one-way (condition) multivariate analysis of variance (MANOVA) conducted on the FNE, SIAS, SPS, and BDI-II revealed that the two experimental groups did not differ in symptom severity,  $F(4, 44) = 1.19, p > .10, \eta_p^2 = .10$ . See Table 1.

*Confederate Consistency.* To ensure that confederates displayed similar behaviour across all participants, a 2 (condition) by 2 (time) ANOVA was conducted on experimenter ratings of confederate warmth and openness. Results revealed no significant main effects for condition, time, or the time by condition interaction,  $F(1, 48) = 2.82, 3.11, .78$ , respectively, all  $p > .05$ , all  $\eta_p^2 < .06$ . Those findings suggested that confederates were consistent in their behavioural performance across participants within each condition.

*Expectancy.* A one-way (condition) ANOVA conducted on participant expectancy ratings revealed no between-group differences,  $F(1, 48) = 0.01, p > .10, \eta_p^2 = .00$ . Those findings suggested that participants in each condition expected that their respective treatment strategies would be equally effective in overcoming their anxiety symptoms and fears.

*Manipulation Check (Safety Behaviours).* To ensure that the experimental protocol was successful in manipulating safety behaviours during the conversation, a 3 (time) by 2 (condition)

ANOVA was conducted on participant safety behaviour ratings completed prior to the initial interaction, and following both interactions. Results revealed a significant main effect for time,  $F(2, 94) = 126.44, p < .001, \eta_p^2 = .73$ . This main effect was moderated by a significant time by condition interaction,  $F(2, 94) = 10.34, p < .001, \eta_p^2 = .18$ . Follow-up comparisons indicated that the significant interaction was explained primarily by the greater reduction in safety behaviours by participants in the experimental condition from before to after the initial interaction compared to control participants,  $F(1, 47) = 13.01, p = .001, \eta_p^2 = .22$ . Follow-up contrasts between the first and second conversation did not reach significance,  $F(1, 47) = .59, p > .10, \eta_p^2 = .01$ , indicating that the between-group differences were maintained across exposure sessions. The condition main effect was not significant,  $F(1, 48) = 2.02, p > .10, \eta_p^2 = .04$ . As a whole, those findings suggested that the experimental manipulation was successful in decreasing safety behaviours in the experimental group and that this change was maintained over a second interaction. See Table 2.

### *Main Analyses*

To test the primary study hypotheses, 2 (time: interaction 1 vs. 2) by 2 (condition: SB reduction vs. control) between-within ANOVAs with repeated-measurement of time, were conducted on the dependent variables of interest. Multivariate analyses were used when dependent measures were conceptually related, and significant multivariate effects were followed up with univariate tests. The main prediction that the safety behaviour reduction manipulation would differentially affect the dependent variables relative to the control group was evaluated according to the presence of a main effect for condition.

*Social Performance.* My first question was whether the safety behaviour manipulation influenced indices of participant social performance during the conversation. Two 2 (time) by 2

(condition) between-within MANOVAs were conducted on participant and confederate ratings of participant Anxiety-Related Behaviour and Prosocial Behaviour. For participant ratings, the results revealed a main effect of time,  $F(2, 47) = 10.36, p < .001, \eta_p^2 = .31$ . Follow-up univariate analyses revealed that all participants rated themselves as displaying fewer Anxiety-Related Behaviours, and more Prosocial Behaviours during the second interaction relative to the first interaction,  $F(1, 48) = 11.99, 12.64, \text{both } p = .001, \eta_p^2 = .20, .21, \text{ respectively}$ . Of greater relevance to the primary question of interest was the significant main effect for condition,  $F(2, 47) = 5.46, p = .007, \eta_p^2 = .19$ . Follow-up univariate analyses revealed that participants in the SB reduction group rated themselves as displaying significantly fewer Anxiety-Related Behaviours during both the initial and the generalization conversation compared to participants in the exposure alone group,  $F(1, 48) = 10.75, p = .002, \eta_p^2 = .18$ . The groups did not differ with respect to judgments of their own Prosocial Behaviours,  $F(1, 48) = 1.94, p > .10, \eta_p^2 = .04$ . The time by condition interaction was not significant,  $F(2, 47) = 1.38, p > .10, \eta_p^2 = .06$ .

For confederate ratings of participant behaviour, results revealed a significant main effect of time,  $F(2, 47) = 4.15, p = .02, \eta_p^2 = .15$ . Follow-up univariate analyses revealed that all participants were rated as displaying more Prosocial Behaviours during the second conversation compared to the first,  $F(1, 48) = 8.44, p = .006, \eta_p^2 = .15$ . The follow-up analysis for Anxiety-Related Behaviours was not significant,  $F(1, 48) = .33, p > .10, \eta_p^2 = .01$ . More central to the study was the significant main effect for condition,  $F(2, 47) = 4.61, p = .02, \eta_p^2 = .16$ . Follow-up analyses revealed that participants in the SB group were rated by confederates as displaying significantly more Prosocial Behaviours during both the first and the generalization interaction compared to participants in the exposure alone group,  $F(1, 48) = 8.48, p = .005, \eta_p^2 = .15$ . The groups did not differ with respect to confederate ratings of Anxiety-Related Behaviour,  $F(1, 48)$

$= .43, p > .10, \eta_p^2 = .01$ . The time by condition interaction was not significant,  $F(2, 47) = .54, p > .10, \eta_p^2 = .02$ . See Table 2.

*Self-Judgment Bias.* My second question was whether the two groups differed in the *accuracy* of their self-judgments relative to an objective observer. To address this question, a 2 (time) by 2 (rater: participant, confederate) by 2 (condition) between-within MANOVA was conducted on ratings of participant Anxiety-Related Behaviour and Prosocial Behaviour. If, as hypothesized, the safety behaviour reduction manipulation was successful in modifying participant judgment biases relative to control participants, a significant rater by condition interaction was expected.

Results revealed significant multivariate main effects for time,  $F(2, 47) = 11.76, p < .001, \eta_p^2 = .33$ , rater,  $F(2, 47) = 13.66, p < .001, \eta_p^2 = .37$ , and condition,  $F(2, 47) = 4.56, p = .02, \eta_p^2 = .16$ . The time by rater interaction was also significant,  $F(2, 47) = 4.98, p = .01, \eta_p^2 = .18$ . Most relevant to the *a priori* hypotheses was the significant rater by condition interaction,  $F(2, 47) = 3.23, p = .05, \eta_p^2 = .12$ . The three-way time by rater by condition interaction was not significant,  $F(2, 47) = .24, p > .10, \eta_p^2 = .01$ .

Follow-up univariate analyses of the rater by condition interaction revealed that, although participants in the SB group exhibited a tendency to be more accurate in their judgments of their own Anxiety-Related Behaviour, i.e., judgments closer to observer ratings, compared to participants in the exposure alone group, this interaction effect failed to reach significance,  $F(1, 48) = 3.11, p = .08, \eta_p^2 = .06$ . The rater by condition interaction was not significant for Prosocial Behaviour,  $F(1, 48) = 1.19, p > .10, \eta_p^2 = .02$ , which indicated that the groups did not differ with respect to biases in judgments of their Prosocial Behaviour.



*Social Judgments.* A related question was whether the safety behaviour reduction procedure influenced participants' judgments of their partner's behaviour. To address this issue, participant ratings of Partner Warmth were entered into a 2 (time) by 2 (condition) between-within ANOVA. Results revealed that the time, condition, and time by condition effects were not significant,  $F(1, 48) = .07, .18, .25$ , all  $p > .10$ , all  $\eta_p^2 < .01$ . Those findings indicated that participants in the experimental and control groups did not differ in judgments of their partner's behaviour. See Table 2.

*Social Outcomes.* To evaluate the effect of decreased safety behaviour use on confederates' social reactions to participants, confederate DFI ratings were entered as the dependent variable in a 2 (time) by 2 (condition) between-within ANOVA. Results revealed a significant main effect for time,  $F(1, 48) = 6.16, p = .02, \eta_p^2 = .11$ , which indicated that confederate liking of all participants increased from the first to the second interaction. A significant main effect for condition also emerged,  $F(1, 48) = 6.73, p = .01, \eta_p^2 = .12$ , which suggested that confederates better liked participants who were encouraged to eliminate safety behaviours compared to the control group. The time by condition interaction was not significant,  $F(1, 48) = .81, p > .10, \eta_p^2 = .02$ , which indicated that the effect was maintained across the second interaction. See Table 2.

A secondary question of interest was whether the safety behaviour manipulation influenced participants' own reactions to their conversation partner. A 2 (time) by 2 (condition) between-within ANOVA was conducted using participant DFI ratings as the dependent variable. Results revealed that the time, condition, and time by condition effects were not significant,  $F(1, 48) = 3.58, .033, 2.45$ , respectively, all  $p > .05, \eta_p^2 = .07, .00, .05$ , respectively. Those findings

suggested that the safety behaviour manipulation did not influence participants' own interpersonal reactions in the context of this brief laboratory conversation. See Table 2.

### *Supplementary Analyses*

Previous research indicates that procedures designed to decrease safety behaviour use are associated with *in vivo* reductions in anxiety in people with SAD (Kim, 2005; Wells et al., 1995). It is possible that the differences observed between the experimental and control groups on the dependent measures may be a product of decreased anxiety experienced by participants encouraged to refrain from using safety behaviours. To examine that possibility, participants self-reported state anxiety scores completed before and after both interactions were entered in a 4 (time) by 2 (condition) between-within ANOVA. Results revealed a significant main effect for time,  $F(3, 144) = 14.19, p < .001, \eta_p^2 = .23$ . Follow-up comparisons using the Šidák adjustment for multiple comparisons (see Cardinal & Aitken, 2006) revealed that all participants reported experiencing a marginally significant decrease in anxiety from before to after the first conversation,  $F(1, 48) = 7.09, p = .06, \eta_p^2 = .13$ , and a significant decrease in anxiety from before to after the second conversation,  $F(1, 48) = 30.14, p < .001, \eta_p^2 = .39$ . The condition,  $F(1, 48) = 0.74, p > .10, \eta_p^2 = .02$ , and time by condition interaction effects were not significant,  $F(3, 144) = 1.59, p > .10, \eta_p^2 = .03$ . Those findings indicated that reduction in anxiety was not responsible for the between-condition differences. See Table 2.

### Discussion

As predicted, socially anxious participants instructed to eliminate safety behaviours during a conversation (SB group) displayed more accurate self-judgments of anxiety-related behaviour, improved social performance, and evoked more positive partner reactions. Interestingly, those outcomes were observed in some, but not all cognitive and behavioural

domains assessed. The present findings support contemporary cognitive models of SAD, and contribute to an emerging empirical literature documenting the importance of reducing safety behaviours in socially anxious populations.

Socially anxious participants encouraged to reduce safety behaviours during the conversation rated themselves as displaying fewer anxiety-related behaviours compared to control participants. Interestingly, the observers did not distinguish the control and safety behaviour groups. Considered together, those findings suggested that the SB group's judgments about visible signs of anxiety became more accurate, i.e., converged more with the observers' judgments. The failure to find between-group differences in subjective anxiety implies that the safety behaviour procedures were more likely to alter *appraisals* regarding the visibility of anxiety-related cues, rather than their actual occurrence per se. All in all, the findings are consistent with contemporary cognitive models arguing that safety behaviours facilitate biased processing of self-related information, which in turn, distorts perceptions of one's own performance (e.g., Clark, 2001; Clark & Wells, 1995; see also Sloan & Telch, 2002).

A different pattern emerged for ratings of participant prosocial behaviour. Although the SB and control groups did not differ in their own ratings of how warm, friendly, and open they appeared, observers rated SB participants as displaying more prosocial behaviours relative to controls. Those findings are consistent with self-presentation theories suggesting that socially anxious individuals adopt behaviours that are subdued and less revealing (e.g., Arkin, 1981; Leary, 2001), and with cognitive models arguing that safety behaviours disrupt social performance (e.g., Alden & Taylor, 2004; Clark, 2001; Clark & Wells, 1995). In addition, the divergent findings for anxiety-related and prosocial behaviour underscore the importance of independently assessing different aspects of socially anxious individuals' behaviour.

In contrast to self-judgments, the SB and control groups did not differ on judgments of their partner's behaviour. Those findings would seem at odds with cognitive models that argue that reducing safety behaviours should lead to increased processing of previously ignored, external social cues (e.g., Clark & Wells, 1995; Wells & Papageorgiou, 1998). It is possible, however, that the current results are simply an artefact of the experimental control that was imposed on confederate behaviour necessitated by the experimental rigour of the study. By scripting confederate behaviour, participants in both groups were exposed to similar behavioural cues displayed by their partner, a finding that was confirmed by the confederate consistency check. Another consideration is that socially anxious individuals typically have not been found to display biased judgments of other peoples' behaviour per se. Rather, social judgment biases tend to emerge when assessing judgments of oneself in relation to others, such as perceived partner liking (e.g., Alden & Wallace, 1995; see Alden & Taylor, 2004 for a review). Research is needed to establish whether safety behaviour reduction interventions influence judgments of others' perceived reactions to oneself.

As predicted, the SB group was better liked by their conversation partners relative to control participants. This finding is consistent with theoretical speculations that self-protective behaviours inadvertently elicit negative social responses (e.g., Alden & Taylor, 2004; Clark, 2001). Conversely, safety behaviour reduction and control participants did not differ regarding their own internal reactions to their partner. Similar to social judgments, the high degree of behavioural consistency displayed by confederates may have limited variability in participant ratings of partner liking. Future work using more ecologically valid research designs is needed.

### *Summary*

The present investigation was the first study to manipulate safety behaviours during a complex interpersonal interaction. This work established that even in the context of a brief conversation, socially anxious participants on the whole were able to identify and reduce their idiosyncratic safety behaviours, and that this reduction was associated with changes in key cognitive and interpersonal variables. Further, the beneficial effects of the safety behaviour intervention generalized to a subsequent interaction, which suggests the effects are enduring. Methodologically, the findings provide support for the utility of the experimental protocol in manipulating safety behaviours during a laboratory social interaction, and support the use of those procedures in future work.

It is important to note, however, that safety behaviours were identified according to participants' retrospective accounts of the self-protective strategies they typically use during first-meeting situations. Given that laboratory social encounters are unique, the use of a baseline, no intervention condition would likely provide a more accurate assessment of *in vivo* safety behaviours specific to that context. Further, the absence of a baseline condition prevented within-group comparisons resulting from the experimental manipulation. Although the failure to detect between-group differences on demographic and symptom measures bolsters confidence that any differences observed on the dependent variables reflect true outcomes resulting from the manipulation, the inclusion of a baseline condition would undoubtedly enhance power to detect changes resulting from the safety behaviour procedures by controlling for pre-existing differences in the dependent measures. Finally, the current sample consisted of socially anxious undergraduate students, and future work in clinical samples is needed.

## Study 2

Consistent with cognitive theories of SAD, Study 1 established that in a sample of individuals with high levels of social anxiety, safety behaviour reduction was associated with more accurate judgments of one's own performance, enhanced social behaviour, and the elicitation of more positive social responses. The study, however, relied on a sample of undergraduate students, and there is a need to determine whether the results would extend to a clinical sample. Individuals seeking treatment for their social fears undoubtedly present with greater severity of social anxiety symptoms and functional impairment. Accordingly, the primary aim of the second study was to examine the impact of safety behaviour reduction strategies in a sample of individuals diagnosed with generalized SAD.

My second goal was to improve upon some of the methodological limitations of Study 1. First, the lack of a baseline interaction prior to the safety behaviour manipulation prevented me from completely ruling out pre-existing differences on the dependent measures. A baseline condition is required to definitively establish a causal link between the safety behaviour manipulation and outcomes. Further, a baseline exposure session can be used to measure *in vivo* safety behaviours specific to the laboratory conversation, which would provide a more accurate assessment of the idiosyncratic safety behaviours reported by participants. To address those issues, the current study implemented a no intervention condition prior to introducing the experimental manipulation.

A third goal of Study 2 was to improve the measurement of interpersonal outcomes. Study 1 failed to detect differences between the safety behaviour and control groups regarding judgments of partner behaviour. Although methodological constraints may account for those results, it is also possible that a more sensitive measure of social judgment bias involves

perceptions of others' reactions to oneself, rather than others' behaviour per se (see Alden & Taylor, 2004). Research demonstrates that social judgment biases generally emerge when assessing appraisals of other peoples' reactions to oneself, judgments that are based on a combination of perceptions of self and other. It could be argued that if safety behaviour reduction strategies result in more positive appraisals of one's own performance, those interventions may ultimately affect judgments of others' reactions to oneself, i.e., perceived liking. The current study set out to address that issue by evaluating participant judgments of their partner's liking of them.

The fourth goal of Study 2 was to assess the effects of safety behaviour reduction on predictions about future social interactions. Study 1 indicated that reducing safety behaviours influenced self-judgments pertaining to that specific event; however, it did not address judgments of subsequent social events. Individuals with SAD have been shown to anticipate negative outcomes prior to engaging in social situations (e.g., Foa et al., 1996; Glass & Furlong, 1990; Hinrichsen & Clark, 2003; Hofmann et al., 2004; Wallace & Alden, 1997). According to cognitive theorists, such fear-related predictions are resistant to change because the non-occurrence of the feared outcome is attributed to the use of safety behaviours, rather than to the innocuous nature of the situation itself (e.g., Salkovskis, 1991). In this way, anxious individuals continue to anticipate threat in future encounters with the feared stimulus. If Salkovskis is correct, one would expect to see reductions in negative predictions about future social events when safety behaviours are reduced. Further, if socially anxious individuals appraise their social performance more positively when reducing safety behaviours, they might anticipate that future social interactions will also turn out well. Accordingly, the final goal of Study 2 was to evaluate

whether the safety behaviour reduction intervention affected predictions pertaining to a future social event.

### Current Study

To address these goals, individuals diagnosed with generalized SAD participated in two laboratory-based conversations with a trained experimental confederate. The initial interaction served as a baseline to assess *in vivo* safety behaviours, and to control for pre-existing effects on the dependent variables. Prior to the second interaction, participants were randomly assigned to either the (1) graduated exposure (control) condition or (2) safety behaviour reduction (experimental) condition. The primary research questions were as follows: Do safety behaviour reduction strategies influence SAD individuals' (1) self- and social-judgments, (2) social performance, (3) the interpersonal reactions of themselves and others, and (4) judgments of future social events.

### Hypotheses

Consistent with cognitive models and the findings of Study 1, I predicted that relative to the graduated exposure group, participants in the safety behaviour reduction group would: (1) become more accurate in their judgments of their own anxiety-related behaviour, but not prosocial behaviour; (2) display enhanced judgments of perceived partner liking of oneself, but not partner behaviour per se; (3) exhibit more effective social behaviour, most notably in displays of prosocial behaviour; and (4) be better liked by their partners relative to control participants. (5) Finally, in keeping with speculations about the role of safety behaviours in disrupting threat disconfirmation, I hypothesized that the safety behaviour group would display greater reductions in their estimates of the probability and cost of negative outcomes pertaining to a future social event relative to controls.



## Method

### *Participants*

Participants were 80 individuals (43 men, 37 women) seeking treatment for Generalized Social Anxiety Disorder (GSAD) from outpatient psychology clinics and community referrals. Upon initial telephone contact, prospective participants were provided with information pertaining to the treatment program and assessment procedures, including the current experimental protocol. They also completed a brief screening interview to assess their appropriateness for participation in the study. Participants were excluded if they did not report that their primary problem was with social anxiety, if their social fears were of subclinical severity, or if they reported being unable to commit to the 12-week treatment program (e.g., scheduling or transportation difficulties). Suitable participants were invited to the laboratory to complete the intake assessment and experimental procedure.

Diagnostic status was established using the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Brown, Di Nardo, & Barlow, 1994), a structured interview protocol that assesses diagnostic criteria for the anxiety, mood, somatoform, and substance use disorders, and provides screening criteria for psychosis. The interview also assesses current and past psychological and pharmacological treatments. DSM-IV diagnoses based on the ADIS-IV have been shown to have good to excellent inter-rater agreement, and good concurrent validity (Brown et al., 1994; Brown, Di Nardo, Lehman, & Campbell, 2001). Two senior graduate students in clinical psychology (1 man, 1 woman) with extensive experience in the administration of the ADIS-IV conducted the assessments. To be eligible for the study, participants were required to meet DSM-IV criteria for GSAD and to have GSAD as their

predominant problem. Exclusion criteria included a concurrent diagnosis of substance abuse or dependence, Bipolar Disorder, or any Psychotic Disorder. All diagnostic interviews were reviewed in weekly team meetings with the two evaluators and the supervising registered psychologist who has considerable clinical and research expertise with SAD. A primary diagnosis of GSAD was only assigned if the clinical team was in agreement. See Table 4 for diagnoses and treatment relevant information.

### *Personnel*

*Experimenter.* The same two graduate students who completed the diagnostic assessments served as experimenters. The experimenters were trained to follow a scripted protocol to deliver instructions to participants, and were responsible for implementing the laboratory procedures, administering questionnaires, rating confederate behaviour, and conducting debriefing at the conclusion of the experiment.

*Confederates.* Four senior undergraduate students (2 men, 2 women) served as experimental confederates, and were trained to provide a set of scripted verbal and nonverbal behaviours designed to convey a reserved, but not unfriendly social response. The current protocol was modeled after prior research (Alden & Wallace, 1995; Stopa & Clark, 1993; Taylor & Alden, 2005), and was identical to that described in Study 1. Confederates were blind to the study hypotheses and participants' experimental condition.

*Observer.* To assess inter-rater agreement, two additional undergraduate students served as independent observers, and were trained to rate participant and confederate behaviour. Similar to confederates, the observers remained blind to the study hypotheses and participants' experimental condition.

### *Procedure*

The present experimental procedure shares many similarities to that described in Study 1. Accordingly, the current procedures will only be discussed in brief, and the reader is referred to the Study 1 Method section for a more thorough discussion of procedural details. Areas where the current procedures deviate from Study 1 will be highlighted and more fully elaborated.

Upon arriving to the laboratory, participants were greeted by the experimenter, informed about the study procedures, and provided written informed consent<sup>2</sup>. Participants were told that they would spend some time getting to know one of our assistants, after which they would rate their impressions of the interaction. Prior to the interaction, participants were asked to identify their idiosyncratic feared outcomes, i.e., negative predictions, pertaining to the upcoming conversation. After participants completed a measure of state anxiety (described below), the confederate entered the room and was introduced to the participant.

*Baseline Exposure Session.* To obtain information regarding *in vivo* safety behaviours and to control for pre-existing differences on the dependent variables, participants engaged in a baseline (no intervention) exposure session in which they interacted with a trained experimental assistant. Participants were informed that we were interested in understanding their typical thoughts and behaviours during a first-meeting social encounter. After participants completed the pre-interaction measures, the confederate entered the room and was introduced to the participant. After explaining the nature of the conversation, the experimenter left the room to rate the confederate's behaviour from behind a one-way mirror. The interaction itself consisted of the same 5-minute open-ended 'getting acquainted' conversation used in Study 1 (see also Alden & Wallace, 1995; Taylor & Alden, 2005). Following the interaction, the experimenter returned to the room, thanked the confederate for their assistance, and asked the participant to complete the

dependent measures (described below). After leaving the room, the confederate rated the participant's behaviour and their desire to interact with the participant again.

*Identification of Safety Behaviours.* After completing the dependent measures pertaining to the baseline interaction, experimenters conducted an assessment of the safety behaviours that participants used during the previous conversation. First, the experimenter reviewed with participants their previously identified feared outcomes, and used that information to obtain a list of the behavioural strategies that participants used to prevent or minimize the likelihood of those negative outcomes. Similar to Study 1, participants were then provided with the Safety Behaviour Questionnaire (described below), and were asked to rate the extent to which they used each behaviour during the conversation in order to make themselves *feel safer or to try to prevent [their] feared outcome(s) from happening*. The experimenter then reviewed this form with participants, and confirmed their primary safety behaviours.

*Experimental Session.* Following the safety behaviour assessment, participants were informed that they would be engaging in a second conversation with the same partner, which served as the experimental session. Prior to the interaction, participants were randomly assigned to either the (1) graduated exposure (GE; control) condition (17 females, 23 males) or (2) the safety behaviour reduction (SB; experimental) condition (20 females, 20 males). The same experimental rationales as those used in Study 1 were presented to participants in their respective conditions (see also Kim, 2005; Wells et al., 1995). Following presentation of the experimental instructions, participants rated their expectations about the credibility and effectiveness of their respective experimental strategy (see Expectancy Scale, described below). Similar to Study 1, all participants engaged in a 'practice conversation' with the experimenter prior to the experimental session to increase the likelihood that experimental participants would be able to successfully

manipulate their safety behaviours during the interaction. Consistency was maintained across participants by selecting a pre-determined conversation topic (i.e., “Tell me about the most recent holiday or vacation you took”), the duration of which was limited to two minutes. At the completion of the practice session, participants’ understanding of the experimental instructions was assessed, and further clarification was provided when necessary. Participants then completed a measure of state anxiety (described below). Consistent with Study 1, participants were asked to initiate this conversation, which was otherwise identical in nature to the first. Following the interaction, the participant and confederate completed the same dependent measures as those used following the first exposure session. See Figure 1 for a diagram of the procedure.

### *Measures*

*Social Anxiety.* The Social Phobia Scale (SPS; Mattick & Clarke, 1998) and the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) were used to assess severity of social anxiety symptoms. See Study 1 for more information on this measure. See Appendix 2 and 3 for the SPS and SIAS, respectively.

*Depression.* The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) was used to assess severity of depression during the past two weeks. See Study 1 for more information on this measure. See Appendix 4.

### *Dependent Measures*

*Social Behaviour.* The participant, confederate, and observer rated the participant’s behavioural performance during each conversation using the same two social behaviour scales described in Study 1. The first dimension comprised 6 items written to reflect Anxiety-Related Behaviour (show signs of anxiety, speak fluently/clearly, tremble or shake, create uncomfortable pauses, fidget, appear tense or rigid)<sup>4</sup>. The second dimension consisted of 5 items reflecting

Prosocial Behaviour (talked openly about yourself, conveyed interest in your partner, appeared actively engaged in the conversation, appeared friendly, were talkative). Internal consistency of the two sets of items was adequate in this sample (Cronbach's  $\alpha$  range = .75 – .90, and .80 – .91 for the Anxiety-Related Behaviour and Prosocial Behaviour ratings, respectively). Inter-rater agreement for ratings of participant behaviour was also satisfactory (Intraclass correlation coefficients for the Anxiety-Related Behaviour and Prosocial Behaviour scales were .91, .85 and .81, .78, respectively, all  $p < .01$ ). See Appendix 7.

*Social Judgment.* Following the interaction, participants rated the confederate on scales developed to reflect (1) Partner Warmth (friendly, talkative, disinterested, distant, self-disclosive), and (2) Perceived Partner Reactions (5 items, e.g., “How much do you think your partner would want to talk with you again?”). The Partner Warmth scale was described in greater detail in Study 1. The Perceived Partner Reactions scale was added following earlier work highlighting the importance of distinguishing judgments of actual partner behaviour from perceived responses to oneself (see Alden & Taylor, 2004 for a review). Ratings were made on a 7-point scale with anchors of *not at all* and *very much*. The Partner Warmth and Perceived Partner Reactions scales displayed acceptable internal consistency (Cronbach's  $\alpha$  range = .72 – .84, .85 – .85, respectively). See Appendix 8.

*Desire for Future Interaction.* Confederate and participant reactions to their conversation partner were assessed using the Desire for Future Interaction Scale (DFI; Coyne, 1976) described in Study 1. The items were summed to form an overall index of liking versus rejection of the target individual. The Cronbach's  $\alpha$  for this sample was .97, .97, and .91, .93, for confederates and participants, respectively. See Appendix 9.

*State Anxiety.* Participant-rated state anxiety was assessed using the Brief State Anxiety Measure (BSAM; Berg et al., 1998), which was completed immediately before and after each conversation. (Cronbach's  $\alpha$  range = .75 – .84). See Study 1 for more information on this measure. See Appendix 10.

*Future Social Predictions.* Participants completed ratings about the perceived probability and cost of their idiosyncratic feared outcomes, i.e., their negative predictions, pertaining to the laboratory conversation. Ratings were made in reference to the negative outcome participants feared the *most*, and were completed prior to the second (experimental) interaction and pertaining to an ostensible future interaction with the same conversation partner. Probability estimates were assessed by asking, “How *likely* is it that the outcome will occur during the conversation?”, while cost estimates were rated according to, “How *bad* would it be if that outcome actually occurred?” Ratings were made on an 8-point scale ranging from *not at all (likely or bad)* to *extremely (likely or bad)* (see Foa et al., 1996).

#### *Experimental Checks*

*Confederate check.* Confederate behaviour was rated by experimenters from behind a one-way mirror using the same Partner Warmth scale developed in Study 1. Items were summed to create an overall index of confederate warmth and friendliness. (Cronbach's  $\alpha$  range = .72 – .84). See Appendix 8(A).

*Safety behaviours.* To evaluate safety behaviour use during each conversation, participants completed a 22-item<sup>4</sup> version of the Safety Behaviours Questionnaire (SBQ) described in Study 1. The SBQ was completed following both interactions to assess the extent to which participants performed each safety behaviour during the conversation. The Cronbach's  $\alpha$

for the total scale in this sample was .87 and .93 for the baseline and experimental interactions, respectively. See Appendix 6.

*Expectancy scale.* To assess whether participants perceived their respective experimental manipulation as equally credible, participant expectancies were assessed following presentation of the experimental rationale using the same scale described in Study 1. The Cronbach's  $\alpha$  for this scale in the present sample was .80. See Appendix 5.

## Results

### *Preliminary Analyses*

*Demographics.* Separate one-way (condition) analyses of variance (ANOVA) conducted on participant age and years of education revealed no between-group differences,  $F(1, 78) = .00, 2.24$ , both  $p > .10$ ,  $\eta_p^2 = .00, .03$ , respectively. Chi-square analyses revealed no differences between participants in the two conditions in terms of the number of men and women participants, ethnicity, whether participants were born in North America or not, English as a first language, marital status (married vs. not married), and occupation, (employed, student, unemployed),  $\chi^2$  range = .06 – 2.82, all  $p > .10$ . Taken as a whole, those findings suggested that participants in the two conditions did not differ on relevant demographic characteristics. See Table 4.

*Symptom Measures.* A one-way (condition) multivariate analysis of variance (MANOVA) was conducted on pre-assessment ratings of the SIAS, SPS, and BDI-II. Results revealed that the two experimental groups did not differ in symptom severity,  $F(3, 75) = .43, p > .10, \eta_p^2 = .02$ . See Table 5.

*Confederate Consistency.* To determine whether confederates maintained consistent behaviour across all participants, a 2 (time) by 2 (condition) ANOVA was conducted on



experimenter ratings of confederate warmth and openness. Results revealed no significant effects for time, condition, or the time by condition interaction,  $F(1, 77) = .63, 1.81, .11$ , respectively, all  $p > .10$ , all  $\eta_p^2 < .02$ . Those findings suggested that confederates did not differ in their behavioural performance across participants within each condition and across interactions. See Table 6.

*Expectancy.* A one-way (condition) ANOVA conducted on participant expectancy ratings revealed no between-group differences,  $F(1, 78) = 0.16, p > .10, \eta_p^2 = .00$ . Those findings suggested that participants in each condition expected that their respective treatment strategies would be equally effective in overcoming their anxiety symptoms and fears. See Table 6.

*Manipulation Check (Safety Behaviours).* To confirm that the experimental protocol was successful in manipulating safety behaviours during the conversation, a 2 (time) by 2 (condition) ANOVA was conducted on participant safety behaviour ratings completed at the conclusion of each conversation. Results revealed a significant main effect for time,  $F(1, 78) = 21.33, p < .001, \eta_p^2 = .22$ . This main effect was moderated by a significant time by condition interaction,  $F(1, 78) = 17.58, p < .001, \eta_p^2 = .18$ . Simple main effects analyses revealed that the SB group reported using fewer safety behaviours during the experimental interaction relative to baseline,  $F(1, 78) = 38.82, p < .001, \eta_p^2 = .33$ . However, the GE group did not differ on safety behaviour use between the baseline and experimental interactions,  $F(1, 78) = .09, p > .10, \eta_p^2 = .00$ . The condition main effect was not significant,  $F(1, 78) = .29, p > .10, \eta_p^2 = .00$ . As a whole, those findings suggested that the experimental manipulation was successful in decreasing safety behaviours in the experimental group. See Table 7.

### *Main Analyses*

To address specific *a priori* hypotheses, 2 (time: baseline, experimental interaction) by 2 (condition: SB, GE) ANOVAs were conducted on the primary dependent variables. Based on the findings of study 1, and to enhance conceptual clarity by providing a more focused test of the primary study hypotheses, dependent variables were analyzed using univariate tests. The main prediction that the safety behaviour reduction manipulation would differently affect the dependent measures of interest relative to the GE group was evaluated according to the presence of time by condition interaction effects. Significant interactions were followed-up with within-group simple main effects analyses to determine whether the safety behaviour reduction manipulation resulted in a significant change on the relevant dependent variables from baseline to the experimental interaction.

*Social Performance.* To investigate the first hypothesis, namely that the safety behaviour reduction manipulation would result in enhanced behavioural performance, 2 (time) by 2 (condition) between-within ANOVAs were conducted on participant and confederate ratings of participant Anxiety-Related Behaviour and Prosocial Behaviour. For participant ratings, the ANOVA for Anxiety-Related Behaviour revealed a significant main effect for time,  $F(1, 78) = 17.71, p < .001, \eta_p^2 = .19$ , which was qualified by a significant time by condition interaction,  $F(1, 78) = 13.12, p = .001, \eta_p^2 = .14$ . The main effect for condition was not significant,  $F(1, 78) = .79, p > .10, \eta_p^2 = .01$ . Simple main effects analyses of the time by condition interaction indicated that, consistent with study 1, participants in the SB group rated themselves as displaying significantly fewer Anxiety-Related Behaviours during the experimental interaction relative to baseline,  $F(1, 78) = 30.66, p < .001, \eta_p^2 = .28$ . The GE group, however, did not differ in ratings of their own Anxiety-Related Behaviour across the two conversations,  $F(1, 78) = .17, p$

$> .10$ ,  $\eta_p^2 = .00$ . See Figure 2. The ANOVA for participant ratings of their own Prosocial Behaviour revealed a significant main effect for time,  $F(1, 78) = 32.55$ ,  $p < .001$ ,  $\eta_p^2 = .29$ , which suggested that all participants rated themselves as displaying more Prosocial Behaviours during the experimental conversation relative to baseline. As in study 1, the condition, and time by condition effects were not significant,  $F(1, 78) = .43, 2.23$ , both  $p > .10$ ,  $\eta_p^2 = .01, .03$ , respectively. See Table 7.

The 2 (time) by 2 (condition) between-within ANOVA conducted on confederate ratings of participant Anxiety-Related Behaviour revealed a significant main effect for time, and condition,  $F(1, 78) = 6.31, 6.53$ , both  $p < .05$ , both  $\eta_p^2 = .08$ , respectively. Although participants in the SB group were rated as displaying a tendency to exhibit fewer signs of observable anxiety from baseline to the experimental conversation relative to control participants, the time by condition interaction effect failed to reach significance,  $F(1, 78) = 3.66$ ,  $p = .06$ ,  $\eta_p^2 = .05$ . See Table 7.

For confederate ratings of participant Prosocial Behaviour, results revealed a significant main effect of time,  $F(1, 78) = 31.69$ ,  $p < .001$ ,  $\eta_p^2 = .29$ , but not for condition,  $F(1, 78) = 3.34$ ,  $p = .07$ ,  $\eta_p^2 = .04$ . These main effects were moderated by a significant time by condition interaction,  $F(1, 78) = 6.40$ ,  $p = .01$ ,  $\eta_p^2 = .08$ . Simple main effects analyses conducted within each condition revealed that both the SB and GE groups were rated by confederates as displaying an increase in Prosocial Behaviour from baseline to the second conversation,  $F(1, 78) = 33.28, 4.81$ ,  $p = .001, .03$ ,  $\eta_p^2 = .30, .06$ , respectively. As in Study 1, however, participants in the SB group displayed a *greater* increase in Prosocial Behaviour across time compared to control participants as evidenced by the significant between-group differences during the experimental

interaction,  $F(1, 78) = 7.68, p = .007, \eta_p^2 = .09$ , but not during the baseline conversation,  $F(1, 78) = .75, p > .10, \eta_p^2 = .01$ . See Figure 3.

*Self-Judgment Bias.* The second research question was whether participants instructed to reduce safety behaviours became more accurate in their self-judgments relative to the control group. To address this issue, 2 (time) by 2 (rater: participant, confederate) by 2 (condition) between-within ANOVAs were conducted on ratings of participant Anxiety-Related Behaviour and Prosocial Behaviour. The outcome most relevant to the *a priori* hypotheses was a three-way time by rater by condition interaction.

For Anxiety-Related Behaviour, results revealed significant main effects for time,  $F(1, 78) = 19.24, p < .001, \eta_p^2 = .20$ , rater,  $F(1, 78) = 12.89, p = .001, \eta_p^2 = .14$ , and condition,  $F(1, 78) = 4.34, p = .041, \eta_p^2 = .05$ . Significant two-way interaction effects emerged for time by condition,  $F(1, 78) = 13.30, p < .001, \eta_p^2 = .15$ , and time by rater,  $F(1, 78) = 5.31, p = .024, \eta_p^2 = .06$ , but not for rater by condition,  $F(1, 78) = 2.81, p = .10, \eta_p^2 = .04$ . As predicted, a significant three-way time by rater by condition interaction effect was found,  $F(1, 78) = 4.61, p = .04, \eta_p^2 = .06$ .

To understand the nature of this three-way interaction, follow-up 2 (time) by 2 (rater) repeated-measures ANOVAs were conducted for the SB and GE groups separately. In the SB group, a significant time by rater interaction emerged,  $F(1, 39) = 8.19, p = .007, \eta_p^2 = .17$ , which indicated that the extent to which participants and confederates differed on ratings of participant Anxiety-Related Behaviour was less during the experimental interaction relative to the baseline interaction. In contrast, the time by rater interaction was not significant in the GE group,  $F(1, 39) = .02, p > .10, \eta_p^2 = .00$ , suggesting that the magnitude of difference in participant and confederate ratings of participants' Anxiety-Related Behaviour did not differ between the

baseline and experimental conversations. Considered together, those findings indicated that participants in the SB group displayed a greater increase in the accuracy of judgments of their Anxiety-Related Behaviour, i.e., judgments closer to confederate ratings, from baseline to the experimental interaction, compared to participants in the GE group.

The 2 (time) by 2 (rater) by 2 (condition) between-within ANOVA conducted on ratings of participant Prosocial Behaviour revealed significant main effects for time,  $F(1, 78) = 47.13, p < .001, \eta_p^2 = .38$ , and rater,  $F(1, 78) = 16.58, p < .001, \eta_p^2 = .18$ , but not for condition,  $F(1, 78) = 2.20, p > .10, \eta_p^2 = .03$ . Significant two-way interaction effects emerged for time by condition,  $F(1, 78) = 5.05, p = .028, \eta_p^2 = .06$ , and time by rater,  $F(1, 78) = 7.34, p = .008, \eta_p^2 = .09$ , but not for rater by condition,  $F(1, 78) = 1.07, p > .10, \eta_p^2 = .01$ . Most relevant to the primary study hypotheses was the three-way time by rater by condition interaction effect, which was not significant,  $F(1, 78) = .02, p > .10, \eta_p^2 = .00$ . As in study 1, the amount of discrepancy between participant and confederate ratings of Prosocial Behaviour across interactions did not differ according to experimental condition (SB vs. GE).

*Social Judgment.* The third research question was whether participants in the SB group differed in their social judgments relative to the GE group. To address this issue, 2 (time) by 2 (condition) between-within ANOVAs were conducted on participant ratings of Partner Warmth and Perceived Partner Reactions. As in study 1, the ANOVA for Partner Warmth revealed no significant effects for time, condition, or the time by condition interaction,  $F(1, 78) = 1.43, 1.94, 2.69$ , all  $p > .10, \eta_p^2 = .02, .02, .03$ , respectively. For Perceived Partner Reactions, a significant main effect for time revealed that all participants judged their partner to like them more following the second interaction relative to the first,  $F(1, 78) = 27.60, p < .001, \eta_p^2 = .26$ . The

condition, and time by condition interaction effects were not significant,  $F(1, 78) = 3.03, 2.88$ , respectively, both  $p = .09$ , both  $\eta_p^2 = .04$ . See Table 7.

*Social Reactions.* To evaluate the fourth hypothesis, i.e., that reducing safety behaviours would elicit more positive social reactions, confederate DFI ratings were entered as the dependent variable in a 2 (time) by 2 (condition) between-within ANOVA. Results revealed a significant main effect for time,  $F(1, 77) = 7.27, p = .009, \eta_p^2 = .09$ , and a marginally significant main effect for condition,  $F(1, 77) = 3.50, p = .07, \eta_p^2 = .04$ . Of greater relevance to the study hypotheses was the significant time by condition interaction,  $F(1, 77) = 4.04, p = .05, \eta_p^2 = .05$ . Consistent with the findings of study 1, simple main effects analyses revealed that confederates reported greater liking of participants in the SB group following the experimental conversation relative to baseline,  $F(1, 77) = 10.93, p = .001, \eta_p^2 = .12$ . Confederate DFI ratings did not differ across interactions for control participants,  $F(1, 77) = .24, p > .10, \eta_p^2 = .00$ . See Table 7.

A related question was whether the safety behaviour procedure affected participants' own reactions to their partner. A 2 (time) by 2 (condition) between-within ANOVA conducted on participant DFI ratings revealed a significant main effect for time,  $F(1, 78) = 10.91, p = .001, \eta_p^2 = .12$ , which indicated that all participants reported greater liking of their partner during the second interaction relative to the first. As in study 1, the condition, and time by condition effects were not significant,  $F(1, 78) = .05, 1.86$ , both  $p > .10, \eta_p^2 = .00, .02$ , respectively.

*Future Social Predictions.* To examine the fifth hypothesis, i.e., that the safety behaviour manipulation would affect judgments of an anticipated future social event, a 2 (time) by 2 (condition) between-within MANOVA was conducted using participant ratings of the likelihood and cost of their most feared outcome. Social predictions were rated prior to the experimental conversation and pertaining to an ostensible future interaction with the same partner. Results

revealed a significant multivariate effect for time,  $F(2, 73) = 3.04, p = .05, \eta_p^2 = .08$ . This main effect was qualified by a significant multivariate time by condition interaction,  $F(2, 73) = 5.00, p = .009, \eta_p^2 = .12$ . The main effect for condition did not attain significance,  $F(2, 73) = .64, p > .10, \eta_p^2 = .02$ .

Follow-up univariate analyses of the time by condition interaction revealed a significant interaction effect for probability estimates regarding participants' most feared outcome,  $F(1, 74) = 9.92, p = .002, \eta_p^2 = .12$ . Simple main effects analyses indicated that participants in the SB group displayed significant reductions in the subjective probability of their most feared outcome,  $F(1, 74) = 16.24, p < .001, \eta_p^2 = .18$ , whereas participants in the GE group did not differ across the two time points,  $F(1, 74) = .22, p > .10, \eta_p^2 = .00$ . The time by condition interaction effect for cost estimates was not significant,  $F(1, 74) = 1.15, p > .10, \eta_p^2 = .02$ . See Table 8.

#### *Supplementary Analyses*

Similar to Study 1, I was interested in determining the impact of changes in anxiety, if any, on the between-group differences observed on the primary dependent variables. To address this issue, a 4 (time) by 2 (condition) between-within ANOVA was conducted on participant state anxiety ratings completed before and after each conversation. Results revealed a significant main effect for time,  $F(3, 231) = 12.81, p < .001, \eta_p^2 = .14$ . Follow-up analyses using the Šidák adjustment for multiple comparisons revealed that all participants reported experiencing less anxiety following the experimental exposure session ( $M = 14.47, SD = 3.61$ ) compared to all prior assessment points,  $F(1, 77)$  range = 19.69 – 28.41, all  $p < .001, \eta_p^2$  range = .20 – .27. Participant-rated state anxiety did not differ, however, across the initial three assessment points, (pre-baseline,  $M = 16.60, SD = 3.47$ ; post-baseline,  $M = 16.50, SD = 3.47$ ; pre-experimental,  $M = 16.24, SD = 3.31$ ). The condition,  $F(1, 77) = 1.43, p > .10, \eta_p^2 = .02$ , and time by condition

effects were not significant,  $F(3, 231) = 1.30, p > .10, \eta_p^2 = .02$ . Those analyses indicated that the experimental and control groups did not differ in the amount of change on subjective anxiety across interactions. See Table 7.

### Discussion

The results of the present study were largely consistent with the findings of Study 1, which indicated that the safety behaviour reduction effects generalized to patients with GSAD. In line with cognitive models of SAD and the results of Study 1, participants encouraged to eliminate safety behaviours became more accurate in their self-judgments regarding anxiety-related behaviour, displayed more effective social behaviour, and were better liked relative to controls. Further, the safety behaviour intervention led to reductions in judgments of the likelihood of feared outcomes pertaining to a future social event. As in Study 1, no differences emerged between the experimental and control groups in terms of judgments of their own prosocial behaviour, social judgments, or their own social reactions. All in all, the current findings provide further support for contemporary cognitive models of SAD (e.g., Alden, 2001; Clark, 2001; Rapee & Heimberg, 1997) and highlight the importance of including safety behaviour reduction strategies in existing treatment regimens of SAD.

Consistent with Study 1, patients with GSAD instructed to eliminate safety behaviours became more accurate in judgments about visible displays of anxiety relative to controls. Again, no differences emerged between the experimental and control groups on self-judgments of prosocial behaviour, suggesting that GSAD participants were more aware of changes in anxiety-related cues, but not their external display of warmth and friendliness. Further, the absence of between-group differences in subjective anxiety across interactions implies that the safety behaviour manipulation exerted a greater effect on participants' *appraisals* of how anxious they



appeared, rather than actual changes in anxiety per se. The present work adds to a growing body of literature indicating that socially anxious individuals place greater importance on anxiety-related cues relative to other sources of social information (e.g., Alden & Mellings, 2004; Mansell & Clark, 1999).

In keeping with the findings from Study 1, observers rated the safety behaviour reduction group as being warmer, friendlier, and more open relative to controls. Those results are consistent with previous research findings regarding the negative association between safety behaviour use and social performance (Hirsch et al., 2004; Stangier et al., 2006). Further, participants encouraged to reduce safety behaviours were rated as displaying a slight tendency to exhibit fewer visible signs of anxiety compared to control participants. It is notable, however, that changes in visible anxiety associated with the safety behaviour intervention were a considerably less salient feature of participants' behaviour as rated by observers. All in all, future work is needed to clarify the relationship between safety behaviours and visibility of anxiety.

The safety behaviour and control groups did not differ on judgments of their partner's behaviour or internal reactions during the conversation. Those results are consistent with Study 1, which suggested that in the context of a brief controlled laboratory interaction, reducing safety behaviours does not affect socially anxious people's social judgments. Although cognitive models argue that safety behaviour reduction would be associated with increased processing of previously ignored external social cues (e.g., Clark & Wells, 1995), given that confederate behaviour was constrained in the context of the present interaction, it is difficult to speculate about the reasons for the lack of between-group differences in this domain. As discussed earlier, the experimental control that was imposed on confederate behaviour led participants in both groups to be exposed to similar social cues. Moreover, confederates were trained to convey a

warm social response, which may have limited variability in social judgments. Research is needed to evaluate the impact of safety behaviour procedures on social judgments in more naturalistic research designs where partner behaviour is not controlled, and under conditions of greater ambiguity, where the potential for pre-existing biases is more likely (e.g., Amir, Foa, & Coles, 1998; Taylor & Alden, 2005).

A similar pattern of findings emerged for interpersonal reactions as in Study 1. Confederates reported greater liking of participants in the safety behaviour reduction group relative to control participants. Those findings provided further support for the proposition that safety behaviours can lead to the negative social outcomes that the socially anxious individual is attempting to avoid, i.e., rejection (e.g., Alden, 2001; Clark, 2001; Rapee & Heimberg, 1997). Once again, the safety behaviour manipulation did not influence participants' liking for their partner. As with participants' social judgments, the lack of variability in confederate responses may have constrained participants' reactions to their partners. Future work should address this methodological limitation using more naturalistic research designs (see Creed & Funder, 1998 for example).

Another unique contribution of this study was the examination of effects of reducing safety behaviours beyond the immediate social encounter. Consistent with cognitive formulations of the role of safety behaviours in the persistence of fear-related beliefs, the results demonstrated that the SB group displayed greater reductions in predictions of negative outcomes in future interactions. One possible explanation is that participants in the SB group were less likely to attribute the absence of a negative outcome in the interaction to safety behaviours, but rather were better able to discern that the feared outcome did not occur (e.g., Salkovskis, 1991). It is also possible that decreases in negative judgment biases led to corresponding reductions in

negative predictions regarding a future social encounter. Research is needed to determine the mechanism that underlies prediction disconfirmation in socially anxious populations.

No differences emerged in participant ratings of the perceived cost or consequences associated with their most feared outcome. One possible explanation for those findings concerns the nature of cost biases in SAD. Previous research has established that a prominent aspect of the cost bias is the belief that negative social events indicate that the socially anxious person possesses negative personal characteristics (e.g., I am boring/incompetent) (Wilson & Rapee, 2005). As a result, changes in cost estimates may occur over a longer period of time, something that requires more fundamental changes at the level of one's self-concept. It is not surprising that the manipulation used in the current brief laboratory interaction failed to affect this cognitive bias that appears to be related to more core aspects of the self. Interestingly, a recent study demonstrated that reduction in probability estimates resulted in subsequent fear reduction during a brief exposure-based treatment for SAD, while reductions in cost estimates were merely a consequence of fear reduction (Smits, Rosenfield, McDonald, & Telch, 2006). All in all, it would be valuable to examine the process of threat disconfirmation over time.

The present results demonstrated that the findings from Study 1 replicated in a treatment-seeking sample of patients with GSAD, and provided further support for the role of safety behaviours in the maintenance of SAD. The findings suggested that safety behaviours not only negatively impact cognitive, behavioural, and interpersonal processes *during* social encounters, but also affect judgments of future social events. The current study represents the first empirical work to evaluate the effects of safety behaviour reduction strategies during a complex social interaction in a clinical sample of patients with GSAD. All in all, this research supports

recommendations to include safety behaviour reduction strategies as part of contemporary treatment regimens for SAD.

## General Discussion

The purpose of this dissertation research was to examine the effect of safety behaviour reduction strategies on cognitive, behavioural, and interpersonal processes purported to be central to the persistence of social anxiety. Study 1 was conducted in a sample of socially anxious students to evaluate the feasibility of manipulating *in vivo* safety behaviours during a laboratory conversation, and to determine the effect of the manipulation on self- and social-judgments, behavioural performance, and interpersonal reactions. Study 2 was designed to establish whether the safety behaviour reduction effects would extend to a clinical sample of individuals diagnosed with generalized SAD. A further aim of Study 2 was to improve upon some of the methodological limitations of Study 1, and to address the issue of whether the safety behaviour manipulation would affect judgments beyond the immediate social encounter. This final discussion section will review the findings from both studies as they apply to cognitive theories of SAD, will highlight promising avenues for future research, and will discuss the clinical implications of these findings for the treatment of SAD.

### *Self-Judgments*

A consistent finding to emerge across samples was that relative to control participants, the safety behaviour reduction group displayed greater accuracy in self-judgments about the visibility of their anxiety. Several explanations may account for those findings. First, it could be argued that reductions in safety behaviours led to a decrease in anxiety and associated interoceptive cues (e.g., Clark & Wells, 1995), which may in turn have led the anxious participants to (more accurately) appraise themselves as appearing less anxious. The present findings do not support anxiety-reduction explanations, as no between-group differences were detected in participant ratings of their subjective anxiety. The absence of changes in subjective

anxiety stands in contrast to previous work on safety behaviours in people with SAD (Kim, 2005; Well et al., 1995). This divergence may reflect differences in how anxiety was assessed. Previous work evaluated global anxiety ratings *during* the social task, while in the current study anxiety was assessed *before* and *after* the interaction, which may have reduced sensitivity to detect between-group differences (see Moscovitch & Hofmann, 2007 for example).

It is also plausible that the nature of the interaction may account for the differences. One might speculate that it is more challenging to reduce safety behaviours during a complex social situation than in public speaking tasks (e.g., Kim, 2005), given the increased social demands inherent in such encounters. If so, any anxiety reduction benefits resulting from the safety behaviour manipulation may have been offset by increased arousal associated with engaging in a novel set of behaviours during an interpersonal encounter. This account is consistent with our clinical experiences in which phobic patients often report discomfort during initial attempts at dropping safety behaviours *in vivo*. It would be interesting to determine whether, with repeated practice eliminating safety behaviours over time, one eventually sees corresponding decreases in anxiety. It is also notable that not all studies have found reductions in anxiety associated with decreased safety behaviour use (e.g., Alden & Bieling, 1998).

An alternative explanation for the enhanced self-judgments of anxiety-related behaviour is that the safety behaviour manipulation led to reductions in the degree of processing of self-related information. Cognitive theories posit that safety behaviours lead to heightened processing of negative self-related cues such as anxiety-related sensations and behaviours (e.g., Clark, 2001; Clark & Wells, 1995; Sloan & Telch, 2002). Research has demonstrated that socially anxious individuals use negative self-related information to make overly negative judgments about how they appear to others (e.g., Alden & Mellings, 2004; Arntz et al., 1995; Mansell & Clark, 1999;

McEwan & Devins, 1983; Mellings & Alden, 2000). Thus, diminished processing of self-related cues may have decreased the salience of negative self-related information, thereby leading to more positive and accurate performance judgments. However, the degree of self-related processing was not assessed in this study, nor was the relative weight of self- versus other-related social information used in the judgments of socially anxious participants (e.g., Alden & Mellings, 2004). Preliminary evidence from ongoing research in our laboratory suggests that changes in self-focus may be one possible mechanism underlying the safety behaviour reduction-self-judgment bias relationship (Alden & Taylor, 2007). Future work needs to evaluate putative mechanisms involved in changes in self-judgments following safety behaviour reduction.

### *Social Judgments*

In contrast to self-judgments, the safety behaviour manipulation did not influence participants' judgments of their partner's behaviour or perceived reactions to oneself. As discussed earlier, the high degree of behavioural consistency displayed by confederates may have limited variability in social judgments. Another possibility that deserves consideration is that participants may have attended more to self-related changes associated with the safety behaviour intervention, while external social cues were less salient. It is widely known that socially anxious individuals tend to engage in excessive processing of self-related cues at the expense of other-related information (e.g., Mansell, Clark, & Ehlers, 2003; Mellings & Alden, 2000). Given their tendency to be in a habitual state of self-focus, socially anxious participants encouraged to refrain from using safety behaviours may have been more likely to notice changes in their own internal sensations and behaviour compared to external social cues such as partner behaviour. Further, cognitive theories propose that individuals with SAD often use their own internal cues to make inferences about the responses of other people (e.g., Clark, 2001; Rapee &

Heimberg, 1997). It could be argued that following improvements in judgments of one's own performance, socially anxious individuals may eventually come to appraise others' reactions to them more positively as well. Research is needed to examine that possibility.

### *Social Performance*

The present work was the first study to evaluate behavioural outcomes following a safety behaviour reduction manipulation. Socially anxious and SAD participants instructed to reduce safety behaviours were rated as displaying more effective social behaviour relative to controls. The present results add to a growing body of literature illustrating that socially anxious persons are capable of behavioural flexibility (e.g., Leary & Kowalski, 1995). Those findings call into question traditional social skills deficits models of social anxiety, which assume that socially anxious individuals failed to learn effective social skills, and thus display ineffective social behaviour *across* social contexts (e.g., Segrin, 2001). It should be noted, however, that safety behaviour accounts are not completely at odds with social skills models. It is likely that following long-standing habitual use of self-protective behaviours or through extensive social avoidance, SAD individuals may indeed present with skills deficits in some domains. Importantly, the present findings suggest that it is possible for individuals with SAD to perform more effectively when provided with relatively straightforward instructions to reduce safety behaviours during feared social encounters.

Considered together, the divergent judgment patterns emerging for participants and observers implies a differential salience of behavioural outcomes associated with the safety behaviour intervention. Socially anxious individuals and patients with SAD were more likely to notice changes in anxiety-related cues, while prosocial behaviour was more important to their conversation partner. Those findings are consistent with a large body of research demonstrating



that anxiety-related cues and sensations are particularly salient to socially anxious individuals (e.g., Arntz et al., 1995; Mansell & Clark, 1999), and that people with SAD weigh anxiety-related self information more heavily in their judgments compared to non-anxious individuals (Alden & Mellings, 2004). The results are also reminiscent of earlier research demonstrating that anxiety-related behaviour was less important, i.e., carried less weight, in the judgments of observers relative to overt displays of warmth, friendliness, and openness (e.g., Papsdorf & Alden, 1998). The failure of individuals with social anxiety and SAD to recognize changes in their prosocial behaviour after reducing safety behaviours, and the importance of those changes to other people, may have significant interpersonal implications. Those findings point to a potentially important treatment target for SAD populations.

### *Social Outcomes*

In both studies, the SB group evoked more positive partner reactions relative to controls. Those findings are consistent with previous research demonstrating that the tendency to engage in self-protective behaviours was associated with negative perceptions by others (Alden & Bieling, 1998; Meleshko & Alden, 1993), and with theoretical speculations that safety behaviours inadvertently elicit negative social responses (e.g., Alden & Taylor, 2004; Clark, 2001). Importantly, this research implies another mechanism through which safety behaviours might interfere with threat disconfirmation (cf. Salkovskis, 1991), namely that through the pursuit of self-protection, socially anxious individuals may deprive themselves of positive social experiences that could be used to correct their fear-related beliefs. The results of the present research suggest that safety behaviour reduction strategies could play an important role in facilitating greater social connectedness and the development of more satisfying social relationships for people with SAD.

### *Clinical Implications*

The results of the present work have important implications for the treatment of SAD. Considered as a whole, this research contributes to a growing body of literature documenting the importance of safety behaviour reduction strategies in the modification of pathological fear (e.g., Salkovskis et al., 1999; Wells et al., 1995). Accordingly, it would seem important to include a comprehensive assessment of SAD patients' idiosyncratic safety behaviours as a routine part of initial evaluations used in clinical practice. Surprisingly, there are no published measures to date that provide a detailed assessment of safety behaviours relevant to SAD populations. Future work is needed to address this deficiency.

Second, the current findings highlight the value of incorporating safety behaviour reduction strategies as part of behavioural exposures traditionally used in cognitive behavioural treatment regimens for SAD (e.g., Clark, 1999; Heimberg & Becker, 2002), which would be expected to facilitate emotional processing and fear reduction. Emotional processing is posited to occur following the assimilation of new information that is incompatible with the existing fear structure in memory (Foa & Kozak, 1986). Accordingly, behavioural exposures are expected to be successful to the extent that confrontation with the feared situation changes the *meaning* of threat-relevant stimuli. Clinically, this could be accomplished by having patients identify their feared outcomes prior to engaging in an anxiety-provoking situation, and then have those patients evaluate the accuracy of their predictions following a behavioural experiment involving the reduction of safety behaviours (see Clark, 1999, 2001). This strategy would be expected to enhance the perceived difference between the predicted (feared) and actual outcome (e.g., Rodebaugh et al., 2004), and thereby optimize conditions for the entry of information at odds with existing fear-relevant beliefs into the patient's contemporary belief system (e.g., Foa &

Kozak, 1986; Rachman, 1980). Conversely, in-situation safety behaviours may prevent changes in the meaning of fear-relevant stimuli, given that attributions for the absence of threat are likely to be made according to the use of safety behaviours, rather than the benign nature of the situation itself (e.g., Salkovskis, 1991). In this way, the formation of new, less-threatening cognitive representations of the feared event would be inhibited. Changes in threat representations resulting from safety behaviour reduction would be expected to diminish activation of the social threat schema that gives rise to social anxiety in the first place, and thereby decrease avoidance of future encounters with the fear-provoking situation. Research is needed to evaluate the unfolding of the safety behaviour reduction- threat disconfirmation process over time.

The current findings also suggest that it may be useful for cognitive behavioural interventions to increase patients' awareness of the interpersonal impact of their behaviours (e.g., Alden & Taylor, 2004). Given that SAD patients exist in a persistent state of self-preoccupation due to their concerns with self protection, they can be naïve about the message their behaviour conveys to others. It may be beneficial to discuss with patients how their behaviour sends an interpersonal message to other people, which in turn can "pull" a reciprocal response (see Alden, 2001; Alden & Taylor, 2004). Clinical observations in our laboratory suggest that patients are often surprised to see how their safety behaviours can elicit responses from other people that often confirm the very negative outcomes they are trying to avoid. Further, patients can learn that safety behaviours can deprive them of positive social experiences and the development of closer, more intimate relationships. Given that cognitive behavioural treatment for SAD often occurs in a group setting (e.g., Heimberg & Juster, 1994), it could be beneficial to conduct in-session role-plays where patients first use their safety behaviours, and then again when they do not use their

safety behaviours. Feedback could then be solicited from other group members about any differences observed in the target patient's performance and their own reactions to the patient under the two conditions. Observations made in our own treatment program for SAD suggest that *in vivo* feedback from other socially anxious patients can be a powerful therapeutic intervention (Alden, Taylor, & Buhr, 2007).

All in all, the results indicate that the benefits of traditional exposure-based and cognitive restructuring interventions may be reduced if participants continue to adopt self-protective strategies that facilitate biased processing of social information, disrupt behavioural performance, and limit opportunities for positive social transactions. In contrast to anxiety-related conditions where the feared outcome rarely, if ever, comes to fruition (e.g., having a heart attack in patients with panic disorder; contracting a life-threatening illness through contact with dirt or germs in patients with obsessive-compulsive disorder), patients with SAD may have encountered negative social experiences at some point in their life. If self-protective behavioural strategies continue to deprive socially anxious individuals of experiences that unambiguously disconfirm their pre-existing beliefs and prevent them from building positive social relationships, exposure to anxiety-provoking situations may only recapitulate and further perpetuate their fears.

#### *Caveats & Future Directions*

A number of caveats should be noted when drawing conclusions from these results. The careful scripting of confederate behaviour necessary to achieve the experimental rigour of providing all participants with the same social stimulus constrains confederates' natural responses to participants. Given differences observed in confederates' ratings of participant likeability between experimental conditions, one might expect that participants would "pull" different responses from their partners when using versus eliminating safety behaviours (see

Creed & Funder, 1998 for example). In turn, those social responses would be expected to result in different patterns of social judgments and reactions. Research is needed to examine safety behaviour reduction strategies using more ecologically valid research designs.

Similarly, this study examined a safety behaviour manipulation in the context of a brief first-meeting interaction in a laboratory setting, and generalizability to naturalistic settings and other social situations needs to be established. It will also be important to evaluate how the cognitive, behavioural, and interpersonal sequelae of safety behaviour reduction interventions unfold over time. Further, socially anxious individuals may become aware of other safety behaviours they were initially not cognizant of following repeated exposure to feared situations.

It should also be noted that this study examined the effect of an omnibus safety behaviour manipulation. As recognized by cognitive models, socially anxious individuals employ a diverse array of behaviours intended to enhance self-protection (e.g., Clark, 2001; Clark & Wells, 1995). It is possible that certain types of safety behaviours have particularly detrimental effects on self-judgments, social performance, and interpersonal outcomes. It would be beneficial for future research to establish whether there are different subtypes or underlying dimensions of safety behaviours, and to evaluate their relative impact on social situations.

The present research relied on a self-report measure of safety behaviours, which assumes that participants were able to reflect upon and accurately describe their own behavioural strategies and internal motivations. Although the definition of safety behaviours used in the present study is widely agreed upon in the extant clinical literature, a number of important issues remain regarding the way in which safety behaviours are currently conceptualized. For instance, defining safety behaviours according to their intended purpose, i.e., to prevent or minimize the likelihood of negative social outcomes, implies that anxious individuals are fully aware of the

motivation behind their behaviours. Cognitive theorists have acknowledged that given habitual use over time, safety behaviours may at times become relatively automatized and therefore less accessible for reporting by anxious individuals (e.g., Kamphuis & Telch, 1998; Salkovskis et al., 1999). In a similar vein, the boundary between safety behaviours and adaptive coping strategies may not always be clear, and consideration of a number of factors such as the situational context and frequency of behaviours is likely to be important (see Thwaites & Freeston, 2005 for a recent discussion of these issues). Although beyond the scope of the present research, future work should address these and other questions regarding the conceptualization and assessment of safety behaviours. Despite these definitional issues, and consistent with previous work (e.g., Kim, 2005; Salkovskis et al., 1999; Wells et al., 1995), participants in the current research appeared to readily understand the concept of safety behaviours, and were able to identify and reduce them, which resulted in corresponding changes on several measures of the primary study outcomes.

### *Summary*

All in all, the results of the present research are supportive of cognitive models of SAD, which suggest that safety behaviours facilitate biased processing of threat-relevant information, lead to ineffective social behaviour, and evoke negative responses from others. Considered together, the current findings imply that the pursuit of self-protection during feared social encounters serves to maintain, rather than reduce both *perceived* and *actual* threat (e.g., Alden, 2001; Clark, 2001; Clark & Wells, 1995; Rapee & Heimberg, 1997). The results also contribute to a small body of work demonstrating the effectiveness of safety behaviour reduction interventions in overcoming social fears (Kim, 2005; Wells et al., 1995). This work expands the extant literature, however, in that it serves as the first research to evaluate several core cognitive,

behavioural, and interpersonal processes in SAD during a complex interpersonal interaction. The findings also point to important differences in the type of changes that socially anxious individuals and their interaction partners attend to following reductions in safety behaviour use. Those findings contribute to a growing body of evidence highlighting the importance of considering both self- and other-related sources of information in conceptualizations of social anxiety.

## Footnotes

1. Participants were selected from a larger pool of undergraduate students ( $N = 746$ ) who completed a pre-screening battery of questionnaires, including the FNE. A total of 234 students (31.4%) scored above the high social anxiety cut-off ( $\geq 17$ ), which is consistent with earlier research (e.g., Harvey et al., 2000).
2. This research received ethics approval from the University of British Columbia IRB.
3. Experimental instructions for eliciting idiosyncratic social predictions and safety behaviours were implemented according to recommendations by David M. Clark (personal communication), a clinician and researcher with extensive prior experience identifying and manipulating safety behaviours in patients with SAD.
4. Additional items were written for the Anxiety-Related Behaviour and Safety Behaviour Questionnaires in the clinical sample based on observations made during Study 1.
5. Chi-square analyses revealed that the SB and GE groups did not differ with respect to number of comorbid diagnoses of Major Depressive Disorder,  $\chi^2(1, N = 80) = 2.14, p > .10$ .



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Table 1

*Means and Standard Deviations for Demographic and Symptom Measures (Study 1)*

Variable	Safety Behaviour Reduction	Exposure Alone
Age	20.40 (3.27)	20.52 (4.18)
Years of University	2.22 (1.46)	2.10 (1.61)
North American Born (%)	60.0	72.0
ADIS-IV – Speaking with unfamiliar people (Anxiety)	4.32 (1.39)	4.48 (1.73)
FNE	24.64 (3.58)	23.21 (4.73)
SIAS	40.92 (16.84)	44.45 (11.16)
SPS	25.61 (15.06)	30.57 (11.09)
BDI-II	15.31 (10.09)	16.00 (9.91)

*Note.* Standard deviations in parentheses. ADIS-IV = Anxiety Disorders Interview Schedule – IV; FNE = Fear of Negative Evaluation; SIAS = Social Interaction Anxiety Scale; SPS = Social Phobia Scale; BDI-II = Beck Depression Inventory II.

Table 2

*Means and Standard Deviations for Dependent Measures (Study 1)*

Variable	Safety Behaviour Reduction		Exposure Alone	
Safety Behaviours				
Pre-interaction	96.25 (12.64)		92.44 (15.10)	
Post-interaction 1	62.92 (16.73)		72.76 (18.92)	
Post-interaction 2	61.92 (18.38)		74.30 (18.97)	
	Interaction 1	Interaction 2	Interaction 1	Interaction 2
Prosocial Behaviour				
Participant	25.60 (4.77)	27.92 (4.16)	24.68 (4.65)	25.56 (4.23)
Observer	28.60 (3.98)	30.16 (2.81)	25.84 (4.52)	26.60 (4.77)
Anxiety-Related Behaviour				
Participant	16.80 (5.83)	13.36 (4.52)	20.00 (4.44)	17.80 (5.20)
Observer	12.52 (5.31)	11.96 (4.50)	13.20 (6.31)	13.12 (5.17)
Social Judgment				
Partner Warmth	25.96 (4.21)	26.36 (4.60)	25.76 (4.35)	25.64 (3.98)



Variable	Safety Behaviour Reduction		Exposure Alone	
	Interaction 1	Interaction 2	Interaction 1	Interaction 2
Desire for Future Interaction				
Participant	32.20 (6.84)	34.32 (7.73)	32.76 (9.04)	32.96 (8.59)
Confederate	42.68 (8.18)	45.16 (7.31)	36.52 (10.78)	37.68 (11.65)
State Anxiety				
Pre-interaction	14.12 (3.69)	13.72 (4.61)	14.70 (2.70)	14.68 (3.21)
Post-interaction	13.20 (4.56)	11.00 (4.02)	13.04 (3.35)	12.72 (3.14)

*Note.* Standard deviations in parentheses.

Table 3

*Means and Standard Deviations for Demographic Measures (Study 2)*


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Variable	Safety Behaviour Reduction	Graduated Exposure
Gender (% female)	50.0	42.5
Age	34.55 (12.38)	34.43 (11.68)
Years of Education	14.35 (1.87)	14.96 (1.76)
Ethnicity (%)		
Caucasian	82.5	75.0
Asian	7.5	10.0
Latin-American	5.0	7.5
Indo-Canadian	2.5	5.0
Other	2.5	2.5
North American Born (%)	67.5	70.0
First Language (% English)	75.0	77.5
Marital Status (%)		
Never Married	72.5	70.0
Married/Common-law	22.5	22.5
Separated/Divorced	5.0	7.5
Employment Status (%)		
Employed	45.0	30.0
Student	30.0	32.5
Unemployed	25.0	37.5

---

*Note.* Standard deviations in parentheses.

Table 4

*Means and Standard Deviations for Clinical Characteristics (Study 2)*

Variable	Safety Behaviour Reduction	Graduated Exposure
Comorbid Diagnoses (%) <sup>a</sup>		
MDD <sup>5</sup>	22.5	37.5
Dysthymia	5.0	5.0
GAD	60.0	55.0
Panic Disorder	2.5	2.5
PTSD	5.0	2.5
OCD	5.0	7.5
Specific Phobia	20.0	15.0
Eating Disorder	5.0	0
Currently on Medication (%)	45.0	37.5
Past Therapy (%)	72.5	80.0

*Note.* Standard deviations in parentheses. MDD = Major Depressive Disorder; GAD = Generalized Anxiety Disorder; PTSD = Post Traumatic Stress Disorder; OCD = Obsessive Compulsive Disorder. <sup>a</sup>Comorbid diagnoses sum to over 100% because some participants met criteria for multiple comorbid psychiatric disorders.

Table 5

*Means and Standard Deviations for Symptom Measures (Study 2)*


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Variable	Safety Behaviour Reduction	Graduated Exposure
SIAS	54.08 (8.74)	54.50 (11.56)
SPS	34.25 (14.55)	36.90 (17.24)
BDI-II	18.39 (11.76)	21.47 (14.00)

---

*Note.* Standard deviations in parentheses. SIAS = Social Interaction Anxiety Scale; SPS = Social Phobia Scale; BDI-II = Beck Depression Inventory – II.

Table 6

*Means and Standard Deviations for Experimental Control Measures (Study 2)*


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Variable	Safety Behaviour Reduction	Graduated Exposure
<hr/>		
Confederate Consistency		
Baseline Interaction	26.44 (1.64)	26.85 (1.21)
Experimental Interaction	26.26 (2.33)	26.78 (1.42)
Expectancy Check	16.80 (5.48)	17.28 (5.16)

---

*Note.* Standard deviations in parentheses.

Table 7

*Means and Standard Deviations for Dependent Measures (Study 2)*

Variable	Safety Behaviour Reduction		Graduated Exposure	
	Baseline Interaction	Experimental Interaction	Baseline Interaction	Experimental Interaction
Safety Behaviours	87.52 (21.63)	68.36 (26.15)	81.56 (30.37)	80.63 (32.19)
Prosocial Behaviour				
Participant	21.50 (4.16)	25.58 (4.56)	21.73 (5.88)	24.11 (4.84)
Observer	24.90 (5.13)	27.40 (4.06)	24.00 (4.13)	24.95 (3.84)
Anxiety-Related Behaviour				
Participant	26.60 (6.36)	21.93 (6.33)	25.65 (6.81)	25.30 (7.10)
Observer	21.15 (7.21)	19.30 (6.76)	24.13 (7.08)	23.88 (6.45)
Social Judgment				
Partner Warmth	26.70 (5.17)	26.90 (5.02)	25.98 (4.61)	24.70 (5.59)
Perceived Reactions	18.08 (5.84)	22.03 (4.63)	17.21 (5.35)	19.23 (5.54)
Desire for Future Interaction				
Participant	34.33 (10.25)	36.98 (10.12)	35.53 (8.70)	36.63 (8.27)
Confederate	34.85 (10.94)	37.24 (10.45)	31.63 (9.90)	31.98 (10.02)

Variable	Safety Behaviour Reduction		Graduated Exposure	
	Baseline Interaction	Experimental Interaction	Baseline Interaction	Experimental Interaction
State Anxiety				
Pre-interaction	17.10 (3.35)	16.44 (2.87)	16.11 (3.55)	16.05 (3.72)
Post-interaction	17.26 (3.28)	14.50 (3.61)	15.77 (3.53)	14.45 (3.66)

*Note.* Standard deviations in parentheses.

Table 8

*Means and Standard Deviations for Participant Social Predictions Measure (Study 2)*

Variable	Safety Behaviour Reduction		Graduated Exposure	
	Pre-interaction	Future	Pre-interaction	Future
<b>Social Predictions</b>				
Probability	4.59 (1.85)	3.69 (2.05)	3.86 (1.58)	3.97 (1.57)
Cost	4.56 (1.68)	4.10 (2.12)	4.62 (1.83)	4.57 (1.63)

*Note.* Standard deviations in parentheses.



Figure 1. Diagram of Study 2 procedure.

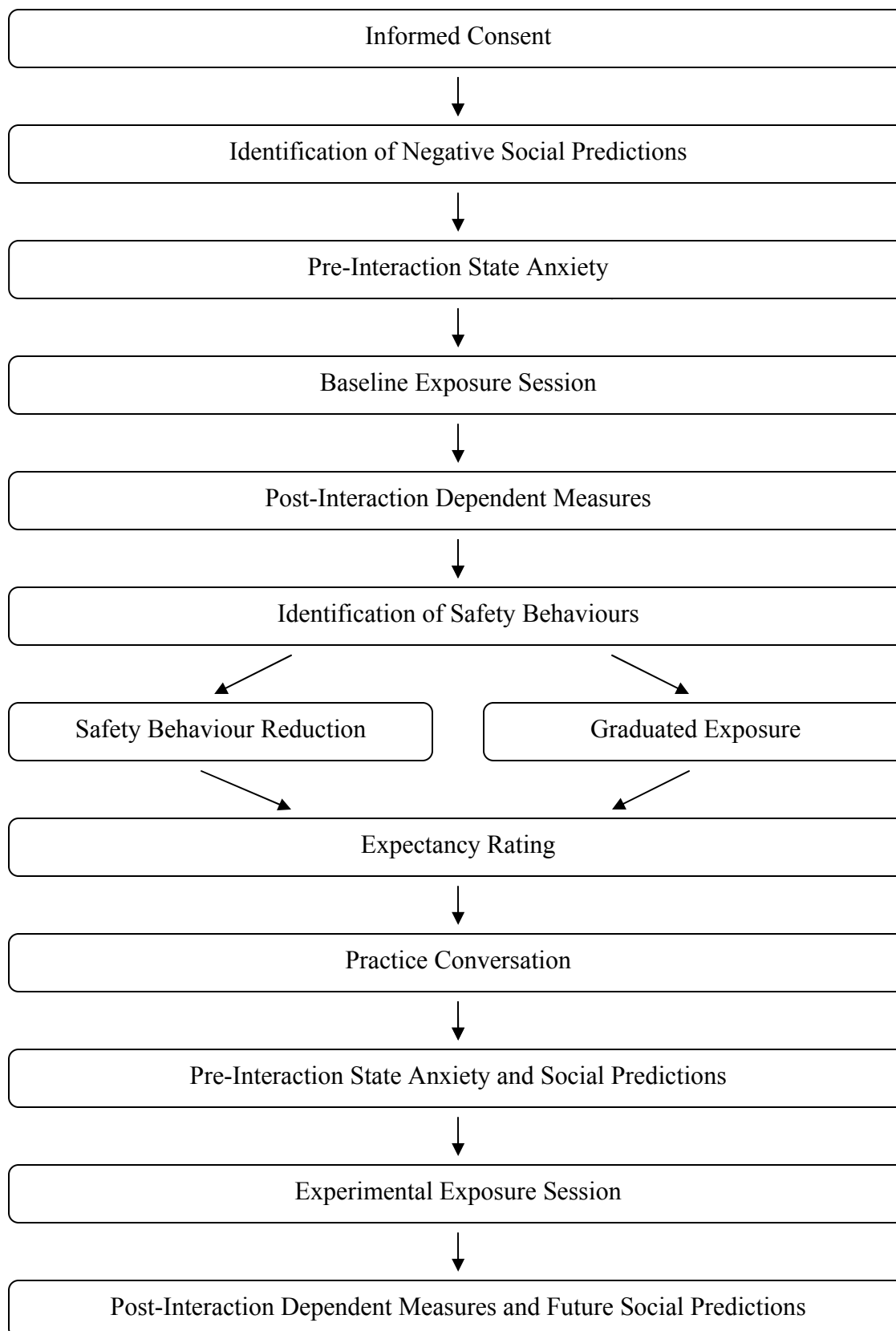


Figure 2. Mean self-judgment ratings of anxiety-related behaviour by exposure session for safety behaviour reduction and graduated exposure groups (Study 2).

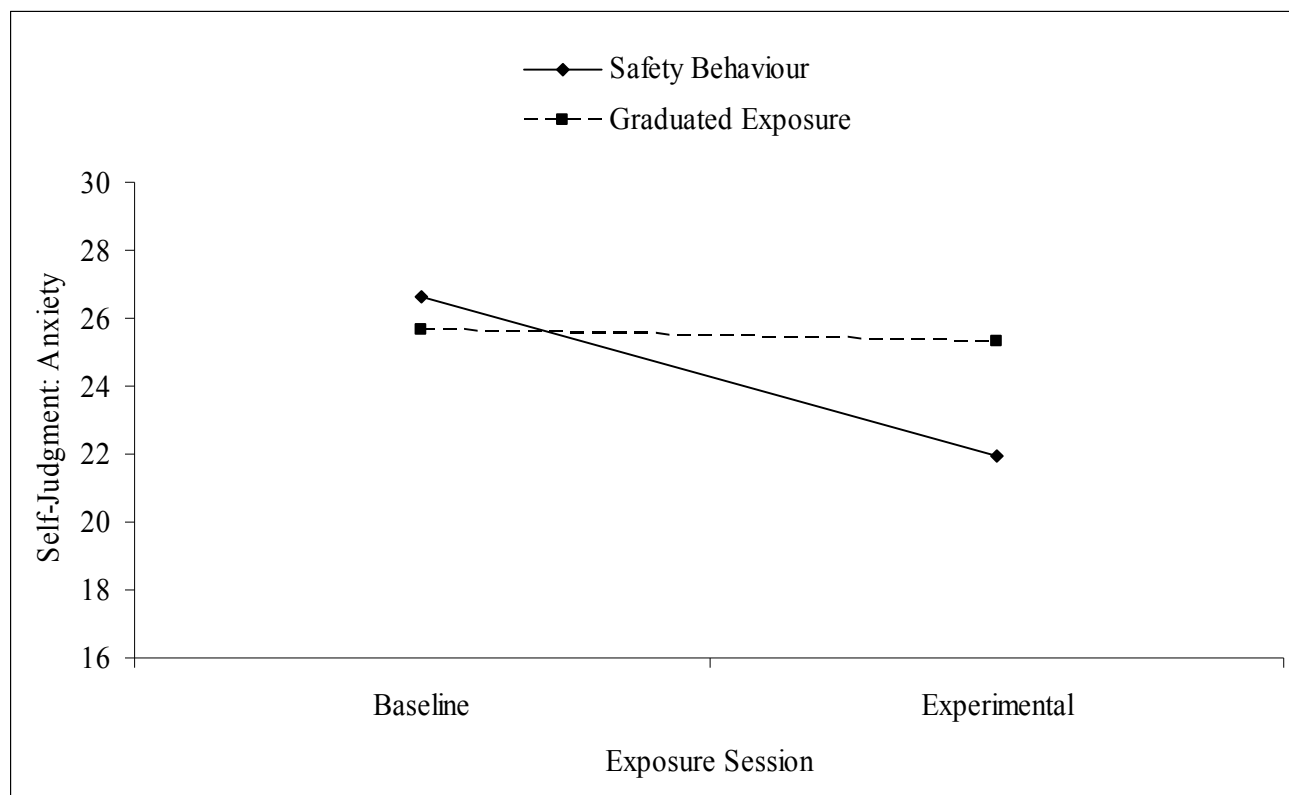
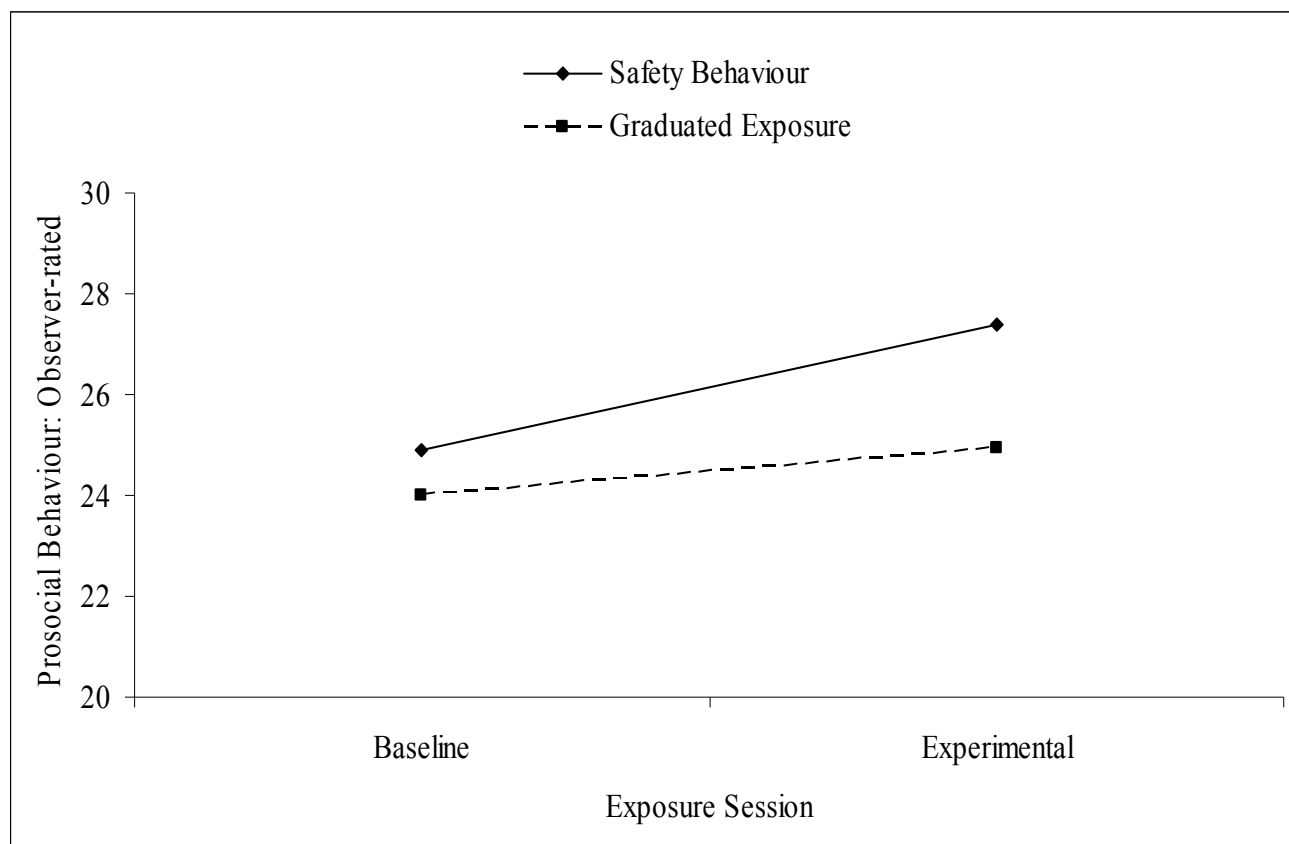


Figure 3. Mean observer ratings of participant prosocial behaviour by exposure session for safety behaviour reduction and graduated exposure groups (Study 2).



## Appendix 1

## Fear of Negative Evaluation Scale (FNE)

**Instructions:** For the following statements, please answer each in terms of whether it is true or false for you. Circle T for true or F for false.

- T F 1. I rarely worry about seeming foolish to others.
- T F 2. I worry about what people will think of me even when I know it doesn't make any difference.
- T F 3. I become tense and jittery if I know someone is sizing me up.
- T F 4. I am unconcerned even if I know people are forming an unfavourable impression of me.
- T F 5. I feel very upset when I commit some social error.
- T F 6. The opinions that important people have of me cause me little concern.
- T F 7. I am often afraid that I may look ridiculous or make a fool of myself.
- T F 8. I react very little when other people disapprove of me.
- T F 9. I am frequently afraid of other people noticing my shortcomings.
- T F 10. The disapproval of others would have little effect on me.
- T F 11. If someone is evaluating me I tend to expect the worst.
- T F 12. I rarely worry about what kind of impression I am making on someone.
- T F 13. I am afraid that others will not approve of me.
- T F 14. I am afraid that people will find fault with me.
- T F 15. Other people's opinions of me do not bother me.
- T F 16. I am not necessarily upset if I do not please someone.
- T F 17. When I am talking about someone, I worry about what they may be thinking about me.
- T F 18. I feel that you can't help making social errors sometimes, so why worry about it.

- T F 19. I am usually worried about what kind impression I make.
- T F 20. I worry a lot about what my superiors think of me.
- T F 21. If I know someone is judging me, it has little effect on me.
- T F 22. I worry that others will think I am not worthwhile.
- T F 23. I worry very little about what others may think of me.
- T F 24. Sometimes I think I am too concerned with what other people think of me.
- T F 25. I often worry that I will say or do the wrong things.
- T F 26. I am often indifferent to the opinions others have of me.
- T F 27. I am usually confident that others will have a favourable impression of me.
- T F 28. I often worry that people who are important to me won't think very much of me.
- T F 29. I brood about the opinions my friends have about me.
- T F 30. I become tense and jittery if I know I am being judged by my superiors.

## Appendix 2

## Social Phobia Scale (SPS)

Please indicate the degree to which you feel the statement is characteristic or true of you.

	Not at all	Slightly	Moderately	Very	Extremely
1. I become anxious if I have to write in front of other people.	0	1	2	3	4
2. I become self-conscious when using public toilets.	0	1	2	3	4
3. I can suddenly become aware of my own voice and of others listening to me.	0	1	2	3	4
4. I get nervous that people are staring at me as I walk down the street.	0	1	2	3	4
5. I fear I may blush when I am with others.	0	1	2	3	4
6. I feel self-conscious if I have to enter a room where others are already seated.	0	1	2	3	4
7. I worry about shaking or trembling when I'm watched by other people.	0	1	2	3	4
8. I would get tense if I had to sit facing other people on a bus or a train.	0	1	2	3	4
9. I get panicky that others might see me faint, or be sick or ill.	0	1	2	3	4
10. I would find it difficult to drink something if in a group of people.	0	1	2	3	4
11. I am worried people will think my behavior is odd.	0	1	2	3	4

12. It would make me feel self-conscious to eat in front of a stranger at a restaurant.	0	1	2	3	4
13. I would get tense if I had to carry a tray across a crowded cafeteria.	0	1	2	3	4
14. I worry I'll lose control of myself in front of other people.	0	1	2	3	4
15. I worry I might do something to attract the attention of other people.	0	1	2	3	4
16. When in an elevator, I am tense if people look at me.	0	1	2	3	4
17. I can feel conspicuous standing in a line.	0	1	2	3	4
18. I get tense when I speak in front of other people.	0	1	2	3	4
19. I worry my head will shake or nod in front of others.	0	1	2	3	4
20. I feel awkward and tense if I know people are watching me.	0	1	2	3	4

## Appendix 3

## Social Interaction Anxiety Scale (SIAS)

Please indicate the degree to which you feel the statement is characteristic or true of you.

	Not at all	Slightly	Moderately	Very	Extremely
1. I get nervous if I have to speak with someone in authority (teacher/ boss, etc).	0	1	2	3	4
2. I have difficulty making eye-contact with others.	0	1	2	3	4
3. I become tense if I have to talk about myself or my feelings.	0	1	2	3	4
4. I have difficulty mixing comfortably with the people I work with.	0	1	2	3	4
5. I find it easy to make friends my own age.	0	1	2	3	4
6. I tense-up if I meet an acquaintance in the street.	0	1	2	3	4
7. When mixing socially I am uncomfortable.	0	1	2	3	4
8. I feel tense if I am alone with just one person.	0	1	2	3	4
9. I am at ease meeting people at parties.	0	1	2	3	4
10. I have difficulty talking with other people.	0	1	2	3	4
11. I find it easy to think of things to talk about.	0	1	2	3	4
12. I worry about expressing myself in case I appear awkward.	0	1	2	3	4
13. I find it difficult to disagree with another's point of view.	0	1	2	3	4
14. I have difficulty talking to an attractive person of the opposite sex.	0	1	2	3	4



15. I find myself worrying that I won't know what to say in social situations.	0	1	2	3	4
16. I am nervous mixing with people I don't know well.	0	1	2	3	4
17. I feel I'll say something embarrassing when talking.	0	1	2	3	4
18. When mixing in a group, I find myself worrying I will be ignored.	0	1	2	3	4
19. I am tense mixing in a group.	0	1	2	3	4
20. I am unsure whether to greet someone I know only slightly.	0	1	2	3	4

## Appendix 4

## Beck Depression Inventory – II (BDI-II)

**Instructions:** This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the **one statement** in each group that best describes the way you have been feeling during the **past two weeks, including today**. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 or Item 18.

1. **0** I do not feel sad.  
**1** I feel sad much of the time.  
**2** I am sad all the time.  
**3** I am so sad or unhappy that I can't stand it.
  
2. **0** I am not discouraged about my future.  
**1** I feel more discouraged about my future than I used to be.  
**2** I do not expect things to work out for me.  
**3** I feel my future is hopeless and will only get worse.
  
3. **0** I do not feel like a failure.  
**1** I have failed more than I should have.  
**2** As I look back, I see a lot of failures.  
**3** I feel I am a total failure as a person.
  
4. **0** I get as much pleasure as I ever did from the things I enjoy.  
**1** I don't enjoy things as much as I used to.  
**2** I get very little pleasure from the things I used to enjoy.  
**3** I can't get any pleasure from the things I used to enjoy.
  
5. **0** I don't feel particularly guilty.  
**1** I feel guilty over many things I have done or should have done.  
**2** I feel quite guilty most of the time.  
**3** I feel guilty all of the time.
  
6. **0** I don't feel I am being punished.  
**1** I feel I may be punished.  
**2** I expect to be punished.  
**3** I feel I am being punished.
  
7. **0** I feel the same about myself as ever.  
**1** I have lost confidence in myself.  
**2** I am disappointed in myself.  
**3** I dislike myself.

8. **0** I don't criticize or blame myself more than usual.
  - 1** I am more critical of myself than I used to be.
  - 2** I criticize myself for all of my faults.
  - 3** I blame myself for everything bad that happens.
  
9. **0** I don't have any thoughts of killing myself.
  - 1** I have thoughts of killing myself, but I would not carry them out.
  - 2** I would like to kill myself.
  - 3** I would kill myself if I had the chance.
  
10. **0** I don't cry anymore than I used to.
  - 1** I cry more than I used to.
  - 2** I cry over every little thing.
  - 3** I feel like crying, but I can't.
  
11. **0** I am no more restless or wound up than usual.
  - 1** I feel more restless or wound up than usual.
  - 2** I am so restless or agitated that it's hard to stay still.
  - 3** I am so restless or agitated that I have to keep moving or doing something.
  
12. **0** I have not lost interest in other people or activities.
  - 1** I am less interested in other people or things than before.
  - 2** I have lost most of my interest in other people or things.
  - 3** It's hard to get interested in anything.
  
13. **0** I make decisions about as well as ever.
  - 1** I find it more difficult to make decisions than usual.
  - 2** I have much greater difficulty in making decisions than I used to.
  - 3** I have trouble making any decisions.
  
14. **0** I do not feel I am worthless.
  - 1** I don't consider myself as worthwhile and useful as I used to.
  - 2** I feel more worthless as compared to other people.
  - 3** I feel utterly worthless.
  
15. **0** I have as much energy as ever.
  - 1** I have less energy than I used to have.
  - 2** I don't have enough energy to do very much.
  - 3** I don't have enough energy to do anything.

16. **0** I have not experienced any change in my sleeping pattern.  
**1a** I sleep somewhat more than usual.  
**1b** I sleep somewhat less than usual.  
**2a** I sleep a lot more than usual.  
**2b** I sleep a lot less than usual.  
**3a** I sleep most of the day.  
**3b** I wake up 1-2 hours early and can't get back to sleep.
17. **0** I am no more irritable than usual.  
**1** I am more irritable than usual.  
**2** I am much more irritable than usual.  
**3** I am irritable all the time.
18. **0** I have not experienced any change in my appetite.  
**1a** My appetite is somewhat less than usual.  
**1b** My appetite is somewhat greater than usual.  
**2a** My appetite is much less than before.  
**2b** My appetite is much greater than usual.  
**3a** I have no appetite at all.  
**3b** I crave food all the time.
19. **0** I can concentrate as well as ever.  
**1** I can't concentrate as well as usual.  
**2** It's hard to keep my mind on anything for very long.  
**3** I find I can't concentrate on anything.
20. **0** I am no more tired or fatigued than usual.  
**1** I get more tired or fatigued more easily than usual.  
**2** I am too tired or fatigued to do a lot of the things I used to do.  
**3** I am too tired or fatigued to do most of the things I used to do.
21. **0** I have not noticed any recent change in my interest in sex.  
**1** I am less interested in sex than I used to be.  
**2** I am much less interested in sex now.  
**3** I have lost interest in sex completely.

## Appendix 5

## Expectancy Scale

Please answer the following questions based on how much you believe, *right now*, that this strategy will be useful in helping to reduce your anxiety and fears.

1. At this point, how logical does this strategy seem to you?

Not at all logical				Somewhat logical				Very logical
1	2	3	4	5	6	7	8	9

2. At this point, how successful do you think this strategy will be in reducing your anxiety symptoms and fears?

Not at all useful				Somewhat useful				Very useful
1	2	3	4	5	6	7	8	9

3. How confident would you be in recommending this strategy to a friend who experiences similar problems?

Not at all confident				Somewhat confident				Very confident
1	2	3	4	5	6	7	8	9

## Appendix 6

## Safety Behaviours Questionnaire (SBQ)

Using the rating scale below, please indicate *how much of the time* you did each of the following during the conversation you just completed.

	Not at all								All the time	
1. Make an effort to get your words right	0	1	2	3	4	5	6	7	8	
2. Check that you are coming across well	0	1	2	3	4	5	6	7	8	
3. Avoid eye contact	0	1	2	3	4	5	6	7	8	
4. Try to picture how you appear to others	0	1	2	3	4	5	6	7	8	
5. Rehearse sentences in your mind	0	1	2	3	4	5	6	7	8	
6. Censor what you are going to say	0	1	2	3	4	5	6	7	8	
7. Avoid talking about yourself	0	1	2	3	4	5	6	7	8	
8. Ask lots of questions	0	1	2	3	4	5	6	7	8	
9. Avoid pauses in your speech	0	1	2	3	4	5	6	7	8	
10. Hide your face	0	1	2	3	4	5	6	7	8	
11. Try to think about other things	0	1	2	3	4	5	6	7	8	
12. Talk a lot	0	1	2	3	4	5	6	7	8	
13. Try not to attract attention to yourself	0	1	2	3	4	5	6	7	8	
14. Try to keep tight control of your behaviour	0	1	2	3	4	5	6	7	8	
15. Try to appear distant	0	1	2	3	4	5	6	7	8	
16. Try to conceal your anxiety	0	1	2	3	4	5	6	7	8	
17. Frequently smile or nod your head	0	1	2	3	4	5	6	7	8	
18. Act very agreeable	0	1	2	3	4	5	6	7	8	

19. Avoid expressing your opinion	0	1	2	3	4	5	6	7	8
20. Say little or nothing (i.e., talk as little as possible)	0	1	2	3	4	5	6	7	8
21. Talk about “safe” or neutral topics <sup>a</sup>	0	1	2	3	4	5	6	7	8
22. Have a pre-determined list of things to talk about <sup>a</sup>	0	1	2	3	4	5	6	7	8

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*Note.* <sup>a</sup>Items added in study 2.

## Appendix 7

## Behaviour Ratings

During the conversation, to what extent did *you [the participant]*...

	Not at all					Very much	
1. Show signs of anxiety <sup>1</sup>	1	2	3	4	5	6	7
2. Speak fluently/clearly (e.g., absence of stuttering, pausing, stumbling over your words) <sup>1</sup>	1	2	3	4	5	6	7
3. Talk openly about yourself (i.e., self disclose) <sup>2</sup>	1	2	3	4	5	6	7
4. Have difficulty maintaining eye contact <sup>1</sup>	1	2	3	4	5	6	7
5. Convey interest in your partner <sup>2</sup>	1	2	3	4	5	6	7
6. Appear actively engaged in the conversation <sup>2</sup>	1	2	3	4	5	6	7
7. Create uncomfortable pauses <sup>1</sup>	1	2	3	4	5	6	7
8. Appear friendly <sup>2</sup>	1	2	3	4	5	6	7
9. Be talkative <sup>2</sup>	1	2	3	4	5	6	7
10. Fidget <sup>1</sup>	1	2	3	4	5	6	7
11. Appear tense or rigid <sup>1, a</sup>	1	2	3	4	5	6	7

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*Note.* <sup>a</sup>Item added in study 2. <sup>1</sup>Items comprising the Anxiety-Related Behaviour scale; <sup>2</sup>Items comprising the Prosocial Behaviour scale.



## Appendix 8

## Social Judgment

Please answer the following questions about your conversation partner. Remember that your answers are confidential. Your partner will not see any of this information.

A) During the conversation, to what extent was *your partner [the confederate]*...

	Not at all					Very much	
1. Talkative	1	2	3	4	5	6	7
2. Disinterested	1	2	3	4	5	6	7
3. Self-disclosive (i.e, talk openly about him or herself)	1	2	3	4	5	6	7
4. Distant	1	2	3	4	5	6	7
5. Friendly	1	2	3	4	5	6	7

B) How much do you think *your partner*...

6. Wanted to get to know you better	1	2	3	4	5	6	7
7. Would want to talk with you again	1	2	3	4	5	6	7
8. Enjoyed talking with you	1	2	3	4	5	6	7
9. Liked you	1	2	3	4	5	6	7
10. Thought negatively of you	1	2	3	4	5	6	7

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*Note.* Items in A) comprised the Partner Warmth scale (also used as the confederate consistency check); items in B) comprised the Perceived Partner Reactions scale, used in study 2 only.

## Appendix 9

## Desire for Future Interaction

We would like to get some idea as to how you felt about your partner. Your answers to these questions are completely confidential. Your partner will never see your answers.

Please answer the following questions about your reactions to your interaction partner.

	Not at all					Very much	
	1	2	3	4	5	6	7
1. Would you like to meet this person again?	1	2	3	4	5	6	7
2. Would you like to spend more time with this person in the future?	1	2	3	4	5	6	7
3. Would you like to work with this person in the future?	1	2	3	4	5	6	7
4. Would you like to sit next to this person on a 3-hour bus ride?	1	2	3	4	5	6	7
5. Would you invite this person to visit you?	1	2	3	4	5	6	7
6. Would you like to have this person as a friend?	1	2	3	4	5	6	7
7. Would you ask this person for advice?	1	2	3	4	5	6	7
8. Would you consider sharing an apartment with this person or having this person for a roommate?	1	2	3	4	5	6	7

## Appendix 10

## Brief State Anxiety Measure (BSAM)

Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right* now, that is, *at this moment*. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best. Please use the following scale:

		Not at all	Somewhat	Moderately so	Very much so
1.	I am tense.	1	2	3	4
2.	I feel strained.	1	2	3	4
3.	I feel comfortable.	1	2	3	4
4.	I am relaxed.	1	2	3	4
5.	I am worried.	1	2	3	4
6.	I feel steady.	1	2	3	4

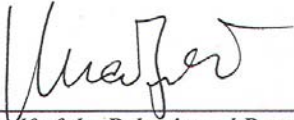
## Appendix 11

## UBC Research Ethics Board Certificate of Approval



The University of British Columbia  
Office of Research Services and Administration  
**Behavioural Research Ethics Board**

***Certificate of Approval***

PRINCIPAL INVESTIGATOR Alden, L.E.		DEPARTMENT Psychology	NUMBER <b>B04-0068</b> Modification of This is a modified version of file #B01-0079
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT UBC Campus ,			
CO-INVESTIGATORS:			
SPONSORING AGENCIES Social Sciences & Humanities Research Council			
TITLE: Social Phobia and Assimilation of Positive Information			
APPROVAL RENEWED DATE <b>FEB 24 2006</b>	TERM (YEARS) 1	AMENDMENT: Feb. 20, 2006, Research method / Consent form / Questionnaires	AMENDMENT APPROVED: <b>FEB 24 2006</b>
CERTIFICATION:  The request for continuing review and amendment of the above-named project has been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.   <hr/> <i>Approved on behalf of the Behavioural Research Ethics Board</i> by one of the following: Dr. Peter Suedfeld, Chair, Dr. Susan Rowley, Associate Chair Dr. Jim Rupert, Associate Chair Dr. Arminee Kazanjian, Associate Chair  This Certificate of Approval is valid for the above term provided there is no change in the experimental procedures			