Seeking Safety: The Perceived Function and Consequences of Safety Behaviour Use in Social

Anxiety

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including

any required final revisions, as accepted by my examiners. I understand that my thesis may be

made electronically available to the public.

Abstract

This study was designed to examine the perceived self-protective function and consequences of safety behaviour use in social anxiety. The research explores how individuals' selection and use of different types of safety behaviours might vary in relation to their specific social concerns and levels of trait social anxiety. It also explores differences between actor and observer interpretations of safety behaviour use and perceived utility, highlighting distinctions between how we view our own safety behaviour use versus how it might be viewed by others. Undergraduates completed self-report measures of social anxiety, specific social fears, and safety behaviour use. They also read vignettes in which they imagined and rated a central character who uses different types of safety behaviours (i.e., avoidance, impression management, or anxiety symptom management) in situations pertaining to different social fears (e.g., social incompetence, showing signs of anxiety, and physical unattractiveness). Results revealed that impression management safety behaviours were viewed as being most socially adaptive, while avoidance safety behaviours were relied upon by particularly anxious individuals, despite them not having as much faith in the usefulness of those safety behaviours. Findings also showed that there was a strong relation between perceived likelihood of using specific safety behaviours and their perceived social utility, but this perception was less robust when observing the safety behaviour use of other socially anxious individuals. By enriching our understanding of how and when specific safety behaviours promote positive or negative social outcomes within specific contexts, the present study lays the foundation for attempting to establish guidelines for more effective and idiographic treatment of socially anxious individuals.

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Literature Review and General Introduction

Social Anxiety

Social interaction is a fundamental part of everyday life, spanning workplace communication, daily chores, and close relationships. For many, these interactions are largely pleasant and rewarding, but socially anxious individuals view them with fear and dread. This differs from normative shyness and introversion, which are significantly more common and less problematic (American Psychiatric Association [APA], 2013). In contrast to these qualities, the Diagnostic and Statistical Manual (DSM-5) posits that the central diagnostic characteristic of social anxiety is an intense, disproportionate fear of social situations where one is afraid of being judged, embarrassed, or rejected. Some critiques of the DSM's specific diagnostic criteria have been made, highlighting the potential need for further refinements in future editions (see Skocic, Jackson, & Hulbert, 2015), but the fundamentals outlined in the manual remain at the crux of our understanding of social fears.

Social fears range across numerous social situations: from eating in public to going shopping (APA, 2013). Specifically, psychologists have long-distinguished between social performance and social interaction fears, which has resulted in the DSM's adoption of the "performance only" specifier for the disorder and the creation of measures which distinguish between these concerns (Hart, Jack, Turk, & Heimberg, 1999; Moscovitch & Huyder, 2011). Socially anxious individuals often imagine numerous potential negative outcomes to social situations, frequently focusing on others disliking them or perceiving them to be overly anxious; some individuals even fear that they will inadvertently offend others (Clark & Wells, 1995; Hofmann, 2007). When sufficiently intense, these fears often plague people even outside of social interactions (e.g., worrying for days in advance of attending a birthday party) and often

results in avoidance of the feared situations in the future. The avoidance strategies themselves can range from overt (e.g., refusing to go to parties) to subtle (e.g., limiting eye contact), but act as crutches that reinforce anxiety and teach the anxious individual that they are incapable of facing social situations by themselves (Moscovitch & Hofman, 2007; Moscovitch et al., 2013). When this avoidance begins to take over their lives or interfere significantly with work, recreation, and relationships, a diagnosis of Social Anxiety Disorder (SAD) is often warranted. An estimate of the 12-month prevalence of SAD in Canada and the United States is approximately 7%, with as many as one in eight people suffering from clinical levels of social anxiety at some point in their lives (APA, 2013; Statistics Canada, 2012).

Due to the inherently social nature of most people's lives, sufferers of social anxiety can be particularly impaired in their functioning compared to other anxiety disorders, having higher rates of school dropout, unemployment, lower socioeconomic status, and overall lower quality of life (Stein & Kean, 2000). Unfortunately, high levels of impairment do not translate to higher willingness to seek treatment, with only about half of all sufferers ever attempting to get professional help, and often only after years or decades of struggling with symptoms (APA, 2013). This is compounded by social anxiety often being comorbid with other anxiety disorders, depression, and substance abuse.

Studies have also found numerous cognitive factors that make social anxiety particularly challenging to overcome, ranging from memory and expectancy biases that make it difficult for socially anxious individuals to appraise new interaction partners as being trustworthy and accepting (Bielak & Moscovitch, 2012; Moscovitch, Rodebaugh, & Hesch, 2012) to stable negative mental representations of themselves that socially anxious people hold during social interactions (Clark & McManus, 2002; Foa, Franklin, Perry, & Herbert, 1996). In fact, Clark and

McManus (2002) suggest that social anxiety is characterized by numerous cognitive biases. These include individuals' interpretation of external social events, their ability to accurately detect and evaluate negative responses from other people, their attentional focus on external and internal stimuli, the way they use internal information to infer how others perceive them, the way they recall and process social interactions after they occur (particularly in relation to how they view themselves within those social interactions).

Due to the high prevalence of SAD and the impairment it causes, significant research efforts have been undertaken to develop novel and effective treatment techniques, with meta-analytic reviews of hundreds of studies consistently showing that a variety of cognitive behavioural approaches are effective in treating social anxiety (Norton & Price, 2007). Many specific cognitive techniques, including cognitive restructuring, video feedback, attention retraining, and behavioural experiments, have also been empirically supported as being effective ways to reduce social fears (Rapee, Gaston, & Abbott, 2009). Research comparing cognitive techniques used in individual, group, and online settings has found salutary effects across all of them (Stangier, 2016).

Cognitive-Behavioural Models of Social Anxiety

This clear efficacy of cognitive behavioural treatments of anxiety has stemmed from (and, perhaps just as much, contributed to) the development and gradual evolution of numerous cognitive behavioural models explaining the development, nature, and persistence of social fears. Classic cognitive models of social anxiety (Schlenker & Leary, 1982; Leary & Kowalski, 1995; Clark & Wells, 1995; Rapee & Heimberg, 1997) established their foundation by focusing on the underlying cognitive mechanisms that serve to maintain symptoms of social anxiety.

Leary and Kowalski (1995) formulated their classic "self-presentation model," which focused on drawing parallels between normative experiences of social anxiety and ones that are impairing or excessively distressing. They explained that social fears build up when people desire to make a positive impression on others, but doubt that they can do so. A later refinement of their model added that the core fear may be that making an inadequate impression may cause others to devalue their relationship with them, extending Leary's "sociometer theory," which conceptualizes social anxiety as an early warning system that alerts people to situations that endanger their relations with others (Leary, 2001; Leary & Jongman-Sereno, 2010).

Clark and Wells (1995) similarly posited that social anxiety becomes problematic when people with a strong desire to create positive impressions on others also experience significant insecurity about not being able to do so. They explained that the onset of social anxiety often follows the same multi-step process: people enter social situations and fear that they will be judged; they turn their attention inwards and view their physiological anxiety symptoms as confirmations of their social ineptitude; and they try to imagine how others see them, but often do so in a distorted, negative way. The model also emphasises the importance of subtle avoidance strategies—safety behaviours—in the maintenance of social anxiety. Safety behaviours are coping strategies used to reduce anxiety and fear in anxiety-provoking situations. Use of these strategies is thought to be detrimental because they may not only increase the likelihood of feared outcomes happening (e.g., avoiding eye contact may not elicit much responsiveness from potential social interaction partners), but also teach the user that even if feared outcomes are indeed avoided, this was solely due to their reliance on these strategies, and not their own social competence (McManus, Sacadura, & Clark, 2008; Wells et al., 1995). Another contributing factor to the maintenance of social fears is overestimation of the severity of

peer rejection and negative social consequences of social blunders, often resulting in hypervigilance to one's own behaviour during social interactions and, paradoxically, a diminished ability to fully engage in a meaningful or mutually satisfying interaction. Finally, Clark and Wells also highlighted the importance of pre- and post-event processing, explaining that anticipatory anxiety and rumination following social interactions are both likely to contribute to future avoidance of similar social situations and thus diminish anxious individuals' opportunities for positive social experiences (Wong, Gordon, & Heimberg, 2014).

In a paper detailing their seminal cognitive-behavioural model of social anxiety, Rapee and Heimberg (1997) agreed that socially anxious individuals place a great deal of value and their own intrinsic self-worth on being positively appraised by others, and that they also believe that others are likely to be critical and unresponsive. They added that social anxiety can be conceptualized dimensionally, with most people experiencing some degree of social fear, but only those near the top of the spectrum being severely handicapped by their fears. They also surmised that one of the key maintaining factors of social anxiety is the mental dissonance that socially anxious people experience due to two core beliefs: others have exceedingly high expectations for them, while simultaneously viewing themselves in very critical ways and largely as incapable of meeting those expectations. Furthermore, while Clark and Wells (1995) asserted that socially anxious individuals largely attend to negative thoughts and self-imagery in social situations, Rapee and Heimberg (1997) posited that socially anxious persons attend to both internal and external stimuli that might signal a potential negative evaluation.

A more recent cognitive-behavioural model of social anxiety proposed by Moscovitch (2009) is described in detail later. According to this model, the core fear in social anxiety is a fundamental concern about revealing one's perceived self flaws to others in social situations,

which leads socially anxious individuals to self-conceal and avoid social contexts in which self-exposure might occur, which they imagine will result in painful humiliation, rejection, and ostracism.

Researchers have proposed models that view social anxiety in a multidimensional way, incorporating a multitude of personality dimensions such as fearfulness, self-consciousness, and submissiveness into the diagnostic assessment process (Hofmann, Heinrichs, & Moscovitch, 2004). While such approaches have not yet been fully explored, some models have evaluated the importance of specific personality factors, such as perfectionism and self-efficacy, establishing that social anxiety is associated with unrealistic standard-setting and tendencies for negative self-appraisal of one's social skills (Alden, Bieling, & Wallace, 1994). Yet despite consistent findings regarding these fears, only some studies have found that socially anxious individuals have objective social skill deficits—instead, most researchers have suggested that while they do possess the skills, they are unable to fully apply them due to factors ranging from excessive self-focused attention to overreliance on safety behaviours (Hofmann, 2007). It has also been postulated that the lack of skill utilization may also be due to anxious individuals' overestimation of the social costs of committing social blunders and perceived lack of control over their own social behaviour and emotional responding, which makes fully engaging in social interactions appear too risky (Hofmann, 2007). Specifically, researchers have consistently found that socially anxious individuals overestimate the likelihood and intensity of negative social outcomes, compared to outcomes in non-social situations (Foa et al., 1996). As a result, it is believed that socially anxious individuals view negative social outcomes as catastrophic events that likely occur due to their own perceived social inadequacies, leading them to become hyperattentive

toward social cues signifying rejection, disapproval, and hostility (Hofmann, 2007; Moscovitch,

Waechter, Bielak, Rowa, & McCabe, 2015).

Interpersonal models of social anxiety have emphasized the importance of a variety of

interpersonal processes, which contribute to the onset and perpetuation of social anxiety.

Specifically, socially anxious people engage in social behaviour that elicits negative responses

from others (e.g., reduced intimacy, irritability, relational disengagement), and which in turn

perpetuates or exacerbates social anxiety (Alden & Taylor, 2004). In a similar vein, "social rank

theory" states that our interpersonal worlds are shaped by monitoring the social hierarchies we

find ourselves in to determine relative rank and affiliation with others (Gilbert & Trower, 2001).

Based on this theory, researchers have discovered that social anxiety is related to perceiving

oneself as having low social rank, being inferior to others, behaving submissively, and having

low perceived intimacy and closeness with others, and that these factors often stem from specific

comparisons and perceptions in adequacy in particular social domains (Weisman, Aderka,

Marom, Hermesh, & Gilboa-Schechtman, 2011).

Social Concerns in Social Anxiety: Identifying Core Fears

Drawing from classic cognitive models (Clark & Wells, 1995; Rapee & Heimberg,

1997), Moscovitch (2009) posited that socially anxious individuals are concerned about their

revealing aspects of themselves to others that they perceive as being deficient or inadequate in

relation to what others expect of them. However, he elaborated that particular types of self-

attributes tend to be the focus of concern in SAD (similarly to how physical sensations tend to be

the focus of concern in panic disorder). Thus, while negative evaluation and loss of social rank

are indeed consequences that all individuals with SAD fear, whether a particular social situation

is perceived to be frightening depends on whether the socially anxious individual deems that they

either will or will not be able to successfully conceal the self-attributes they perceive as being deficient in that particular situation. Figure 1 outlines Moscovitch's (2009) proposed model, highlighting vulnerable self-attributes as the central feature of social anxiety, from which feared situations, feared consequences, and self-protective strategies all emerge.
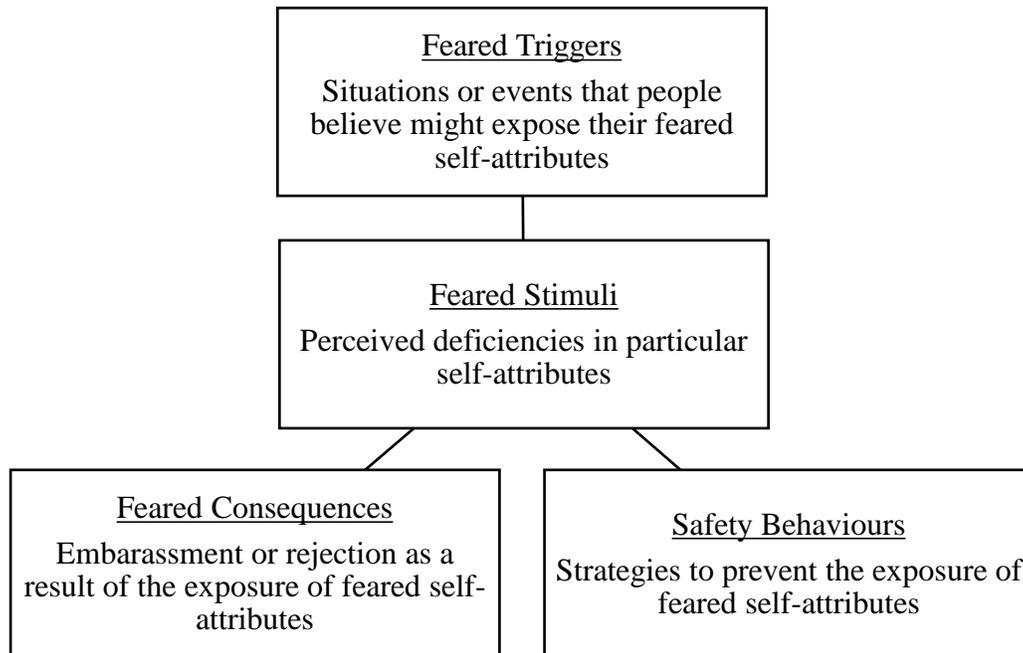
Figure 1. Moscovitch's (2009) model of the feared stimulus and resulting consequences in social anxiety.

The model proposes that while perceived self-attribute deficiencies are at the core of social anxiety, they are quite heterogenous and, for the purposes of understanding and treating social anxiety in an idiographic fashion, must be assessed on an individual basis (Moscovitch, 2009). The model proposes four non-orthogonal types of self-attribute concerns: "(1) perceived flaws in social skills and behaviours; (2) perceived flaws in concealing potentially visible signs of anxiety; (3) perceived flaws in physical appearance; and (4) perceived characterological (i.e., personality-related) flaws" (pp. 126).

To test this model, Moscovitch and Huyder (2011) developed the 27-item Negative Self-Portrayal Scale (NSPS) to assess socially anxious individuals' specific social concerns. The NSPS is a self-report questionnaire measuring the degree to which socially anxious individuals are concerned that particular perceived self-attribute deficiencies will be exposed and critically evaluated by others. The researchers conducted exploratory and confirmatory factor analyses on samples of undergraduate students, which resulted in a three-factor model that encompasses concerns about (a) social competence (which includes items designed to assess both concerns about flaws in social skills and characterological flaws), (b) physical appearance, and (c) signs of anxiety. A follow-up study (Moscovitch, Rowa, Paulitzki, Antony, & McCabe, 2015) replicated and extended the initial findings to clinical samples. Both studies found that the NSPS appeared to have sound validity and reliability across a variety of samples, and that the new measure could be used to predict individual differences in emotional and behavioural facets of social anxiety.

Thus, with established categories of self-attribute concerns, Moscovitch and colleagues have aimed to study their differential effects on the expression and treatment of social anxiety. These efforts have been supported by independent researchers (Kizilcik, Gregory, Baillie, & Crome, 2016), who have found support for the model's improved ability to predict safety behaviour use and anxious fears beyond simple fear of negative evaluation, which is central to Clark and Wells' (1995) and Rapee and Heimberg's (1997) classic models of social anxiety. Moscovitch's own follow-up study found that negative self-attribute concerns mediated the relation between recollected teasing experiences and present-day symptoms of social anxiety (Merrifield, Balk, & Moscovitch, 2013), suggesting that negative early experiences may lead to the development of such concerns, which in turn fuels the experience of social anxiety. However, the retrospective and correlational nature of this study limit the conclusions that can be drawn. In

another study, Bielak and Moscovitch (2013) found that while both high socially anxious and non-anxious participants perceived observable signs of anxiety as a socially undesirable trait, socially anxious individuals attribute unusually positive characteristics to others they perceived as appearing confident, supporting the notion that observable signs of anxiety vs. confidence may function as a key variable that underlie socially anxious individuals' tendency to engage in upward social comparisons and report chronic feelings of inferiority across social situations. Researchers also found that socially anxious participants viewed their own social blunders as costlier than both healthy and anxious controls, and that this was in large part driven by increased social competence concerns, suggesting that exposure therapy focusing on social mishaps may be improved by targeting such concerns (Moscovitch et al., 2015). Moreover, a study investigating physical appearance concerns found that these specific social fears hinder the effects of video feedback interventions aimed at correcting socially anxious individuals' distorted perceptions of self (Orr & Moscovitch, 2014), once more highlighting the importance of tailoring social anxiety treatments to the particular concerns expressed by clients.

Safety Behaviours in Social Anxiety

While these studies demonstrate that self-attribute concerns play a significant role in the maintenance of social anxiety, what might be the specific mechanism by which they do so? Harkening back to Moscovitch's (2009) model, we can recall that self-attribute concerns were seen as the core facet of social anxiety, leading to associations of fear with particular social situations, the realization of feared consequences, and to the utilization of subtle self-concealment strategies. While feared social situations and consequences hardly need further explanation, it is these subtle self-concealment strategies—also called safety behaviours—that may be the mechanism in question. In fact, Moscovitch (2009) states that safety behaviours are

aimed at concealing and preventing the exposure of self-attributes, and that the specific safety behaviours employed by each individual depend on the attributes they are trying to conceal. Indeed, in a study dedicated to studying this very intersection between social concerns and safety behaviours among socially anxious individuals (Moscovitch et al., 2013), researchers found that the presence of social anxiety symptoms was essential for elevating self-attribute concerns, that the degree of self-attribute concerns predicts safety behaviour use across a multitude of social situations, and that the use of safety behaviours mediates the relationship between a diagnosis of SAD and the levels of in-vivo negative affect reported by participants during a socially threatening task in the lab. Yet as clear as this research made the associations between social anxiety and self-attribute concerns (and, in turn, self-attribute concerns and safety behaviours), questions remain about the nature of safety behaviours in social anxiety and, in particular, how to characterize their heterogeneous features in relation to self-attribute concerns.

Research on safety behaviour use in social anxiety began with attempts to determine why some individuals undergoing exposure therapy—a largely effective treatment for anxiety—did not show significant reduction in fear levels (Wells et al., 1995). It was at this point that researchers discovered that subtle self-concealment strategies, or safety behaviours, were being routinely employed by socially anxious individuals to avoid feared outcomes. Yet, simultaneously, the safety behaviours were also having another far more insidious effect: they were preventing users from experiencing true mastery in the situations they were facing, instead teaching them that the feared consequences were likely prevented solely by their reliance on safety behaviours and, by virtue of this association, preventing new, positive learning and the disconfirmation of negative beliefs. This, alongside many follow-up studies, has led to the now-established assertion that safety behaviours and self-focused attention hinder exposure treatment

and that eliminating them entirely is recommended for optimal treatment progression (Isa &

Yuji, 2008; McManus et al., 2008; Schreiber, Heimlich, Schweitzer, & Stangier, 2015; Rowa et

al., 2015). Follow-up studies were also conducted to assess the effects of safety behaviour use on

multiple negative outcomes related to social anxiety, and these studies concluded that the use of

safety behaviours in social situations not only prevented new learning from occurring but also

elicited negative interpersonal responses and evaluations from interaction partners (Alden, &

Bieling, 1998; Stevens et al., 2010; Plasencia, Alden, & Taylor, 2011; Taylor, & Alden, 2011).

Moreover, safety behaviour use was found to be associated with reduced positive psychological

experiences and overall positive affect (Kashdan, 2007). Though levels of safety behaviour use

have been linked with severity of social anxiety, as well as with numerous negative social

outcomes, many socially anxious individuals tend to view their safety behaviours as quite helpful

(Vassilopoulos, 2009; Voncken, Alden, & Bogels, 2006), despite the use of such behaviours

being associated with increased entrenchments of social fears, perceptions of appearing more

anxious, perceptions of poorer social performance, and higher state levels of social anxiety

(McManus et al., 2008).

There were no well-validated measures of safety behaviour use prior to the development

of the Subtle Avoidance Frequency Examination (SAFE; Cuming et al., 2009), a brief self-report

questionnaire comprised of three correlated factors measuring three types of self-protective

strategies, which were labeled: (a) active safety behaviours, (b) restrictive safety behaviours, and

(c) safety behaviours aimed at hiding physical symptoms of anxiety. Subsequently, a study by

Plasencia et al. (2011) examined the effects of different safety behaviours on social outcomes

using an unpublished measure of safety behaviours called the Safety Behaviours Questionnaire

(SBQ; Wells et al., 1995), which distinguishes between impression management safety

behaviours (i.e., attempts to create a positive impression of one's social skills, such as by excessive self-monitoring or over-rehearsal of speech) and avoidance safety behaviours (i.e., attempts to withdraw from social interactions or hide one's perceived flaws, such as by limiting eye-contact). These researchers demonstrated that each of the two factors of the SBQ was associated with very different social outcomes. Use of avoidance safety behaviours was associated with higher reported state anxiety and lower reported authenticity during social interactions, as well as with more negative reactions from interaction partners. On the other hand, use of impression-management safety behaviours was not evaluated as negatively by social partners but undermined participants' ability to update their negative predictions about the imagined costs of future social interactions. Thus, while avoidance safety behaviours tend to make negative social impressions on others, use of impression management behaviours may not be immediately damaging to social relationships but nevertheless inhibit new learning and the disconfirmatory experience sought by exposure treatment.

Further studies have since examined the mechanism by which safety behaviour use elicits negative social outcomes. Results of one study demonstrated that reducing safety behaviour use reduced negative self-judgments (especially about the visibility of anxiety symptoms) and ratings of personal social skills, while simultaneously eliciting greater social approach behaviour and improving partner interaction ratings (Taylor & Alden, 2011). Thus, although safety behaviour reduction undoubtedly yielded positive social outcomes and although both interaction partners recognized these positive changes, socially anxious individuals attributed the change to reduced anxiety visibility, while their non-anxious partners attributed the change to increased sociability on the anxious individuals' parts. Therefore, findings suggest that it is important to consider both

actor and partner effects of social behaviour use and elimination, as both perceived and actual

social consequences may differ between the two.

The Current Study

Study Objectives

The present study was an initial, exploratory investigation designed to develop our understanding of the relation between self-attribute concerns and the safety behaviours that people use to manage their experiences of social anxiety. In particular, I wished to determine how specific safety behaviours are chosen by people in particular social situations and to what end, as well as to examine how levels of trait social anxiety might impact such choices and responses. To investigate this, I designed a series of nine vignettes that portrayed individuals who experienced self-attribute concerns upon entering social situations and used safety behaviours to alleviate their anxiety. These same vignettes were also reconstructed from a third-person perspective. This was done to investigate differences between how people might view their own use of safety behaviours, as compared with that of others (e.g., participants might report being most likely to use safety behaviours they deem most appropriate for a given situation, while rating others as most likely to use safety behaviours that are most overtly noticeable or interpersonally intrusive). For example, while higher trait social anxiety might make participants report being more likely to use safety behaviours themselves, it might also make them more likely to notice others using safety behaviours (possibly due to increased familiarity with the strategies themselves, and possibly due to increased sensitivity to perceived rejection signals, such as those that may be elicited by another's use of avoidance safety behaviours).

Participants were randomly assigned to one of these two perspectives. They were instructed to read the vignettes, imagine themselves in the described situations (from either a first or third person perspective), and to rate the likelihood of using these particular safety behaviours

within the predetermined vignette contexts (or the likelihood of others use them), as well as their

perceptions of the social and interpersonal utility of those safety behaviours (for either

themselves or others, depending on the condition). As constructing the two perspectives required

substantial rewording of the vignettes, which changed their meaning significantly from one

condition to the other, my aim was not to compare the conditions directly but rather to examine

outcomes associated with each perspective separately and in parallel with one another. Overall, I

hoped in this preliminary study to establish a foundational understanding of the relationship

between safety behaviour use and social concerns in social anxiety, with an eye toward later

experimental and clinical investigations and applications in the lab and the clinic.

Study Hypotheses

The same hypotheses were postulated for the first-person and third-person conditions and

efforts were made to keep the analyses and measures as comparable as possible between the two

groups.

1. *Collapsed across safety behaviour subtypes, participants will rate their use of safety*

   behaviours (or their predictions for the safety behaviour use of others) as more likely to be

   elicited by certain types of social concerns than by others. Indeed, participants will not

   view social concerns as being equally amenable to resolution with safety behaviours. For

   example, safety behaviours may be viewed as being relatively less useful for concealing

   flaws in physical appearance.

2. *Collapsed across types of social concerns, participants will rate their use of certain safety*

   behaviour subtypes (or their predictions of others' safety behaviour use) as being more

   likely than others. Indeed, certain safety behaviours may be used more frequently because

   participants see them as being significantly more applicable to a wide range of social

concerns than others, as well as generally more socially acceptable. In particular, impression management safety behaviours may be seen as widely applicable by virtue of being perceived as less likely to elicit negative reactions from social partners.

3. *Collapsed across types of social concerns, the perceived likelihood of using specific safety behaviours will increase as the perceived utility of such safety behaviours increases (for both first-person and third-person conditions), but this association may be moderated by participants' trait levels of social anxiety, such that stronger coupling between likelihood and utility will occur for those with lower levels of social anxiety.* The basis for this prediction was the assumption that there may be types of safety behaviours that socially anxious individuals feel compelled to use even if they do not view them as being particularly useful or effective. In particular, avoidance safety behaviours may be more likely to be used by those with higher levels of social anxiety even when their utility is viewed as being relatively low.

Method

Overview of the Procedure

The present study was conducted in one online session, which consisted of a battery of self-report measures assessing trait variables (social anxiety symptoms, depression symptoms, safety behaviours use, and social concerns). It also included a series of nine vignettes describing individuals experiencing self-attribute concerns upon entering social situations and using safety behaviours to cope with their fears. The vignettes corresponded to well-validated subtypes of social concerns and safety behaviours (Moscovitch, & Huyder, 2011; Cuming et al., 2009) and were presented either from the point of view of the participant or a third party (i.e., "you walk into the room and feel a pang of fear" vs. "they walk into the room and feel a pang of fear"). That is, all participants saw all nine vignettes, but approximately half read them from the first-person perspective and half from the third-person perspective. Upon reading each vignette, participants were asked to rate their likelihood of using the described safety behaviour if faced with such a social situation (or if they observed another person in this situation), as well as respond to a number of questions assessing the perceived utility of that safety behaviour for alleviating the described self-attribute concerns (for themselves or for others). Finally, participants were fully debriefed and the study was terminated. A detailed account of the full procedure is presented below.

Participants

Participants were undergraduate students recruited from the psychology department subject pool of a large Canadian university. They received one experimental participation credit, equivalent to one bonus percentage point in a class they are enrolled in, as remuneration for their time (approximately one hour). Three-hundred forty-one participants completed the online study. Of these, 11 participants were excluded from analyses: six due to excessive missing data and five

due to suspicious patterns of responding (e.g., continually choosing the same response option, including reverse-coded items). The final sample consisted of 330 participants, ages 16-35 ($M =$ 19.91, $SD = 2.60$), of whom 214 (65%) identified as female and 116 as male (35%). Of the sample, 155 (47%) identified themselves as Caucasian, 59 (18%) as South Asian, 51 (15%) as East Asian, 16 (5%) as Middle Eastern, 13 (4%) as Southeast Asian, 10 (3%) as black, 17 (5%) as other cultures/ethnicities, and nine (3%) declined to answer.

Measures

All parts of the study were completed online by participants using Qualtrics™ software, a US-based online survey tool.

Social Phobia Inventory (SPIN)

The Social Phobia Inventory (SPIN; Connor, Davidson, Churchill, Foa, & Weisler, 2000) is a seventeen-item questionnaire that measures the degree to which symptoms of social anxiety have bothered respondents over the past week (e.g., "being criticized scares me a lot;" "I avoid going to parties"). Items are presented on a five-point scale, ranging from 0 (not at all bothersome) to 4 (extremely bothersome). The SPIN has demonstrated high test–retest reliability, strong convergent and divergent validity, good construct validity, and high levels of internal consistency in previous studies (Antony, Coons, McCabe, Ashbaugh, & Swinson, 2006; Connor et al., 2000). In the present study, the internal consistency of the SPIN was .93 for both first-person and third-person perspectives.

Negative Self-Portrayal Scale (NSPS)

The Negative Self-Portrayal Scale (NSPS; Moscovitch & Huyder, 2011) is a twenty-seven-item questionnaire that assesses the extent to which individuals are concerned with revealing particular self-attributes that they perceive to be inadequate or insufficient (e.g., "in social situations (in which I feel anxious), it will become obvious to other people that I am

boring"). Items are rated on a five-point scale, ranging from 0 (not at all concerned) to 4 (extremely concerned). The NSPS measures concerns respondents have on three subscales, including social competence (e.g., "stuttering"), signs of anxiety (e.g., "blushing"), and physical appearance (e.g., appearing "fat"), yielding separate scores for these three sub-scales, as well as a total score. The NSPS has been shown to have strong concurrent, construct validity, and test–retest reliability across both student and clinical samples (Moscovitch & Huyder, 2011; Moscovitch et al., 2015). In the current study, the internal consistency of the NSPS total score ranged between .96 for the first-person perspective (subscales ranging from .86 to .93) and .97 for the third-person perspective (subscales ranging from .90 to .95).

Subtle Avoidance Frequency Examination (SAFE)

The Subtle Avoidance Frequency Examination (SAFE; Cuming et al., 2009) is a thirty-two-item questionnaire pertaining to the frequency of safety behaviour use in social situations (e.g., "rate how often you wear clothes or makeup to hide blushing"). Each item is rated on a five-point scale, ranging from 0 (never use) to 4 (always use). The SAFE measures safety behaviours across three subscales, including restrictive safety behaviours (e.g., "avoid eye-contact"), active safety behaviours (e.g., "rehearse sentences in your mind"), and safety behaviours aimed at hiding physical symptoms of anxiety (e.g., "check the redness of your face in a mirror"), providing separate scores for these three sub-scales, as well as a total score. The SAFE has strong psychometric properties, including good internal consistency and adequate convergent and divergent validity (Cuming et al., 2009). In this study, the internal consistency of the SAFE total score ranged between .95 for the first-person perspective (subscales ranging from .86 to .92) and .95 for the third-person perspective (subscales ranging from .82 to .92).

Depression Anxiety Stress Scales (DASS)

The Depression Anxiety and Stress Scales (DASS; Lovibond & Lovibond, 1995) is a twenty-one-item questionnaire assessing symptoms of depression, anxiety, and stress over the past week. This study only utilized the portion of the DASS pertaining to symptoms of depression, which comprised seven items (e.g., "I felt down-hearted and blue"). Each item is rated on a five-point scale, ranging from 0 (never applied to me) to 4 (always applied to me). The DASS has excellent psychometric properties, including high validity and reliability (e.g., Antony, Bieling, Cox, Enns, & Swinson, 1998; Henry & Crawford, 2005). In the current study, the internal consistency of the DASS depression score ranged between .88 for the first-person perspective and .87 for the third-person perspective.

Vignettes

Nine vignettes describing a central actor entering a social situation and experiencing a specific self-attribute concern followed by the use of a safety behaviour to cope with the actor's anxiety were designed by the author. Vignettes encompassed each of the three types of social concerns outlined by the NSPS: social competence (i.e., fearing that others will perceive you as lacking social skills or as socially undesirable), signs of anxiety (i.e., fearing that others will notice that you are visibly anxious and will judge you negatively for it), and physical appearance (i.e., fearing that others will negatively judge your physical appearance). They also encompassed three types of safety behaviours captured by both the SAFE and the literature on safety behaviours, as follows: avoidance (i.e., attempting to withdraw from others or conceal yourself), impression management (i.e., attempting to facilitate a positive first impression of your social skills through concerted effort), and physical symptom management safety behaviours (i.e., attempting to hide any visible signs of anxiety from others). These social concerns and safety behaviours were paired to ensure every possible combination was represented (see Table 1 for

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details and Appendix A for a full list of all vignettes). Safety behaviour and social concern items were selected directly from the SAFE and NSPS to ensure that the vignettes resembled well-validated and established measures as closely as possible. This selection process was empirically- and conceptually-derived, based both on the psychometric properties of individual items (i.e., factor loadings; Cuming et al., 2009; Moscovitch & Huyder, 2011) and on the items' practical suitability for pairing (e.g., though both represent a signs of anxiety social concern from the NSPS and a physical symptom management safety behaviour from the SAFE, it would not have been logical to pair "fearing that others will judge you for your shaking hands" with "putting on excessive makeup to conceal blushing," while "fearing that others will judge you for excessive sweating" and "putting on several layers of clothing to hide any sweat marks that may become visible" represented a clearer logical relationship). All nine vignettes were presented to participants from either a first-person or a third-person perspective.

Table 1

Vignette design corresponding to SAFE and NSPS subscales.

Type of Social Concern Represented	Impression Management Safety Behaviours	Avoidance Safety Behaviours	Physical Symptom Management Safety Behaviours
Social Competence	Vignette 1	Vignette 2	Vignette 3
Signs of Anxiety	Vignette 4	Vignette 5	Vignette 6
Physical Appearance	Vignette 7	Vignette 8	Vignette 9

After participants read through the anxiety-provoking situation and the employed safety behaviours, they were presented with seven questions: one related to the likelihood of them using that safety behaviour and the rest related to various aspects of their perceptions of that safety behaviour's social utility (e.g., making a good impression, appearing friendly, eliciting a desire to interact in the future). However, upon further consideration, it was decided that the conceptual similarity and the high alpha coefficient ($a = .97$ for the first-person condition and $a = .96$ for the third-person condition) for the latter six questions reflect a single underlying construct, and so these six questions were collapsed into a single composite measure of "social utility." While the alpha coefficients remained unchanged with the inclusion of the single "likelihood" item into the composite score, this single item was kept separate from the other six on conceptual grounds, as likelihood and utility, though related, are also conceptually distinct and I wanted to preserve this distinction in the present study.

Procedure

After registering for the study and following a link to the study website, participants read and completed several forms outlining the study objectives and indicating their consent to participate. They were then presented the nine vignettes, one at a time, randomly assigned as an entire block to appear from either a first- or third-person perspective. Participants were presented with a prompt to "please read the following passage carefully and think about how you (or the main character, for the third-person condition) would behave in this scenario." Next, they saw the first part of a vignette, which outlined the social situation and self-attribute concern being experienced by the central character. Participants next saw the resolution of the vignette, depicting the use of a particular safety behaviour by the central character to alleviate their anxiety. Following this, participants were presented with seven questions, each to be rated on a

five-point scale ranging from 0 (not at all) to 4 (extremely). For these questions and all others in the study, participants always had an additional option labelled "prefer not to answer" so as to avoid forced responding from participants who were genuinely unsure (participants who chose this option excessively were excluded from the study—see "Participants" section). The first question participants saw was "How likely do you think you (or the main character) would be to use this particular strategy if you (they) were actually in this situation?" The remaining questions all related to the perceived utility of using the same safety behaviour (e.g., "how helpful do you think this strategy would be for making a good impression on those around you/them?") and were ultimately compiled into a single measure of perceived safety behaviour utility (see Appendix B for a list of all questions and see Measures for a description of the questionnaires and their compilation into a composite measure).

Following completion of all nine vignette questions, participants were presented with four questionnaires (in order): the SPIN, the DASS, the NSPS, and the SAFE. After completing all four questionnaires, participants were presented with a debriefing letter thanking them for their participation and permitted to close the study window.

Planned Analyses

All analyses were conducted in IBM SPSS Statistics 22 using mixed factorial analysis of variance (ANOVA) and hierarchical multiple regression. Data for the first- and third-person perspectives were examined separately and in parallel, as they represented two distinct groups of participants. As described above, the language for the vignettes and associated measures across the two conditions had to be modified to accommodate each perspective, thus making it inappropriate to compare responses across conditions directly. Follow-up analyses to mixed factorial ANOVAs were conducted when significant results were obtained, which included

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Bonferonni-corrected *t*-tests within conditions and independent samples *t*-tests between conditions. The same analyses were used to the hypotheses for the first-person and third-person conditions.

To test hypothesis 1, that participants will rate their use of safety behaviours as more likely to be elicited by certain types of social concerns than by others (when collapsed across safety behaviour subtypes), repeated-measures ANOVAs were performed with the type of social concern (signs of anxiety, physical appearance, or social competence) as the within-subjects variable and ratings of likelihood and utility as the dependent variables, in separate analyses. Significant main effects were followed up with Bonferroni-corrected paired contrasts.

Similarly, to test hypothesis 2, that participants will rate their use of certain safety behaviour subtypes as being more likely than others (when collapsed across types of social concerns), repeated-measures ANOVAs were performed with the type of safety behaviour (avoidance, physical symptom management, or impression management) as the within-subjects variable and ratings of likelihood and utility as the dependent variables, in separate analyses. Significant main effects were again followed up with Bonferroni-corrected paired contrasts.

Finally, to test hypothesis 3 that the perceived likelihood of specific safety behaviour use will increase as its perceived utility increases (but that this association may be moderated by participants' trait levels of social anxiety, such that stronger coupling between likelihood and utility will occur for those with lower levels of social anxiety), several analyses were performed. First, bivariate correlations examining the associations between perceived likelihood and perceived utility of safety behaviours were examined across safety behaviours subtypes and across social concern subtypes. Second, bivariate correlations examining the association between trait social anxiety and ratings of perceived likelihood and perceived utility of safety behaviours

were examined, again across both safety behaviours subtypes and social concern subtypes. Last, separate hierarchical multiple regression analyses were performed with trait social anxiety and perceived safety behaviour utility as the independent variables and perceived likelihood of safety behaviour use as the dependent variable. Mean-centered trait social anxiety and perceived safety behaviour utility were entered on step one of the regression analyses, and their interaction term was entered on step two. Due to the large number of exploratory analyses, Bonferroni correction was used to control for Type I error across all comparisons.

Results

Data Integrity and Preliminary Analyses

Missing data for individual items were imputed using the expectation-maximization method for each vignette and each questionnaire subscale separately. Missing data were not imputed when a participant failed to complete the majority of a particular scale. Overall, the percentage of data imputed across measures ranged between .03% and .06% for the vignettes, and .02% and .04% for the questionnaires. Little's MCAR tests were non-significant across measures, suggesting that the data were missing completely at random (Little, 1988). When data are missing completely at random and less than 5% of data is missing, a single imputation using expectation-maximization provides unbiased parameter estimates while improving the power of analyses (Enders, 2001; Scheffer, 2002). Participants who were, individually, missing all or nearly all data on particular measures did not have their data imputed and were removed listwise, analysis by analysis.

Data were screened for statistical outliers, and several univariate outliers (> 3 SDs above or below the mean) were identified. One individual was an outlier on levels of social anxiety (SPIN), frequency of safety behaviour use (SAFE), and social concerns (NSPS). Four additional individuals were outliers solely on levels of social anxiety (SPIN) and two individuals were outliers solely on frequency of safety behaviour use (SAFE). As the extreme values in each case were within the plausible range, all data were retained and no changes were made prior to the main analyses. No multivariate outliers were found. Following each analysis, studentized residuals were screened for extreme skew and kurtosis, as well as influential cases. All significant outliers and violations of normality are discussed below.

Equivalence of Groups

Of the 360 participants included in these analyses, 169 were assigned to the first-person condition and 161 to the third-person condition. One-way ANOVAs were conducted on all variables to test for baseline group differences between participants assigned to each condition. The means and standard deviations for age and the self-report measures (DASS-D, SPIN, NSPS, SAFE) can be found in Table 2. No significant differences were found between the first-person and third-person conditions (t's < 1.76, p's > .08) based on theses variables. There were also no significant differences between conditions based on gender ($t = 1.71$, $p = .09$) or ethnic/cultural background (X^2 (9, $N = 330$) = 8.66, p = .47). Significant differences were found for ratings of likelihood of safety behaviour use and ratings of safety behaviour utility, and will be discussed further in the results section.

Table 2.

Means and standard deviations of variables across first-person and third-person conditions.

Variable	*M* (first-person)	*SD* (first-person)	*M* (third-person)	*SD* (third-person)
Age	19.67	2.30	20.16	2.89
DASS-D	13.06	5.14	12.38	4.90
SPIN	42.28	14.59	40.31	15.03
NSPS	63.21	23.95	58.33	26.15
SAFE	70.78	22.58	67.80	23.53

Hypothesis 1: Differences in Safety Behaviour Use Across Social Concern Types

To test hypothesis 1 and explore potential differences in the perceived likelihood and utility of safety behaviour use across specific social fears, repeated-measures ANOVAs were conducted, followed by Bonferroni-corrected t-tests, where applicable. Data for first- and third-person conditions were analyzed separately.

First-person condition

Repeated measures ANOVAs revealed that the reported likelihood of using safety behaviours differed when participants imagined having specific social concerns, $F(2, 151) = 29.89$, $p < .001$, $\eta_p^2 = .17$. Follow-up t-tests revealed significant differences between all three social concern subtypes: physical appearance concerns vs. social competence concerns, $t(155) = 4.40$, $p < .001$; physical appearance concerns vs. signs of anxiety concerns, $t(157) = 7.65$, $p < .001$; and social competence concerns vs. signs of anxiety concerns, $t(153) = 3.97$, $p < .001$. As shown in Figure 2, results demonstrated that people reported being most likely to use safety behaviours when faced with situations eliciting concerns pertaining to signs of anxiety ($M = 3.16$, $SD = .97$), followed by social competence concerns ($M = 2.86$, $SD = .98$), and least likely when faced with physical appearance concerns ($M = 2.57$, $SD = .96$).

A similar analysis revealed differences between participants' ratings of safety behaviour utility when faced with specific social concerns, $F(2, 151) = 11.23$, $p < .001$, $\eta_p^2 = .07$. Follow-up t-tests revealed significant differences between social competence concerns and physical appearance concerns, $t(155) = 4.02$, $p < .001$, and signs of anxiety concerns and physical appearance concerns, $t(157) = 4.53$, $p < .001$. No significant difference was found between social competence concerns and signs of anxiety concerns, $t(153) = 1.12$, $p = .264$. Thus, as shown in Figure 2, participants generally imagined safety behaviours to be most useful for managing their

own social competence concerns ($M = 2.84$, $SD = .81$) and signs of anxiety concerns ($M = 2.91$, $SD = .76$), but somewhat less so for managing physical appearance concerns ($M = 2.63$, $SD = .79$).

Figure 2. The rated likelihood and utility of using safety behaviours across types of social concerns, within the first-person condition; error bars represent standard error.

Third-person condition

Repeated measures ANOVAs revealed no significant differences between participants' perceptions of others' likelihood of using safety behaviours when faced with specific social concerns, $F(2, 149) = 2.20$, $p = .112$, $\eta_p^2 = .02$. Indeed, as illustrated in Figure 3, participants believed that others are equally likely to use safety behaviours when faced with any type of

social concern (physical appearance concerns: $M = 3.28$, $SD = .73$; social competence concerns: $M = 3.29$, $SD = .84$, signs of anxiety concerns: $M = 3.41$, $SD = .71$).

A similar analysis revealed significant differences when participants rated their perception of the safety behaviour utility when they imagine others faced with specific social concerns, $F(2, 149) = 8.59$, $p < .001$, $\eta_p^2 = .09$. Follow-up t-tests revealed significant differences between signs of anxiety concerns and physical appearance concerns, $t(150) = 3.94$, $p < .001$. However, the difference between the perceived utility for others of using safety behaviours in response to physical appearance concerns compared to social competence concerns failed to reach the required threshold for statistical significance following Bonferroni correction, $t(153) = 2.26$, $p = .03$, as did the difference between the perceived utility of others using safety behaviours when faced with signs of anxiety concerns versus social competence concerns, $t(149) = 1.76$, $p = .08$. As seen in Figure 3, participants believed that others generally find safety behaviours to be most helpful for managing signs of anxiety concerns ($M = 2.85$, SD .73), followed by social competence concerns ($M = 2.74$, $SD = .80$), and physical appearance concerns ($M = 2.63$, $SD = .70$).

Differences in Safety Behaviour Use, Grouped by Social Concern Types within the Third-Person Condition

Figure 3. The rated likelihood and utility of using safety behaviours across types of social concerns, within the third-person condition; error bars represent standard error.

Hypothesis 2: Differences in Safety Behaviour Use Across Safety Behaviour Types

To test hypothesis 2 and explore differences in the perceived likelihood and utility of using specific types of safety behaviours, repeated-measures ANOVAs were conducted, followed by Bonferroni-corrected *t*-tests, where applicable. Data for first- and third-person conditions were analyzed separately.

First-Person Condition

Repeated measures ANOVAs revealed significant differences between participants' reported likelihood of using specific safety behaviour types across all types of social concerns, $F(2, 151) = 24.19$, $p < .001$, $\eta_p^2 = .14$. Follow-up *t*-tests revealed significant differences between all safety behaviour subtypes: impression management safety behaviours and avoidance safety

behaviours $t(154) > 3.29$, $p < .001$; impression management safety behaviours and physical symptom management safety behaviours $t(158) > 6.25$, $p < .001$; and avoidance safety behaviours and physical symptom management safety behaviours $t(151) > 3.94$, $p < .001$. Overall, as shown in Figure 4, participants were most likely to use impression management safety behaviours ($M = 3.10$, $SD = .85$), followed by avoidance safety behaviours ($M = 2.87$, $SD = 1.00$), and then physical symptom management safety behaviours ($M = 2.63$, $SD = 1.08$).

A similar analysis revealed significant differences between participants' ratings of specific safety behaviours' utility across all types of social concerns, $F(2, 151) = 40.00$, $p < .001$, $\eta_p^2 = .21$. Follow-up t-tests revealed significant differences between the perceived utility of impression management and avoidance safety behaviours, $t(154) = 6.94$, $p < .001$, and impression management and physical symptom management safety behaviours, $t(158) = 7.06$, $p < .001$. The difference between the perceived utility of avoidance safety behaviours and physical symptom management safety behaviours was not significant, $\underline{t}(151) = .107$, $p = .92$. Thus, as shown in Figure 4, overall, participants rated impression management safety behaviours ($M = 3.09$, $SD = .62$) as being significantly more useful than avoidance safety behaviours ($M = 2.66$, $SD = .89$) or physical symptom management safety behaviours ($M = 2.66$, $SD = .87$).
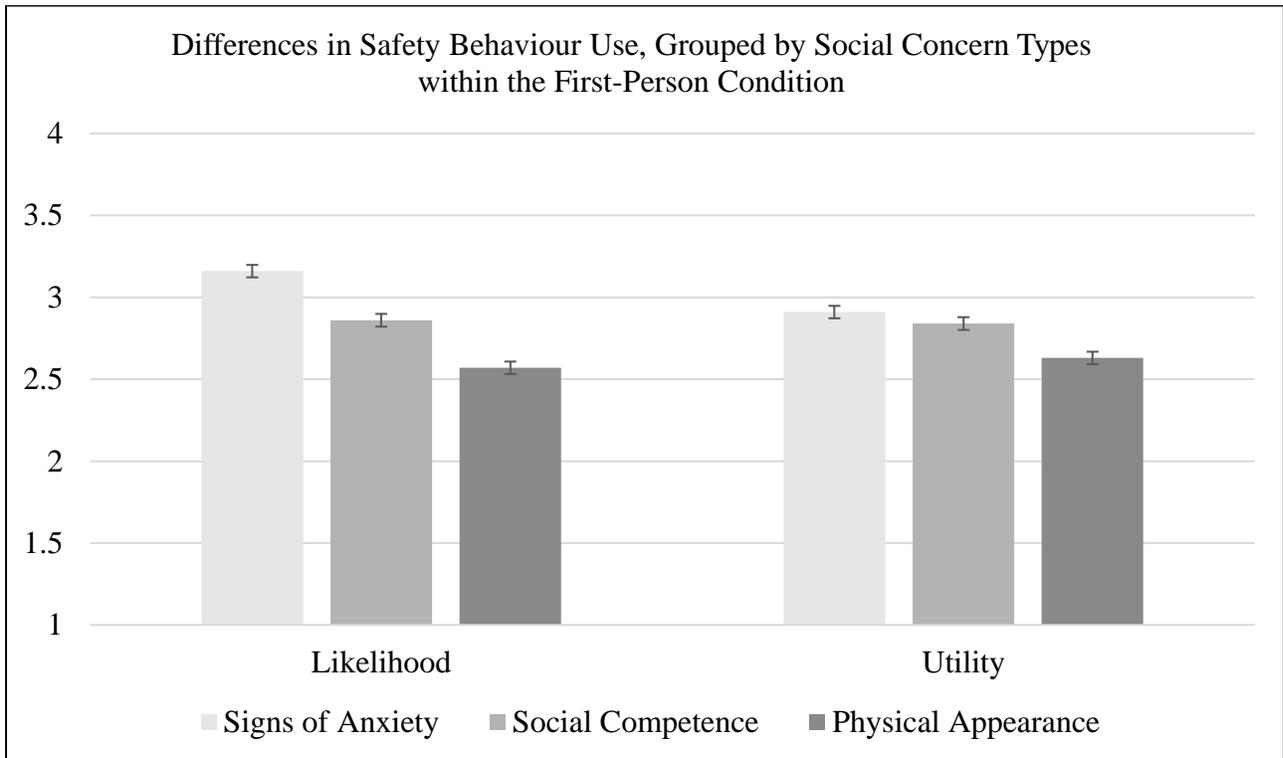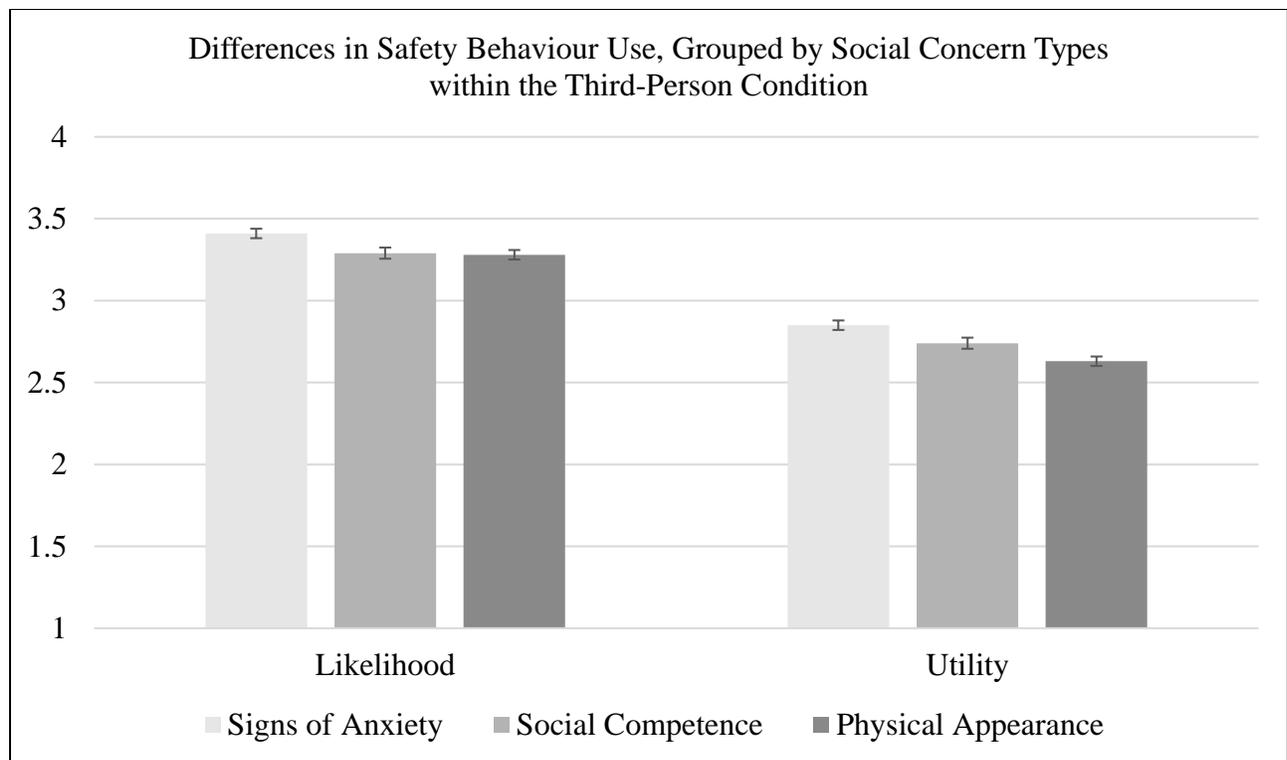
Figure 4. The rated likelihood and utility of using safety behaviours across types of safety behaviours, within the first-person condition; error bars represent standard error.

Third-Person Condition

      Repeated measures ANOVAs revealed significant differences between safety behaviour types that participants imagined others being likely to use across all types of social concerns, $F(2, 149) = 23.39$, $p < .001$, $\eta_p^2 = .14$. Follow-up t-tests revealed that participants believed others would be more likely to use impression management safety behaviours than physical symptom management safety behaviours, $t(150) = 4.25$, $p < .001$, and that others would be more likely to use avoidance safety behaviours than physical symptom management safety behaviours, $t(150) = 7.19$, $p < .001$. Participants' ratings of the likelihood of others using impression management safety behaviours and avoidance safety behaviours were statistically equivalent following Bonferroni correction, $t(151) = 2.22$, $p = .03$. Thus, as shown in Figure 5, participants overall

believed that others are more likely to use avoidance safety behaviours ($M = 3.50$, $SD = .69$) and impression management safety behaviours ($M = 3.37$, $SD = .65$) than physical symptom management safety behaviours ($M = 3.11$, $SD = .80$) across all types of social concerns.

Significant differences were also found between participants' ratings of others' perceptions of safety behaviour utility across social concerns, $F(2, 149) = 47.46$, $p < .001$, $\eta_p^2 = .24$. Follow-up t-tests revealed that participants perceived others' would find impression management safety behaviours as having greater utility than avoidance safety behaviours, $t(151) = 7.87$, $p < .001$, and that they would perceive impression management safety behaviours as being more useful than physical symptom management safety behaviours, $t(150) = 8.33$, $p < .001$. Avoidance safety behaviours and physical symptom management safety behaviours were rated as being equally useful when participants imagined them from a third-person perspective, $t(150) = .71$, $p = .48$. Thus, as illustrated in Figure 5, participants overall believed others view impression management safety behaviours ($M = 3.02$, $SD = .57$) as significantly more useful than either avoidance safety behaviours ($M = 2.58$, $SD = .82$) or physical symptom management safety behaviours ($M = 2.62$, $SD = .75$).
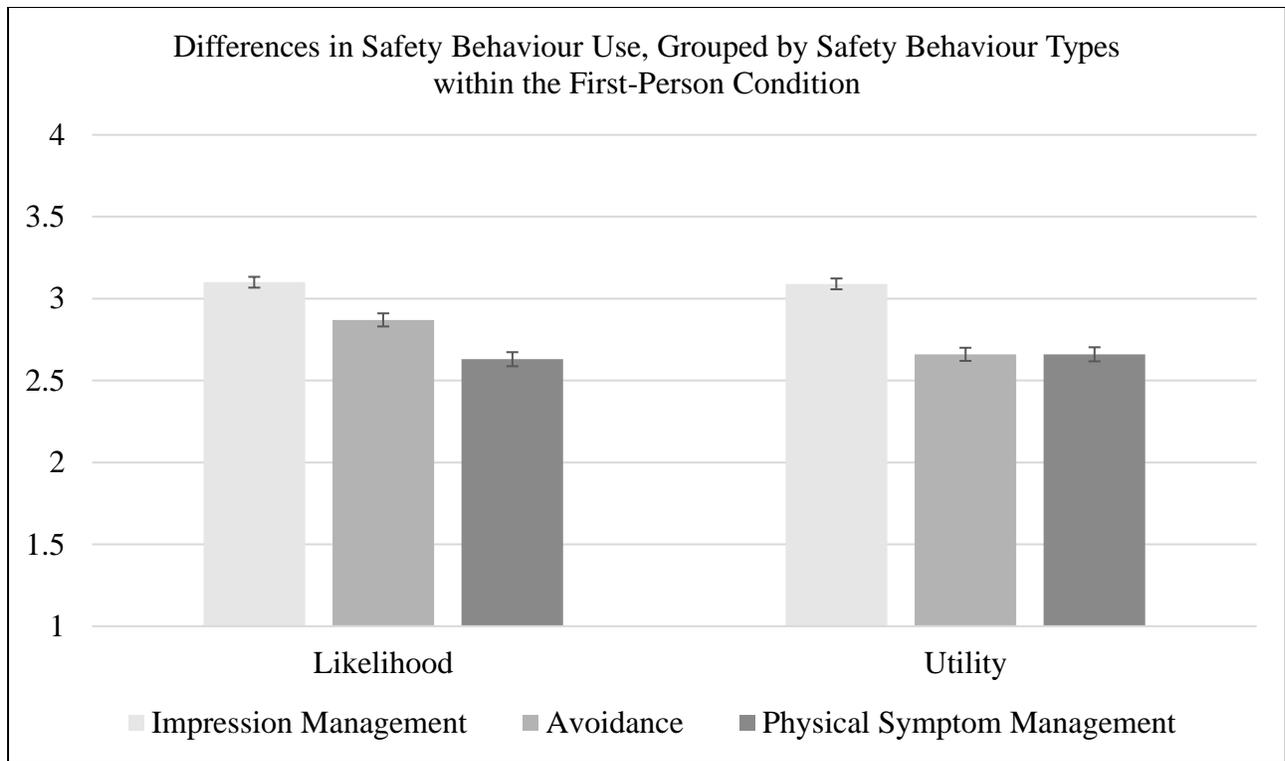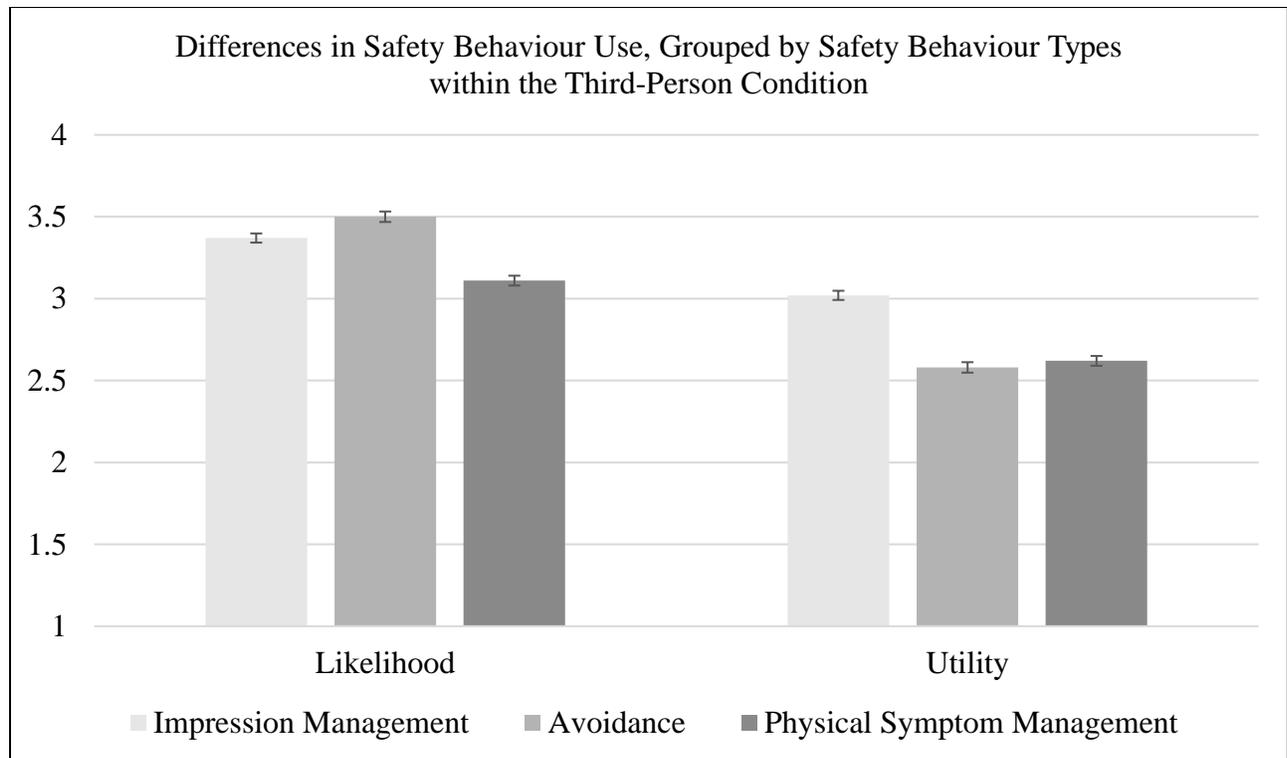
Figure 5. The rated likelihood and utility of using safety behaviours across types of safety behaviours, within the third-person condition; error bars represent standard error.

Hypothesis 3, Part 1: Bivariate Correlations Between Likelihood and Utility

To examine how the perceived likelihood of using safety behaviours relates to the perceived utility of those safety behaviours, bivariate correlations were conducted. Correlations compared perceived likelihood of using safety behaviours and perceived utility of the safety behaviours for vignette data grouped by safety behaviour types and by social concern types for first- and third-person conditions separately. Analyses also compared all safety behaviour and social concern subtypes when grouped together. To control for Type I error, I corrected the required p-value threshold to .05/7 (= .007) for the first- and third-person conditions, respectively.

First-person condition

As shown in Table 3, following Bonferroni correction, perceived likelihood of using safety behaviours was strongly related with their perceived utility, both when summed across the nine vignettes and when vignette data were grouped by safety behaviour subtypes or social concern subtypes (all p's < .001)

Table 3

Bivariate correlations between ratings of likelihood and utility of safety behaviour use in the first-person condition.

Variables	A Safety Behaviour (Utility)	IM Safety Behaviour (Utility)	PSM Safety Behaviour (Utility)	PA Social Concern (Utility)	SC Social Concern (Utility)	SA Social Concern (Utility)
1. A Safety Behaviour (Likelihood)	.81***					
2. IM Safety Behaviour (Likelihood)		.71***				
3. PSM Safety Behaviour (Likelihood)			.86***			
4. PA Social Concern (Likelihood)				.81***		
5. SC Social Concern (Likelihood)					.85***	
6. SA Social Concern (Likelihood)						.78***

Note. N's ranged from 156-165 due to missing data; ***p < .001.

Abbreviations. A: avoidance, IM: impression management, PSM: physical symptom management, PA: physical appearance, SC: social competence, SA: signs of anxiety.

Third-person condition

As shown in Table 4, following Bonferroni correction, ratings of others' perceived likelihood of using safety behaviours was significantly associated with ratings of others' perceived utility of the safety behaviours, both when summed across all nine vignettes and when vignette data were grouped by safety behaviour subtypes or social concern subtypes (all p's < .001), though correlations were less robust than in the first-person condition.

Table 4

Bivariate correlations between ratings of likelihood and utility of safety behaviour use in the third-person condition.

Variables	A Safety Behaviour (Utility)	IM Safety Behaviour (Utility)	PSM Safety Behaviour (Utility)	PA Social Concern (Utility)	SC Social Concern (Utility)	SA Social Concern (Utility)
7. A Safety Behaviour (Likelihood)	.32***					
8. IM Safety Behaviour (Likelihood)		.34***				
9. PSM Safety Behaviour (Likelihood)			.56***			
10. PA Social Concern (Likelihood)				.26***		
11. SC Social Concern (Likelihood)					.55***	
12. SA Social Concern (Likelihood)						.48***

Note. N's ranged from 153-157 due to missing data; ***p < .001.

Abbreviations. A: avoidance, IM: impression management, PSM: physical symptom management, PA: physical appearance, SC: social competence, SA: signs of anxiety.

Hypothesis 3, Part 2: Bivariate Correlations Between Trait Anxiety and Safety Behaviour Use and Utility

To determine how the perceived likelihood and perceived utility of using safety behaviours were associated with trait social anxiety, additional bivariate correlations were conducted. Correlations compared perceived likelihood of using safety behaviours and perceived utility of the safety behaviours with reported levels of trait social anxiety. This was done for vignette data grouped by safety behaviour types and by social concern types for both first- and third-person conditions. To control for Type I error, I corrected the required p-value threshold to .05/6 (= .008) for the first- and third-person conditions, respectively.

First-person condition

As shown in Table 5, following Bonferroni correction, social anxiety symptoms were significantly associated with the perceived likelihood of using avoidance safety behaviours (p = .001), but not with the perceived likelihood of using impression management safety behaviours (p = .52) or physical symptom management safety behaviours (p = .04). Social anxiety symptoms were also not significantly associated with the perceived utility of using any safety behaviours (all p's > .15).

When vignette data were grouped by social concern subtypes, only the reported likelihood of using safety behaviours in response to signs of anxiety social concerns was marginally associated with trait social anxiety (p = .008). No significant relationships were found between trait social anxiety and either social competence social concerns (p = .04) or physical appearance social concerns (p = .23). Social anxiety symptoms were also not significantly associated with the perceived utility of using safety behaviours in response to any social concerns (all p's > .14).

Table 5

Bivariate correlations between ratings of likelihood and utility of safety behaviour use with symptoms of social anxiety (SPIN) in the first-person condition.

Variables	Social Anxiety Symptoms (SPIN)
1. Avoidance Safety Behaviours (likelihood)	$r = .27$***
2. Impression Management Safety Behaviours (likelihood)	$r = .05$
3. Physical Symptom Management Safety Behaviours (likelihood)	$r = .16$*
4. Physical Appearance Concerns (likelihood)	$r = .09$
5. Social Competence Concerns (likelihood)	$r = .17$*
6. Signs of Anxiety Concerns (likelihood)	$r = .21$**
7. Avoidance Safety Behaviours (utility)	$r = .09$
8. Impression Management Safety Behaviours (utility)	$r = .06$
9. Physical Symptom Management Safety Behaviours (utility)	$r = .11$
10. Physical Appearance Concerns (utility)	$r = .07$
11. Social Competence Concerns (utility)	$r = .12$
12. Signs of Anxiety Concerns (utility)	$r = .06$

Note. N's ranged from 156-165 due to missing data; *$p < .05$, **$p < .01$, ***$p < .001$.

Third-person condition

As shown in Table 6, following Bonferroni correction, social anxiety symptoms were not significantly associated with any ratings of perceived likelihood of others using safety behaviours (all p's > .04). Social anxiety symptoms were also not significantly associated with ratings of others' view of the utility of those safety behaviours (all p's > .13).

When vignette data were grouped by social concern subtypes, social anxiety symptoms were neither significantly associated with ratings of the perceived likelihood of others using safety behaviours in response to any social concerns (all p's > .03), nor with ratings of others' perceived utility of using safety behaviours in response to any social concerns (all p's > .18).

Table 6

Bivariate correlations between ratings of likelihood and utility with symptoms of social anxiety (SPIN) in the third-person condition.

Variables	Social Anxiety Symptoms (SPIN)
13. Avoidance Safety Behaviours (likelihood)	$r = .07$
14. Impression Management Safety Behaviours (likelihood)	$r = .10$
15. Physical Symptom Management Safety Behaviours (likelihood)	$r = .17*$
16. Physical Appearance Concerns (likelihood)	$r = .12$
17. Social Competence Concerns (likelihood)	$r = .18*$
18. Signs of Anxiety Concerns (likelihood)	$r = .02$
19. Avoidance Safety Behaviours (utility)	$r = .12$
20. Impression Management Safety Behaviours (utility)	$r = .11$
21. Physical Symptom Management Safety Behaviours (utility)	$r = .07$
22. Physical Appearance Concerns (utility)	$r = .11$
23. Social Competence Concerns (utility)	$r = .04$
24. Signs of Anxiety Concerns (utility)	$r = .05$

Note. N's ranged from 153-156 due to missing data; $*p < .05$.

Hypothesis 3, Part 3: Hierarchical Regression Analyses Examining Whether Trait Social Anxiety Moderates the Relation Between Perceived Likelihood and Utility of Safety Behaviour Use

To determine whether the perceived likelihood of specific safety behaviour use increases as its perceived utility increases, and whether this association may be moderated by participants' trait levels of social anxiety (such that stronger coupling between likelihood and utility will occur for those with lower levels of social anxiety), hierarchical regression analyses were conducted with mean-centred perceived safety behaviour utility and mean-centered trait social anxiety (SPIN scores) entered as predictor variables on step 1, the interaction term on step 2, and perceived likelihood of safety behaviour use as the outcome variable. Twelve hierarchical linear regression analyses were conducted in total (six for the first-person condition and six for the

third-person condition, with the required *p*-value threshold set to .008 for analyses pertaining to each condition, respectively). Vignette data were grouped by safety behaviour subtypes for the first three models within each condition and by social concern subtypes for the remaining three models within each condition.

First-person condition

As shown in Table 7, when data were grouped by type social concerns, 63-72% of the variance in ratings of the likelihood of safety behaviour use were accounted for by utility ratings and social anxiety at step 1 of the regression analyses across types of social concerns. Perceived utility was the only significant predictor of the perceived likelihood of using safety behaviours in response to both physical appearance social concerns and social competence concerns (*p*'s < .001). For ratings of the likelihood of using safety behaviours in response to signs of anxiety concerns, both utility (*p* < .001) and social anxiety (*p* = .001) were significant predictors. No other significant main effects of trait social anxiety (*p*'s > .10) were observed. The addition of the interaction term at Step 2 did not contribute significantly to the amount of variance explained (*p*'s > .06), and there were no significant interactions between safety behaviour utility and trait social anxiety (*p*'s > .06).

Table 7

Regression models with ratings of safety behaviour likelihood as the dependent variable, and ratings of safety behaviour utility, social anxiety symptoms (SPIN), and their interaction as the predictor variables across the three types of social concerns, within the first-person condition.

Variable	Physical Appearance Concerns			Social Competence Concerns			Signs of Anxiety Concerns		
	B	*β*	ΔR^2	*B*	*β*	ΔR^2	*B*	*β*	ΔR^2
Step 1			.67***			.72***			.63***
Utility	.98***	.81		1.00***	.84		.96***	.77	
Social Anxiety	.04	.04		.08	.07		.18**	.16	
Step 2			.00			.01			.00
Utility	.98***	.80		.99***	.84		.95***	.75	
Social Anxiety	.06	.05		.10*	.09		.20**	.17	
Interaction	-.07	-.06		-.11	-.08		-.11	-.09	

Note. Predictor variables were centered at their means; DV = safety behavior likelihood ratings; *SE B's* ranged from .05 to .06; **$p < .01$, ***$p < .001$.

As shown in Table 8, when data were grouped by type of safety behaviour, 50-74% of the variance in ratings of the likelihood of safety behaviour use were accounted for by utility ratings and social anxiety at step 1 of the regression analyses across types of safety behaviours. Perceived utility was the only significant predictor of the perceived likelihood of using impression management and physical symptom management safety behaviours (p's < .001). For ratings of the likelihood of using avoidance safety behaviours, both utility and social anxiety were significant predictors (p's < .001). No other significant main effects of trait social anxiety (p's > .10) were observed. Due to Bonferroni correction, the addition of the interaction term at Step 2 did not contribute significantly to the amount of variance explained (p's > .02), and there

were no significant interactions between safety behaviour utility and trait social anxiety (p's >

.02).

Table 8

Regression models with ratings of safety behaviour likelihood as the dependent variable, and ratings of safety behaviour utility, social anxiety symptoms (SPIN), and their interaction as the predictor variables across the three types of safety behaviours, within the first-person condition.

Variable	Impression Management Safety Behaviours			Avoidance Safety Behaviours			Physical Symptom Management Safety Behaviours		
	B	β	ΔR^2	B	β	ΔR^2	B	β	ΔR^2
Step 1			.50***			.69***			.74***
Utility	.96***	.71		.88***	.79		1.05***	.85	
Social Anxiety	.01	.01		.23***	.20		.08	.07	
Step 2			.02*			.01*			.00
Utility	.94***	.69		.87***	.78		1.04***	.84	
Social Anxiety	.04	.04		.24***	.21		.10	.08	
Interaction	-.19*	-.14		-.12*	-.09		-.09	-.07	

Note. Predictor variables were centered at their means; DV = safety behavior likelihood ratings; *SE B's* ranged from .05 to .08; *p < .05, ***p < .001.

Third-person condition

As shown in Table 9, when data were grouped by type social concerns, 8-32% of the

variance in ratings of the likelihood of safety behaviour use were accounted for by utility ratings

and social anxiety at step 1 of the regression analyses across types of social concerns. Perceived

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utility was the only significant predictor of the perceived likelihood of using safety behaviours in response to all types of social concerns (p's < .001). No significant main effects of trait social anxiety (p's > .02) were observed. The addition of the interaction term at Step 2 did not contribute significantly to the amount of variance explained (p's > .07), and there were no significant interactions between safety behaviour utility and trait social anxiety (p's > .07).

Table 9

Regression models with ratings of safety behaviour likelihood as the dependent variable, and ratings of safety behaviour utility, social anxiety symptoms (SPIN), and their interaction as the predictor variables across the three types of social concerns, within the third-person condition.

Variable	Physical Appearance Concerns			Social Competence Concerns			Signs of Anxiety Concerns		
	B	β	ΔR^2	B	β	ΔR^2	B	β	ΔR^2
Step 1			.08**			.32***			.23***
Utility	.26**	.26		.56***	.54		.46***	.48	
Social Anxiety	.08	.09		.15*	.16		.04	.05	
Step 2			.01			.00			.02
Utility	.24**	.23		.56***	.54		.44***	.45	
Social Anxiety	.08	.10		.15*	.16		.03	.04	
Interaction	-.13	-.11		.00	.00		-.13	-.14	

Note. Predictor variables were centered at their means; DV = safety behavior likelihood ratings; *SE B's* ranged from .01 to .09; *p < .05, **p < .01, ***p < .001.

As shown in Table 10, when data were grouped by type of safety behaviour, 10-33% of the variance in ratings of the likelihood of safety behaviour use were accounted for by utility ratings and social anxiety at step 1 of the regression analyses across types of safety behaviours.

Perceived utility was the only significant predictor of the perceived likelihood of using all types

of safety behaviours (p's < .001). No significant main effects of trait social anxiety (p's > .06)

were observed. The addition of the interaction term at Step 2 contributed significantly to the

amount of variance explained (p = .004) in avoidance safety behaviour model. As shown in

Figure 6, there was a significant interaction between safety behaviour utility and trait social

anxiety (p = .004), suggesting that higher socially anxious participants did not modify their

perception of others' likelihood of using avoidance safety behaviours according to their

perceived usefulness, whereas participants with lower social anxiety rated others as being more

or less likely to use avoidance safety behaviours when they viewed them as being more or less

useful. For the other two models, adding the interaction term did not contribute significantly to

the amount of variance explained (p's > .04), and there were no significant interactions between

safety behaviour utility and trait social anxiety (p's > .04).
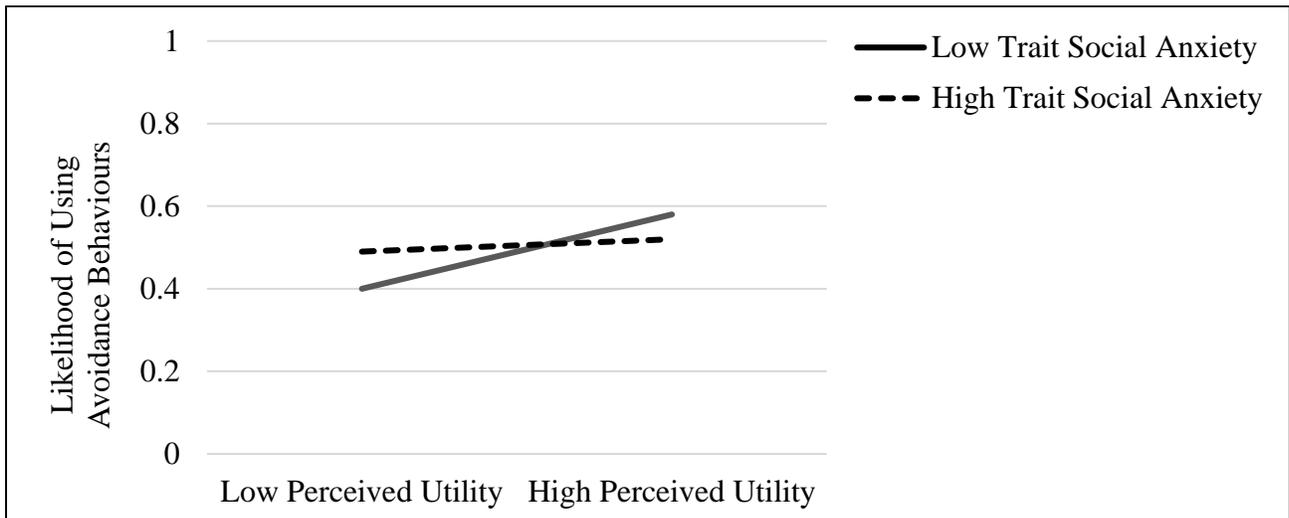
Figure 6. Likelihood of using avoidance safety behaviours predicted by the perceived utility of using avoidance

safety behaviours and trait social anxiety, within the third-person condition.

Table 10

Regression models with ratings of safety behaviour likelihood as the dependent variable, and ratings of safety behaviour utility, social anxiety symptoms (SPIN), and their interaction as the predictor variables across the three types of safety behaviours, within the third-person condition.

Variable	Impression Management Safety Behaviours			Avoidance Safety Behaviours			Physical Symptom Management Safety Behaviours		
	B	β	ΔR^2	B	β	ΔR^2	B	β	ΔR^2
Step 1			.13***			.10***			.33***
Utility	.40***	.35		.25***	.31		.58***	.55	
Social Anxiety	.11	.14		.02	.03		.11	.13	
Step 2			.02			.05**			.02*
Utility	.42***	.37		.20**	.24		.56***	.54	
Social Anxiety	.12*	.17		.04	.05		.12*	.13	
Interaction	.16	.13		-.20**	-.23		-.14*	-.14	

Note. Predictor variables were centered at their means; DV = safety behavior likelihood ratings; *SE B's* ranged from .06 to .10; *p* < .05, **p* < .01, ***p* < .001.

Discussion

The purpose of this study was to develop our understanding of the relationship between self-attribute concerns and the safety behaviours that people use to manage their social anxiety. I sought to understand how safety behaviours are chosen within specific social contexts, as well as how levels of trait social anxiety might impact such choices. Overall, I hoped that this preliminary study would help to establish a foundational understanding of the relationship between safety behaviours and social concerns in social anxiety, guiding later experimental and clinical investigations. Indeed, this study has allowed me to examine the relations between perceptions of safety behaviour utility and likelihood of safety behaviour use in relation to numerous other factors associated with selecting and using safety behaviours (e.g., overall social anxiety symptoms, perspective). Basing this research on existing measures (Moscovitch & Huyder, 2011; Cuming et al., 2009; Connor et al., 2000) and models (Moscovitch, 2009) of social anxiety has allowed for comparisons to be drawn with prior findings on the nature and use of safety behaviours by socially anxious individuals. My findings suggest that safety behaviours are used differently in response to different social concerns irrespective of individuals' trait levels of social anxiety, and are also affected to some degree and in different ways by trait levels of social anxiety. Moreover, the ways people evaluate their own prospective safety behaviour use and that of others are intriguing and do not always mimic each other.

First-person condition

Hypothesis 1

Guided by Moscovitch's (2009) model, which proposed that safety behaviours are selected in response to specific fears related to revealing self-attributes that are viewed as deficient, I predicted that participants would rate their use of safety behaviours as more likely to

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be elicited by certain types of social concerns than by others. However, while researchers have indeed examined the fears that socially anxious individuals experience (Bielak & Moscovitch, 2013; Moscovitch & Huyder, 2011) and even concluded that self-attribute concerns are a unique feature of social anxiety, as opposed to anxiety in general (Moscovitch et al., 2013), research on the relation between specific types of social concerns and safety behaviour use has been lacking. Therefore, most of the predictions I made were based on my best attempts to reconcile literature on the differences found between outcomes of using particular types of safety behaviours (e.g., Taylor & Alden, 2011) and extrapolating to how this might result from specific self-attribute concerns (Moscovitch, 2009).

Results demonstrated that safety behaviours used in response to signs of anxiety and social competence concerns were rated as being equally useful; yet, despite this apparent parity, safety behaviours were nevertheless reported to be significantly less likely to be used in response to social competence concerns than to signs of anxiety concerns. It is possible that the use of safety behaviours in response to social competence concerns may be viewed by people as a more deliberative process that is driven primarily by logical decisions involving perceived ratings of utility within any particular social context (e.g., "I really want to look smart, so I'll practice everything I say in my head beforehand so I don't stutter."), whereas the use of safety behaviours in response to signs of anxiety concerns may be a more alarm-driven process that is influenced by personal feelings of anxiety and arousal in the moment (e.g., "It might not be that great to stand with my hands in my pockets, by I just can't bear to have others notice them shaking."). However, additional research is needed to conclusively determine the nature of this relationship.

Physical appearance concerns were rated as least likely to elicit the use of any type of safety behaviour and as having the lowest reported utility of safety behaviour use. This may be

the result of the perception that physical appearance concerns being less amenable to change using safety behaviours than other self-attribute fears. Indeed, previous research has shown that physical appearance concerns may impede the effectiveness of video feedback protocols designed to correct distorted perceptions of self in individuals with elevated social anxiety (Orr & Moscovitch, 2014), suggesting that people may believe that little can be done to alter the negative consequences associated with perceived physical appearance flaws. Furthermore, research has shown that social anxiety is a strong component of Body Dysmorphic Disorder (BDD) and that social fears related to physical appearance can contribute to high levels of functional impairment (Kelly, Walters, & Phillips, 2010). Additionally, researchers have found that safety behaviours appear to be used in similar ways and for similar purposes by sufferers of BDD and social anxiety (Warnock-Parkes et al., 2017), suggesting that further research on the selection and nature of safety behaviours in relation to physical appearance social concerns could have far-reaching implications in the treatment of mental-health concerns.

Hypothesis 2

Here, I predicted that participants would rate their use of certain safety behaviour subtypes as being more likely than others. For example, the previous finding that avoidance safety behaviours tend to make immediate negative social impressions on others, while impression management behaviours may inhibit new learning and prevent future reductions in anxiety (Plasencia et al., 2011) was key to forming my expectations that impression management strategies would likely be seen as the most useful and most likely to be employed across types of social concerns. As expected, impression management safety behaviours were rated as most likely to be used and most useful, perhaps due to the seemingly more innocuous nature of this type of safety behaviour and its applicability to a variety of social situations. Furthermore,

physical symptom management safety behaviours were reported as least likely to be used and were perceived as least useful across social concerns.

Avoidance safety behaviours show a very interesting pattern—one similar to safety behaviours used for signs of anxiety concerns (discussed above in relation to Hypothesis 1). Indeed, while avoidance safety behaviours were seen as no more useful than physical symptom management safety behaviours, they were rated as significantly more likely to be used. While these data do not allow me to directly compare my results with previous investigations of the outcomes of using impression management and avoidance strategies (Plasencia et al., 2011), I was able to predict on the basis of those studies that impression management safety behaviours might be used because they are seen as interpersonally useful, while avoidance strategies may be used *despite* not being seen as quite so useful. Like the use of safety behaviours in response to concerns about showing signs of anxiety, reliance on avoidance safety behaviours may be based on snap judgements related to individual levels of anxious arousal within particular social contexts (e.g., "There are too many people and I just can't keep making eye-contact.") and not solely perceptions of the safety behaviours' utility, but more research is needed to ascertain this.

Hypothesis 3

I predicted that the perceived likelihood of specific safety behaviour use will increase as its perceived utility increases, but that this association may be moderated by participants' trait levels of social anxiety, such that stronger coupling between likelihood and utility will occur for those with lower levels of social anxiety. Correlational analyses demonstrated that the likelihood of using all safety behaviour subtypes and the likelihood of using safety behaviours in response to all social concern subtypes was based heavily on perceptions of utility.

The correlations also showed that trait social anxiety was associated with increased perceived likelihood of using avoidance safety behaviours. As predicted, this suggests that a unique feature of avoidance safety behaviours may be that they are used in a less calculated fashion and more as a reaction to increased anxiety, perhaps because they are viewed as a last-resort method for escaping particularly challenging situations. Similarly, trait social anxiety was associated with increased perceived likelihood of using safety behaviours when faced with signs of anxiety social concerns. Again, as predicted, this could mean that safety behaviour use in response to signs of anxiety social concerns may be based on a higher sensitivity to personal anxiety levels, which may in turn be more dependent on momentary physiological arousal levels (as opposed to more long-standing concerns about how one's social skills and overall appearance will be perceived), to which anxious individuals are particularly sensitized.

Supporting these findings, regression analyses showed that the likelihood of using safety behaviours in response to all social concerns was significantly associated with ratings of safety behaviour utility for each of those respective concerns. However, while this was indeed the only significant relationship for physical appearance concerns and social competence concerns, safety behaviours used in response to signs of anxiety concerns were also associated with trait social anxiety, over and above perceived utility.

A similar pattern was seen as well when examining use of each of the safety behaviour subtypes. Again, as predicted, all ratings of the likelihood of using safety behaviours were significantly associated with ratings of safety behaviour utility for each subtype. This was the only significant relationship for physical symptom management safety behaviours and impression management safety behaviours, but avoidance safety behaviours stood out. As predicted, perceived likelihood of using avoidance safety behaviours was also related to levels of

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trait social anxiety, over and above perceived utility. Once more, this relates to my prior

findings, which showed that avoidance safety behaviours are used surprisingly more often than

their rated utility would suggest, indicating that this is likely to be the result of them being a

more anxiety-driven process, in addition to one guided exclusively by perceptions of safety

behaviour utility. In general, my findings support the notion that the immediate positive

interpersonal effects of impression management safety behaviour use (Plasencia et al., 2011)

may differ from the negative effects of avoidance safety behaviours because the former may be

employed more strategically by individuals who use them specifically to try to make a positive

social impression whereas the latter tend to hinder interactions because they are used more when

individuals believe that they have no other way to cope with an anxiety-provoking social

situation.

Third-person condition

Hypothesis 1

Despite my prediction that participants would rate others' use of safety behaviours as

more likely to be elicited by certain types of social concerns than by others, results showed that

ratings of others' perceptions of likelihood of safety behaviour use were uniform across all

concerns. However, ratings of safety behaviour utility were not uniform. Physical appearance

concerns were associated with the lowest reported utility of safety behaviour use, and signs of

anxiety concerns with the highest reported utility (following a similar pattern to the first-person

condition). Therefore, participants believed that while others may share their views about safety

behaviour utility for addressing specific social concerns, they did not expect others to follow the

same pattern of safety behaviour use. It is possible that this apparent discrepancy may be related

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simply to the demand characteristics of the study, which asked participants assigned to the third person condition to infer how others might behave. Indeed, participants' responses may within this condition may stem from an innocent lack of insight into others' mental processes (i.e., "While I may choose how likely I am to use my safety behaviours based on ratings of utility for each of my specific social concerns, I cannot guess what others are thinking or are afraid of, so they must choose their safety behaviours randomly").

Hypothesis 2

Our second hypothesis predicted that participants would rate other people's use of certain safety behaviour subtypes as being more likely than others, and results showed that physical symptom management safety behaviours were expected to be least likely to be used by others and to be perceived as being least useful across social concerns, while impression management safety behaviours were expected to be seen as more useful and to be used more frequently, similar to the first-person condition. Similar to ratings of avoidance safety behaviours in the first-person condition, participants expected others to rate avoidance safety behaviours relatively low on social utility, but nevertheless remain quite likely to use them. This pattern reflects a similar trend as in the first-person condition, possibly indicating that because avoidance safety behaviours are so readily noticeable as compared to the subtler impression management and physical symptom management strategies, others might be seen as more likely to use them.

Hypothesis 3

Our last hypothesis stated that the perceived likelihood of others' specific safety behaviour use might increase as its perceived utility increases, but that this association would be moderated by participants' trait levels of social anxiety. The bivariate correlation analyses demonstrated that participants' perception of the likelihood of others' use of all safety behaviour

subtypes and their likelihood of using safety behaviours in response to all social concern subtypes were strongly associated with perceptions of utility. Trait social anxiety, however, was not significantly associated with ratings of others' likelihood of using safety behaviours, or with ratings of others' utility of those safety behaviours. This suggests that participants' own anxiety did not appear to play a significant role in their predictions of how likely others were to use safety behaviours. Instead, participants appeared to believe that others select and use safety behaviours primarily based on their perceived utility of those strategies and the contexts in which they are being employed.

Finally, regression analyses demonstrated that trait social anxiety did not contribute any additional variance in ratings of others' likelihood of using safety behaviours across types of social concerns over and above the significant contribution of perceived utility, which was a strong predictor. Similarly, for each of the safety behaviour subtypes, all ratings of others' likelihood of using safety behaviours were strongly associated with ratings of their perceived safety behaviour utility. However, participants' trait social anxiety predicted their perception of others' use of avoidance safety behaviours over and above the perceived utility of these behaviours, and there was a significant interaction between avoidance safety behaviour utility and trait social anxiety, such that higher socially anxious participants rated others to be more likely to use avoidance safety behaviours even if they view them as being less useful. While this effect was also observed in the first-person condition, it was only marginally significant due to Bonferroni correction. Nevertheless, future research may investigate the idea that socially anxious individuals may be more likely to see the use of avoidance safety behaviours as a viable option (for themselves and for others) even in situations in which they recognize their social and interpersonal utility to be low. Thus, the results of the present study suggest that socially anxious

individuals may not choose to use avoidance safety behaviours because they believe that they

will be socially or interpersonally effective, but because they believe that they (and others) may

have no other choice when faced with social threat. The propensity to view such behaviours as

habitual, anxiety-driven actions rather than deliberate interpersonal choices that are under their

strategic control may be an important difference that distinguishes those with higher versus

lower trait social anxiety, with potential implications for clinical application.

Limitations and Future Directions

As an initial investigation into the specific associations of safety behaviour and social

concern subtypes, the present study had several limitations. First, the study relied on vignettes

and custom-designed questions, which were never empirically tested or validated, raising

questions about validity and reliability. Future studies should seek to replicate and extend

findings using well-established measures, or aim to develop and validate new measures that

assess safety behaviours and social concerns in greater detail. Additionally, there was only one

vignette created for each pairing of social concern and safety behaviour subtype and the vignettes

were not previously validated, making it possible that the observed outcomes were affected by

variations in the characteristics of the vignettes themselves. Removing subtle shifts in wording

across the vignettes (e.g., the emotional experiences referred to across vignettes include feeling

anxious, scared, worried, and a "pang of fear") ought to improve future studies Moreover, the

current study used only a different vignette for each pairing of safety behaviour and social

concern, making it impossible to know for sure whether differences across pairings were due to

differences in vignettes or in safety behaviours/social concerns. Future studies should aim to

keep the vignette constant across pairings while also perhaps validating multiple vignettes based

on the SAFE and NSPS for each safety behaviour and social concern pairing, which would allow

for more robust comparisons of safety behaviour and social concern subtypes. Having a greater number of vignettes for each pairing could also yield greater heterogeneity in participant responses to questions around safety behaviour utility, as pairings in the same category might not all be perceived as equally adaptive. Additionally, coding and theme-categorizing open-ended responses regarding safety behaviour strategies that they might want to employ in a given social situation could reveal patterns or new strategies not observed by reliance on the SAFE. Similarly, recording and coding responses regarding why (i.e., to what effect) specific safety behaviours are used could allow for a deeper understanding of why certain strategies may be paired with certain social concerns. Alternatively, providing participants with multiple safety behaviours to select from for specific social situations, as well as multiple options that describe their intentions, desired outcomes, and motivations could provide a similarly rich level of insight into the relationships of safety behaviours and social concerns, without the added difficulty of coding unique responses.

Second, although the presence of the first-person and third-person conditions yielded interesting patterns, future studies should focus on fashioning study designs that allow for direct comparisons to be made between ratings of observed and enacted safety behaviours. The main reason I was unable to do so in this study was that some of the outcome measures seemed meaningfully different enough across perspectives to potentially invalidate any inferences that could have been made. Specifically, how likely one was to use a particular safety behaviour did not appear directly comparable to how likely someone else might be to use that same safety behaviour as the latter condition required the participant to adopt a wholly unknown perspective. One way to make such comparisons possible with a study design similar to our own may be to use a within-subjects design for the two conditions, whereby the same participants would read

and respond to both first-person and third-person vignettes, ensuring that the same individuals'

responses are being compared to each other, thereby reducing random variance and improving

reliability, though even a within-subjects design would force participants to adopt an unknown

perspective in the third-person condition. Alternatively, asking participants to think about a

particular individual or interaction for each third-person vignette may help to ensure that the

perspective they are adopting is more uniform across vignettes, thereby improving the validity of

any comparisons we could make with the first-person condition. Extending this research further

could be done in-lab, whereby participants would be instructed to use or eliminate specific safety

behaviours and then asked to engage in brief social interactions, such as where they might get

acquainted with a partner they had not previously met. During this interaction, their use of safety

behaviours and the reactions of their interaction partners to the use of these strategies would be

recorded and could later be analyzed dyadically to explore the reciprocal impacts of safety

behaviour use on observers and users, thus enabling a more reliable investigation of both the

first-person and third-person perspectives.

Third, this study took place entirely online and relied fully on self-report measures. While

self-report is oftentimes the golden standard of psychological research, the ultimate aim of my

research program is to investigate potential treatment applications for differential safety

behaviour use among individuals with particular social concerns. Thus, it is integral for future

studies to incorporate in-lab interactions and, eventually, clinical interventions into their designs

to allow for direct manipulations of safety behaviour use and, consequently, causal conclusions

about the use and elimination of safety behaviours in various circumstances. Intervention-

focused studies, in particular, could involve comparing the efficacy of typical cognitive

behavioural therapy for social anxiety (i.e., "treatment as usual") with therapy that incorporates

judicious safety behaviour use (e.g., replacing avoidance strategies with impression management ones, before slowly phasing them out of treatment).

Fourth, despite intensions to explore the moderating effects of approach and avoidance motivation on the relationship between social concerns, safety behaviours, and social anxiety, it was not possible to do so in the present study due to very high collinearity among all utility-related vignette questions, resulting in all six utility-related questions being amalgamated into a single measure of perceived safety behaviour utility. A possible contributor to this issue was the phrasing of the questions themselves, which contained subtle distinctions between various items between which it may have been difficult for participants to distinguish (e.g., two identically phrased subsequent questions regarding the utility of safety behaviours for making a good impression, and then for avoiding a negative impression might appear to similar for participants to give sufficient thought to differentiating between them). Instead, future studies could improve upon this methodology by instructing participants to make a choice between different motivations or outcomes for each safety behaviour they use (e.g., "Using this safety behaviour may be a good way to: (a) make a positive impression, (b) avoid social judgment"), or as discussed previously, by coding and theme-categorizing open-ended responses.

The planned future directions of this research involve two primary directions: further investigating the differences between safety behaviour subtypes, and exploring the potential positive effects of particular safety behaviours. At the same time, an important consideration will be to study the clinical impact of using vs. eliminating specific social safety behaviours subtypes. In relation to these future directions, researchers have found that safety behaviours increase self-judgements about one's anxiety levels (Taylor & Alden, 2010), decrease perceived authenticity of social interactions (Plasencia, Taylor, & Alden, 2016), and make it more difficult for

interaction partners to ascertain facets of their personality (Aiken, Human, Alden, & Biesanz, 2014). While most studies have explored safety behaviours as a whole, some have found differences between subtypes. Notably, Plasencia et al. (2011) compared impression management and avoidance safety behaviours. They found that impression-management strategies did not negatively impact the social interaction itself, but led to increased anxiety in future social events, suggesting that it may be important for clinicians to help patients who rely on these safety behaviours to understand the potential negative long-term impact. In contrast, avoidance safety behaviours were shown to increase users' anxiety and decrease interaction partners' feelings of affiliation and desire for future interaction with users, thus suggesting that clinicians working with individuals who use avoidance strategies could teach users to focus more on partners' responses and on fostering emotional engagement, in lieu of self-concealment. These findings raise questions about whether it might even be useful for patients who rely primarily on avoidance safety behaviours to be taught instead to use impression management strategies as a stepping stone to overcoming their social anxiety. That is, since avoidance safety behaviours are associated with immediate negative social responses from interaction partners, while impression management behaviours are not, avoidant clients who are reluctant to drop safety behaviours outright might be provided the opportunity to learn from positive social experiences they might not otherwise have by relying on impression management strategies rather than being encouraged from the outset to face their social fears without the use of any safety behaviours.

This idea of incorporating "judicious use" of safety behaviours into treatment is itself an emerging area of research. Researchers working with phobias and Obsessive-Compulsive Disorder (OCD) have long found that treatment dropout can be a considerable problem for

patients with high levels of distress who are too afraid to face their fears without the use of any

of the safety strategies on which they have become accustomed to relying (Rachman, Radomsky,

& Shafran, 2008). Work in this area has shown that judicious (i.e., sparing and only in key

situations) use of safety behaviours may help reduce fears and allow clients to face situations that

might otherwise cause them to terminate therapy (Levy, Senn, & Radomsky, 2014). This

research has demonstrated that judicious safety behaviour use can facilitate new learning by

enhancing clients' willingness to approach feared situations, as well as by increasing perceptions

of control and self-efficacy when facing fears, which might otherwise seem overwhelming (Levy

& Radomsky, 2016; Deacon, Sy, Lickel, & Nelson, 2010). These researchers' recommendations

have been for clinicians to consider incorporating judicious use of safety behaviours in early

phases of therapy, and gradually fading them as therapy progresses.

However, it is unknown whether these findings on judicious safety behaviour use in

specific phobias and OCD may be generalizable to social anxiety due to the differences in the

function of safety behaviours in phobias and OCD, as compared with social anxiety. That is,

safety behaviours in phobias serve a simple, unidirectional purpose—to protect users from

specific feared objects. Safety behaviours used by socially anxious individuals are instead

attempts to conceal perceived self-flaws and prevent feared social rejection, which entails a web

of bidirectional and interpersonal considerations, which make them inherently more complex

(Hofmann et al., 2004). As a result, determining whether safety behaviours can be used

judiciously in treatment of social anxiety will inherently need to be based on a thorough

empirically-based understanding of the interpersonal consequences of safety behaviour subtypes.

Armed with that understanding, however, clinicians ought to be able to develop more advanced

treatment protocols for socially anxious clients that potentially incorporate judicious use of

safety behaviours, and to improve treatment adherence for clients who might otherwise be too distressed to continue.

Together, these findings appear to provide some support for Moscovitch's (2009) emphasis on individual differences in the expression of social anxiety and the use of particular safety behaviours in relation to particular types of social concerns. Though the present study was not focused on a clinical sample of individuals with social anxiety disorder, participants across the social anxiety spectrum demonstrated heterogeneity in their endorsement of social concerns and use of particular safety behaviours. They did not report using all types of safety behaviours equally, nor did they report being equally likely to use safety behaviours in response to all types of social concerns. Additionally, trait social anxiety appears to add another layer of complexity to the model, with participants reporting their likelihood of using some safety behaviours being more influenced by anxiety than others. This heterogeneity highlights the importance of understanding the specific motivations and interpersonal consequences of using different types of safety behaviours. Thus, developing knowledge about a particular client's unique pattern of behaviour may be beneficial to developing more idiographic treatments that may help clients face their social fears more efficiently and gradually eliminate safety behaviours more judiciously.

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Appendix A: Vignettes

Vignette 1 (First-Person)

You are invited to a small dinner party where there will be people you don't know engaging in conversation around a table. As you enter the party, you begin to worry that you will look unattractive and that others will criticize your outfit as being unfashionable. You glance at yourself in the mirror and feel anxious.

To manage this situation, you decide to make excuses about your appearance and tell people at the party that the outfit you initially wanted to wear got damaged by the cleaners.

Vignette 1 (Third-Person)

A person is invited to a small dinner party where there will be people they don't know engaging in conversation around a table. As they enter the party, they begin to worry that they will look unattractive and that others will criticize their outfit as being unfashionable. They glance at themselves in the mirror and feel anxious.

To manage this situation, the person decides to make excuses about their appearance and tell people at the party that the outfit they initially wanted to wear got damaged by the cleaners.

Vignette 2 (First-Person)

You are asked out on a date by someone you have been wanting to go out with for a long time. As you are having dinner at a restaurant, you realize that your waistline is beginning to feel a little tight. You feel scared that your date will notice and think that you are overweight.

To manage this situation, you decide to position yourself so that your date cannot see your waistline and avoid getting up so as to not draw attention to your body.

Vignette 2 (Third-Person)

A person is asked out on a date by someone they have been wanting to go out with for a long time. As they are having dinner at a restaurant, the person realizes that their waistline is beginning to feel a little tight. They feel scared that their date will notice and think that they are overweight.

To manage this situation, the person decides to position themselves so that their date cannot see their waistline and avoid getting up so as to not draw attention to their body.

Vignette 3 (First-Person)

You wake up on the morning of your first day at a new job where you will start off by presenting your thoughts on a new project that the company is undertaking. You go to the washroom to wash up and, as you are brushing your teeth, you look at your reflection in the mirror and feel a pang of fear that others will judge you for your complexion.

To manage this situation, you decide to hide your face from coworkers for the remainder of the day so that they do not notice your complexion.

Vignette 3 (Third-Person)

A person wakes up on the morning of their first day at a new job where they will start off by presenting their thoughts on a new project that the company is undertaking. They go to the washroom to wash up and, as they are brushing their teeth, they look at their reflection in the mirror and feel a pang of fear that others will judge them for their complexion. To manage this situation, the person decides to hide their face from coworkers for the remainder of the day so that they do not notice your complexion.

Vignette 4 (First-Person)

Walking through campus, you run into a classmate you recognize from one of your large classes and begin to make small talk. After a few minutes, there is a short pause in the conversation. You begin to worry that you've run out of things to say and don't have anything interesting to contribute.

To manage this situation, you decide to listen to and watch your classmate closely to gauge their reactions to what you say and adapt your behaviour accordingly.

Vignette 4 (Third-Person)

Walking through campus, a person runs into a classmate they recognize from one of their large classes and begin to make small talk. After a few minutes, there is a short pause in the conversation. The person begins to worry that they've run out of things to say and don't have anything interesting to contribute.

To manage this situation, the person decides to listen to and watch their classmate closely to gauge their reactions to what they say and adapt their behavior accordingly.

Vignette 5 (First-Person)

You go to a friend's birthday celebration, knowing that you have not met many of their other friends. As you enter the party, you congratulate your friend, who introduces you to a large group of people standing nearby, saying that you're a very old friend. They all turn to you expectedly and you begin to feel scared that the others will find you boring.

To manage this situation, you decide to avoid eye contact and try to think of some ways you can excuse yourself from the conversation as quickly as possible.

Vignette 5 (Third-Person)

A person goes to a friend's birthday celebration, knowing that they have not met many of their other friends. As they enter the party, they congratulate their friend, who introduces them to a large group of people standing nearby, saying that they're a very old friend. They all turn to the person expectedly and the person begins to feel scared that the others will find them boring.

To manage this situation, the person decides to avoid eye contact and try to think of some ways they can excuse themselves from the conversation as quickly as possible.

Vignette 6 (First-Person)

Your supervisor at work comes up to you before your shift and introduces you to a new employee, asking you to help train and supervise the new team member. As the supervisor walks away, you look at the new employee and feel awkward. You're not sure how to interact with them naturally.

To manage this situation, you decide to check quickly in a mirror to make sure your face is not turning red before engaging with the new team member.

Vignette 6 (Third-Person)

A person's supervisor at work comes up to them before their shift and introduces them to a new employee, asking them to help train and supervise the new team member. As the supervisor walks away, the person looks at the new employee and feels awkward. They're not sure how to interact with them naturally.

To manage this situation, the person decides to check quickly in a mirror to make sure their face is not turning red before engaging with the new team member.

Vignette 7 (First-Person)

As you sit down at your desk in the small seminar class, the professor begins talking about the importance of this week's homework. After several minutes, the professor calls on you to share your answer for a specific question. As the class looks your way, you worry that others will notice your hands shaking and your face turning red.

To manage this situation, you decide to rehearse in your mind what you're going to say and think of a way to explain that you didn't have much time to prepare your answer.

Vignette 7 (Third-Person)

As a person sits down at their desk in the small seminar class, the professor begins talking about the importance of this week's homework. After several minutes, the professor calls on them to share their answer for a specific question. As the class looks their way, the person worries that others will notice their hands shaking and their face turning red.

To manage this situation, the person decides to rehearse in your mind what you're going to say and think of a way to explain that you didn't have much time to prepare your answer.

Vignette 8 (First-Person)

At your best friend's wedding, you are spontaneously asked to give a speech for the bride and groom in front of their families and all of the other guests. Everyone claps as you stand up but, as you begin to speak, you worry that your voice will sound shaky and that you will stutter some of your words.

To manage this situation, you decide to speak softly and use short sentences to avoid drawing too much attention to yourself.

Vignette 8 (Third-Person)

At their best friend's wedding, a person is spontaneously asked to give a speech for the bride and groom in front of their families and all of the other guests. Everyone claps as they stand up but, as they begin to speak, they worry that their voice will sound shaky and that they will stutter some of their words.

To manage this situation, the person decides to speak softly and use short sentences to avoid drawing too much attention to yourself.

Vignette 9 (First-Person)

You arrive for your weekly staff meeting at work and your boss invites you to present some of your new ideas to the group. As you stand at the conference table, you begin to notice that your face feels hot and that small beads of sweat are starting to run down your back. You worry that others will notice.

To manage this situation, you decide to put on your suit jacket to hide any sweat that shows through your top and comment to everyone how warm it is in the room.

Vignette 9 (Third-Person)

A person arrives for their weekly staff meeting at work and their boss invites them to present some of their new ideas to the group. As the person stands at the conference table, they begin to notice that their face feels hot and that small beads of sweat are starting to run down their back. They worry that others will notice.

To manage this situation, the person decides to put on your suit jacket to hide any sweat that shows through your top and comment to everyone how warm it is in the room.

Appendix B: Vignette Questions

Please answer the following questions using the following response options: (a) not at all, (b) a little bit, (c) somewhat, (d) very much, (e) extremely, (f) prefer not to answer.

1. How likely do you think you would be to use this particular strategy if you were actually in this situation?

2. How helpful do you think this strategy would be for making a good impression on those around you?

3. How effective do you think this strategy would be for avoiding making a bad impression on those around you?

4. If you noticed someone else using this strategy, how much would you want to interact or engage with them socially at the moment?

5. If you noticed someone else using this strategy, how much would you want to interact or engage with them socially in the future?

6. If you noticed someone else using this strategy, how friendly would you think the person was?

7. If you noticed someone else using this strategy, how likeable would you think the person was?