Exploring the cyclical relationship of self- and other-evaluations and its impact on cognitive, behavioural, and emotional outcomes in social anxiety

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ABSTRACT

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Cognitive models of social anxiety disorder (SAD) routinely discuss the cognitive biases (e.g., attentional, interpretation, memory) that contribute to thinking about oneself negatively before, during, and after social or performance situations. However, these models do not mention other impacts of negative self-evaluations—including negative evaluations of others—even though cognitive case formulations often include beliefs about oneself, others, the future, and the world. Importantly, CBT for SAD does not always lead to optimal subclinical symptoms at the end of treatment; suggesting that our most evidence-based treatments require modifications. Few studies have experimentally examined the presence of negative evaluations of others within social anxiety, which has led to inconsistent understanding about whether people with social anxiety demonstrate negative evaluations of others. These conflicting findings are even more complicated by no study examining if the negative self-evaluations that are commonly reported by people with SAD *cause* negative other-evaluations, and vice-versa. I outline two studies in this dissertation where I aimed to understand the relationship (or lack thereof) between negative self-evaluations and negative other-evaluations and its cognitive, behavioural, and emotional consequences. In Study 1, I randomly assigned an unselected sample (N = 152) to provide no-, medium-, or high-evaluations of a videotaped anxious person. Participants also took part in a 10-minute conversation task with a confederate posing as another participant. I measured social anxiety symptoms, state anxiety and electrodermal activity across four-time points, and several

measures related to self- and other-evaluations. Overall, my manipulation was effective as participants responded to the subsequent other-evaluations in the way I anticipated. Despite this, I found no differences between conditions on most of my primary self-evaluation outcomes. However, I observed that participants in the high-evaluation condition demonstrated poorer memory recall. In Study 2, I randomly assigned an unselected sample (N = 169) to receive positive, ambiguous, or negative false-feedback following a conversation task with a confederate. My manipulation was effective, and again, I found no differences between conditions on my primary other-evaluation outcomes. Participants in the negative-feedback condition reported greater state anger following the negative evaluation for the remainder of the study, compared to participants in the other conditions. Ultimately, evaluations of others were less problematic than I initially expected. Because I did observe cognitive and emotional consequences of this self-other process, these findings could have important implications for further refinement of SAD models and treatments using Cognitive Behavioural Therapy.

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DEDICATION

I dedicate this thesis to my mother, Angela. You were always my best friend and my biggest supporter. I know the completion of this thesis meant more to you than anyone else. Love you, mom.

CONTRIBUTION OF AUTHORS

The dissertation outlined in this document comprises two manuscripts:

Study 1 (Chapter 2): Ferguson, R. J., & Ouimet, A. J., & Gardam, O. (in press). Judging others makes me forget: Assessing the cognitive, behavioural, and emotional consequences of other-evaluations on self-evaluations for social anxiety. *Journal of Behavior Therapy and Experimental Psychiatry*. Pre-print available on PsyArXiv: Study 1 Pre-Print Link.

Study 2 (Chapter 4): Ferguson, R. J., & Ouimet, A. J. (under review). Negative self-evaluations do not cause negative other-evaluations: Findings from a false-feedback experiment examining cognitive and emotional consequences in social anxiety. Pre-print available on PsyArXiv: Study 2 Pre-Print Link.

Overall, I developed the initial research plan, including conducting literature reviews, planning the methodology, and creating a data analysis plan. These tasks were completed in collaboration with my research supervisor, Dr. Allison J. Ouimet. Members of my thesis committee (Dr. Andrea Ashbaugh, Dr. John Hunsley, Dr. Erin Maloney) provided feedback during the initial dissertation proposal, between data collection for Study 1 and Study 2 regarding online administration, and conducted a pre-read of this final dissertation. For both studies, I was responsible for the submission of ethics, training volunteers, recruitment of participants, testing participants, data preparation and analysis, and the writing of an initial draft prior to review by Dr. Ouimet.

For Study 1, Olivia Gardam (research volunteer) assisted greatly with extraction of electrodermal activity and contributed to revisions of the final manuscript. Olivia Gardam (research volunteer) and Kathleen McGuire (honours thesis student) assisted greatly with data

collection. Amélie Burla (research volunteer) and Catherine Sarginson (research volunteer) completed the initial video coding. Mohamed Ebeid (research volunteer), Jeremy Oueis (research coordinator), and Mia Painchaud (research volunteer) completed additional video coding following peer-review requests. Minor revisions have been incorporated into the current version of this manuscript, following feedback from peer review.

For Study 2, Amélie Burla (research volunteer), Mohamad Mehrez (research volunteer), Jeremy Oueis (research coordinator), Patrick Racine (research volunteer), Michela Rodriquez (research volunteer), Nicole Simmonds (research volunteer), Tara Snyder (honours thesis student), Anjali Thomas (research volunteer), and Philip Trepiak (research volunteer) assisted greatly with data collection. Kanika Dewan (research volunteer) and Jaidon MacLean (research volunteer) coded participants' written responses.

The two manuscripts described have been submitted (with one accepted for publication) for anonymous peer review and are virtually identical to those presented in Chapter 2 and Chapter 4 of this document. However, supplementary materials for both manuscripts (included as appendices) have been integrated into the dissertation for ease of reading and interpretation. For example, in Chapter 2, I moved the pilot study from supplemental materials to the main document before the experimental study. Additionally, I have made small revisions to the Study 1 manuscript following feedback from committee members including minor word changes and additional interpretation of results. These minor changes vary from the published manuscript.

Finally, both studies' research questions and hypotheses, methodologies, and data analysis have been pre-registered on the Open Science Framework (Open Science Project Pre-Registration Link). In addition, the de-identified datasets (including only age and gender to avoid

indirect identification) have been made publicly available and both manuscripts have been uploaded as Preprints on PsyArXiv.

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CHAPTER ONE:

GENERAL INTRODUCTION

Social anxiety disorder (SAD) is a pervasive mental health disorder characterized by intense fear and anxiety about the perceived negative evaluation from others in social or performance situations (American Psychiatric Association, 2013). In these situations, people with SAD routinely evaluate their thoughts, feelings, and behaviours negatively, compared to people without SAD (Beidel et al., 1985). SAD is one of the most prevalent psychiatric disorders as it affects between 12-13% of North Americans in their lifetime (Kessler et al., 2005; Kessler et al., 2012; Stein & Kean, 2000). Currently, Cognitive Behavioural Therapy (CBT) has the strongest empirical support for the treatment of SAD (Chambless & Ollendick, 2001; Deacon & Abramowitz, 2004; Mayo-Wilson et al., 2014; Stewart & Chambless, 2009). Typical CBT interventions for SAD include shifting one's attention externally—rather than internally, engaging in behavioural experiments, challenging negative assumptions, removing safety behaviours, and reducing post-event processing (e.g., Clark, 2001; Hofmann, 2007). Despite its support, some research indicates that about a quarter of clients undergoing CBT for social anxiety do not respond after 12 weeks of treatment (e.g., Heimberg et al., 1998) or only achieve a *moderate* reduction of symptoms at the end of the treatment protocol (Loerinc et al., 2015; Turner et al., 1996). Altogether, a gap appears to exist between clients who achieve symptom reduction and those who do not. One potential factor that could be related to the maintenance of SAD, yet has been only minimally explored, is the role of negative evaluations of others. Considering research from clinical and social psychology, and because CBT treatments highlight the cyclical role of thoughts, feelings, and behaviours, one possibility is that self-evaluations that are characteristic of SAD might *generalize* to how they evaluate other anxious people?

Social anxiety is a common experience; 61% of Canadians report feeling anxious in *at least* one social or performance situation (Stein et al., 1994). In these situations, people report experiencing distressing physical symptoms including blushing, trembling, heart pounding, and excessive sweating (Dell'Osso et al., 2003). These social anxiety signs—found in everyone to some degree at times—range from mild discomfort to extreme panic-like symptoms (Woody et al., 1997). According to SAD's diagnostic criteria, a person will experience a *clinical* level of symptoms if they report the hallmark features of social anxiety (e.g., fear of negative evaluation, endure or avoid feared situations, fear out of proportion to threat) and experience resulting significant distress or impairment in their daily lives (American Psychiatric Association, 2013). People with SAD commonly fear and avoid many social and performance situations, including giving speeches or presentations, performing in front of others, attending parties, and being assertive (Brown & Barlow, 2014). Their avoidance often also contributes to less occupational or educational attainment and difficulties in their social lives (American Psychiatric Association, 2013).

When working with a client with social anxiety, a CBT clinician might encourage them to take the perspective of another person (i.e., anxious or non-anxious) to highlight the disparities between how they evaluate themselves and how they evaluate others (*double-standard technique*; Leahy, 2017). Although this technique is helpful for many clients to reduce their negative predictions about others' negative evaluation of them (e.g., *If I noticed somebody sweating, I would just think they were hot)*, it may be less effective with some clients, who report a similarly high standard for the social performance of others as they do for themselves (e.g., *If I noticed somebody was sweating, I would think they were incompetent and weak)*. Unfortunately, despite anecdotal experience of clinicians recognizing this pattern in some of their clients, this

tendency has remained disproportionately understudied, compared to research on negative self-evaluations (but see Purdon et al., 2001; Roth et al., 2001). As such, it remains unclear whether holding high standards for others—and evaluating them negatively if their standards are not met—adversely impacts individuals with social anxiety. To deliver the most effective treatment to people with SAD, we need to identify and study factors that might interfere with progress during CBT. My goal in this dissertation was to explore the impact of other-relevant cognitive biases on cognitive, behavioural, and emotional outcomes related to social anxiety disorder.

Cognitive Biases in SAD

Research on SAD began to flourish after the introduction of Social Phobia as a clinical diagnosis in the Diagnostic and Statistical Manual of Mental Disorders – Third Edition (DSM-III; American Psychiatric Association, 1980). Researchers suggest that people with SAD are vulnerable to several cognitive biases (e.g., attention, interpretation, judgement, memory; Mathews & MacLeod, 1994; Steinman et al., 2014). Moreover, they contend that these biases are substantial enough to maintain—and possibly even cause—social anxiety (e.g., Rapee & Heimberg, 1997; Steinman et al., 2014). During the 1990s, two prominent cognitive models of SAD led to substantial changes in how clinicians conceptualize and treat the disorder. Clark and Wells (1995) emphasize the importance of self-focused attention among other causal and maintaining factors. In other words, they propose that misattributing—or making an error in perceiving—one's self-attention cues (e.g., blushing, stuttering, making a social blunder) and interpreting them as catastrophic is responsible for producing anxiety and anxiety-related negative outcomes. In another model, Rapee and Heimberg (1997) agree that self-focused attention is responsible for producing anxiety, while also underlining the role of threatening environmental information on the development and maintenance of social anxiety. For the

purposes of this dissertation, I will briefly summarize these two models 1) because they provide a framework for discussing subsequent cognitive biases, and 2) to highlight the lack of other-evaluations within these models.

Attention. Clark and Wells (1995) suggest that when a socially anxious person detects an audience in a social situation, a series of dysfunctional assumptions about themselves are activated: 1) excessively high standards (e.g., *I must always have something interesting to say*); 2) conditional beliefs about negative evaluation (e.g., *If I don't have something interesting to say, then people will think that I'm boring*); and 3) unconditional beliefs about the self (e.g., *I'm unlikeable*; Clark, 2001). These assumptions often lead to negative automatic thoughts (e.g., rejection, loss of status) about oneself, which in turn, focus one's attention inward. To illustrate, a person with social anxiety is about to give a presentation to their colleagues. According to Clark & Wells' model, they would notice that their hands are trembling. Consequently, they may assume that their colleagues also notice their trembling hands. They may even take the perspective of one of their colleagues, where they would imagine how they must look to them as they tremble during their presentation (Schultz & Heimberg, 2008). This example illustrates the *observer-perspective bias*, whereby a person reflects their own beliefs about themselves onto the vantage point of another (Wells & Papageorgiou, 1999). Altogether, this bias often causes problems for individuals with SAD, as it alters how they interpret the event (e.g., believes colleagues see their trembling hands → thinks they must be judging them negatively → increases anxiety).

Clark and Wells (1995) underscore that environmental threats are influential only *prior* to the initiation of self-focused attention. Although external threats are important, people with SAD view these threats through the lens of the *observer*, rather than their own. Rapee and Heimberg

(1997), in contrast, highlight the continued influence of *external* threat cues, in addition to one's internal representation of themselves. Using the previous example of the person presenting to their colleagues, according to Rapee and Heimberg (1997), while already focusing on how their trembling hands must appear to others, they will also be aware of their external environment and eventually notice one of their colleagues focused on their cellphone. Noticing this external cue would activate greater attention to their internal self-representation, which may lead them to think that their presentation is not going well and that they are boring (Schultz & Heimberg, 2008). As it pertains to my research, this theoretical model provides an initial suggestion that one's attention to external stimuli is not solely constrained to the observer-perspective bias.

Self-focused attention. In line with Clark and Wells' (1995) model of SAD, self-focused attention involves hypervigilance and misinterpretation of one's internal states, including cognitive, behavioural, emotional, and physical threat cues (Clark & Beck, 2010). Researchers have demonstrated that self-focused attention has many detrimental effects, including social performance deficiencies, negative self-evaluations, and difficulties performing tasks (e.g., Hope et al., 1989; Leigh et al., 2021; Woody et al., 1997).

When facing a social situation, an individual's attention can be focused internally (i.e., *self-focused*) or externally (i.e., *other- or task-focused*); however, a combination of both is more common (e.g., Rapee & Heimberg, 1997). When an individual engages in self-focused attention, their perspective narrows, consisting of their own thoughts, emotions, behaviours, and arousal (Bögels & Mansell, 2004; Hope et al., 1989; Spurr & Stopa, 2002). Research on other-focused attention underscores the shift in attention towards other people, their environment, or towards a task. Whereas studies suggest that other- or task-focused attention is beneficial (Bögels & Lamers, 2002)—at least compared to self-focused attention—previous descriptions do not reflect

the range of other-relevant experiences (i.e., when the *other* person is visibly anxious).

Consistent with existing cognitive treatments for SAD, shifting one's attention externally (i.e., *away* from the self) has been successful in reducing social anxiety symptoms (e.g., Warnock-Parkes et al., 2020; Woody et al., 1997). Nevertheless, I expect that not all externally focused attention is helpful for clients. In other words, what if the negative purported evidence gathered during self-focused attention (e.g., physical appearance, social competence; Moscovitch et al., 2015) also applied to one's view of other people in anxiety-provoking social situations? If this process occurs, does it play an important maintaining role in SAD?

Interpretation. Like research on attentional biases, researchers have also found consistent evidence that people with SAD *interpret* social or performance situations differently than people without SAD. Specifically, research findings have suggested that people with SAD interpret ambiguous social situations as *negative* and negative social situations as *catastrophic* (e.g., Beard & Amir, 2010; Chen et al., 2019). In a foundational study, Amir et al. (1998) observed that, compared to people with OCD and non-anxious people, people with SAD interpreted ambiguous social situations more negatively, but not for non-social situations. These findings provide initial evidence that interpretation biases are *context specific* for people with SAD. These findings have since been replicated in undergraduate (Constans et al., 1999) and adolescent (Miers et al., 2008) samples. Stopa and Clark (2000) added to these findings by incorporating *slightly negative* social situations, in addition to ambiguous and non-social situations. They observed that people with SAD gave more *catastrophic* interpretations to the slightly negative situations, compared to people with another anxiety disorder or people without an anxiety disorder.

Taken together, these findings suggest that people with SAD interpret social situations

differently than people without SAD. Related to my research plan, I aim to understand if modifying participants' interpretation of their conversation performance to be ambiguous or negative (compared to positive; Study 2) might contribute to subsequent differences in how they evaluate themselves and a visibly anxious person.

Memory. After people with SAD have focused on their own anxious thoughts, feelings, images, and behaviours in a social situation and interpreted the situation more negatively than it might have truly been, it is no wonder that the memory of these individuals is also impacted. Clark and Beck (2010) proposed an amalgamation of the foundational cognitive SAD models into a *three-phase model* (anticipatory phase, situational exposure, and post-event processing). Here, they suggest that a person's maladaptive schemas, perceived vulnerability to negative appraisal from others, and recollection of past social situations together influence the activation of self-focused attention *and* other maladaptive behaviours (e.g., ineffective safety behaviours, automatic inhibitory behaviours). According to this model, social anxiety is then maintained because people re-evaluate their own previous social performance following the event, which also leads to a biased memory of the event. Consequently, when they next anticipate a social performance event, they recall this biased memory, which leads them to make catastrophic predictions about the upcoming event and contributes to anticipatory anxiety and maladaptive beliefs. In this case, a feedback loop develops, wherein people's negative predictions about an upcoming event contribute to increased anxiety and associated maladaptive behaviours (e.g., complete avoidance, safety behaviours), which serve to further confirm their negative predictions.

Research suggests that self-focused attention can detract from one's attentional resources, which may hinder participant's ability to remember and recall facts from their conversation

(Ingram, 1990; Schultz & Heimberg, 2008). Given the scarcity of experimental research examining other-evaluations, we do not yet know if there are memory consequences of evaluating others. For my program of research, I am particularly interested if the process of negative other-evaluations of visibly anxious others might contribute to more focus on one's own signs of anxiety, which might impact participants' memory of their own conversation (Study 1).

Evaluations of Others

Compared to the cognitive bias literature (e.g., attention, interpretation, memory), research on evaluations (self or other) has been limited. There is existing evidence that evaluations come as a *secondary* reaction to cognitive biases. Clark and Wells' (1995) suggest that people with SAD hold high standards for their own social performance. When these high standards are not met, people with SAD tend to evaluate themselves *negatively*. In a similar vein, attention and evaluation are likely linked. Clark and Beck (2010) suggest when someone with SAD enters a social situation, their attention is turned inward (self-focused attention), which contributes to the activation of dysfunctional self-beliefs (e.g., *I am socially awkward*). In line with Clark and Beck (2010), these self-beliefs bias one's recollection of these events, which likely lead them to evaluate themselves negatively (e.g., boring, nervous, stupid, weak). I suspect that after repeated pairings of feeling anxious in social or performance situations and evaluating oneself negatively, that these evaluations might generalize to anxiety in *others*. Compared to people with low social anxiety symptoms, people with elevated social anxiety symptoms are more likely to overestimate the negative consequences (e.g., embarrassing, shame-inducing) of social blunders committed by others (Moscovitch, et al., 2012). Therefore, the primary goal of my dissertation is to better understand how people's evaluations of *themselves* and *others* might be related, which ultimately could have implications for the development and maintenance of

SAD.

In colloquial language, the term *evaluation* is frequently used and has many interchangeable synonyms (e.g., appraisal, assessment, judgement). For this reason, I believe research on evaluations has been lacking, or at least has a less identifiable literature base. Many studies appear to investigate similar concepts but have not used consistent terminology. For my studies, I refer to evaluation as the act of assigning positive or negative attributes towards oneself or another person (e.g., *I am boring, others are intelligent*). Although researchers have focused on the degree to which people with social anxiety demonstrate negative interpretation biases across numerous studies (see Hirsch et al., 2016, for a review), much of the focus is on how people interpret ambiguous social situations, and the degree to which they believe others will evaluate them negatively. My research is unique in that I am focusing on the relationship between how people evaluate themselves *and* others.

Evaluations of others may be an important mechanism that contributes to the maintenance of SAD. For instance, when one's high standards for others are not met (e.g., *when anxious, people should try to be cool, calm, and collected*), they might evaluate others negatively (e.g., *she's clearly nervous, she must be weak and incompetent*). Self-evaluation and other-evaluation likely do not operate in isolation. In other words, I propose that self- and other-evaluations work together within a feedback loop, wherein people who evaluate themselves negatively may also tend to evaluate others negatively, and *vice-versa*. This contention receives some support from previous literature examining stigma (including discrimination, prejudice, and stereotypes) related to seeking mental health services, including public (i.e., a *society's* belief that it is unacceptable to seek psychological services) and self-stigma (i.e., an *individual's* belief that it is unacceptable for *them* to seek psychological services; Vogel et al., 2017).

According to Corrigan (2004) both of these types of stigma contribute to reducing the likelihood that somebody who needs psychological services will seek them out. Moreover, Vogel et al. found that public and self-stigma are not independent. Rather, public stigma contributed to lower help-seeking attitudes *because* of self-stigma. In other words, participants appeared to have internalized public attitudes and applied it to themselves. Within the context of SAD, understanding if this type of relationship can extend to other forms of negative attitudes—particularly self- and other-evaluations could have important implications for the refinement of CBT for SAD.

Evidence of Negative Other-Evaluations. Understanding if and why people with SAD evaluate others who are visibly anxious negatively has been largely under-researched. This paucity is a problem because as scientist-practitioners, research informs clinicians to make modifications to their assessment, conceptualization, and treatment of SAD within a CBT framework. Simply put, if research findings are inconsistent, modifications for treatment are not made.

There is some evidence that people with elevated social anxiety symptoms or who have SAD display some negative evaluations of others. Purdon et al. (2001) investigated how people with high and low social anxiety symptoms view others with anxiety. People with high social anxiety symptoms rated an anxious other as less attractive and having less strength of character, but felt greater compassion for them, in comparison to people with low social anxiety symptoms. Similarly, following a 5-minute "getting acquainted" task, people with elevated social anxiety symptoms evaluated their partner more negatively—compared to people with low social anxiety symptoms—across many characteristics (e.g., intelligence, nervousness, trustworthiness; Niels Christensen et al., 2003). Findings from Roth et al. (2001) also suggest that people with SAD

rate the anxiety of others as more intense, compared to how they believe others rate their anxiety.

In their review, Alden and Taylor (2004) summarized that socially anxious people demonstrate behavioural patterns that are more critical, aggressive, or angry towards others. This theory was shaped by earlier findings that shy people *project* their self-evaluations onto their conversational partner (Jones & Briggs, 1984) and friends (Jones & Carpenter, 1986). Compared to people without an anxiety disorder, people with SAD reported greater levels of state and trait anger and displayed anger in response to negative evaluation (Erwin et al., 2003). More recently, these results have been replicated, which suggests that people with low social anxiety respond to rejection with *prosocial* actions, whereas people with high social anxiety demonstrate strong aggressive and avoidance reactions (Weerdmeester & Lange, 2019).

Whereas many studies suggest that people with SAD demonstrate aggressive or angry behaviours when faced with criticism or rejection, or otherwise report negative evaluations of others, not all findings support these results. Many studies find that people with social anxiety are more critical of their own performance than the performance of others (e.g., Clark & Arkowitz, 1975; Rapee & Lim, 1992), or even demonstrate *positive* evaluations of others (Alden & Wallace, 1995; Stopa & Clark, 1993). In contrast, several studies have found there are no differences in how people with SAD or people with elevated social anxiety symptoms versus without view other anxious people. For example, Ashbaugh et al. (2005) examined how students with low versus high social anxiety differed in their evaluations of videos of a confident or an anxious speaker; regardless of video condition, participants did not differ in their ratings of the target individual. Bielak and Moscovitch (2013) also found that high socially anxious participants were no harsher in their ratings of a hypothetical nervous interaction partner than those with low social anxiety. Gee et al. (2012) found that one's *own* level of social anxiety was

not related to their evaluations of others after watching videos of anxiety disclosures. Furthermore, using a cluster analysis, we (Ferguson & Ouimet, 2021) recently demonstrated that people with varied levels of social anxiety (measured as a continuous variable) evaluate anxious people differently (i.e., more/less positive and negative judgements). However, there were no clusters of participants who reported *strongly negative* judgements of anxious people.

Nevertheless, I interpret many of these previous findings with caution. Due to many studies using diverse research designs, all participants were not exposed to the same stimuli (i.e., confident/anxious speaker; confident/anxious interaction partner; no anxiety/no disclosure, anxiety/no disclosure, anxiety/low disclosure, anxiety/high disclosure) within the same study. As such, all participants in my studies viewed the same video stimuli. In addition, although many studies in this area incorporate other-evaluation tasks (i.e., rating pre-recorded speeches) in their studies related to self-evaluation (i.e., speech tasks; Ashbaugh et al., 2005; Bielak et al., 2018), none have examined how participants' other-evaluations *contribute* to their self-evaluations, leaving open the question of whether self- and other-evaluations actually cause and maintain each other.

Indeed, very few researchers have *directly* examined other-evaluations as their primary hypothesis. As a result, researchers appear to use various terms when discussing evaluations of others, have examined other-evaluations as either secondary or tertiary research questions, or appear to have conducted analyses related to other-evaluations to understand their primary results. These research trajectories have led to a less clear definition or operationalization of this phenomenon. Moreover, researchers frequently use written vignettes or research confederates to better understand social anxiety. However, in these studies, there is often little focus on describing the *other* person. For example, Amir et al. (1998) examined how individuals with

social anxiety interpret self- and other-relevant social (e.g., *Someone you are interested in dating says, "hello" to you*) and non-social (e.g., *You receive a phone call from a clerk at your bank regarding your loan application*) situations. Although they found that people made more negative interpretations for self-relevant than for other-relevant situations, participants were instructed to rate how they viewed a *typical person*. These instructions limit what we know about other-evaluations, especially as they pertain to how people with social anxiety view other *anxious* people. When participants with or without SAD are not presented with a clear picture of the other person they are evaluating, I suspect that participants will make interpretations about this person based on their own anxiety and experiences with others. Therefore, studies examining other-evaluations may be most useful if they fully describe or provide appropriate information about the "other" in being evaluated (e.g., anxious vs. non-anxious). Another limitation of the existing other-evaluation research is the emphasis on observational rather than experimental methods to understand the existence of other-evaluations. Although these studies have been foundational in providing greater understanding of these types of evaluations, they do not provide information about *causal* or maintaining relationships.

Thus, given the conflicting findings, it is currently unclear whether individuals with SAD (versus those without) are any more likely to negatively evaluate the emotions or behaviours of others with anxiety. Given that one of the primary objectives of CBT is to reduce cognitive biases (Hofmann, 2007), I wonder—given the gap in knowledge regarding negative other-evaluations—if clinicians may not be appropriately treating the full gamut of their cognitive biases, since we do not yet know the magnitude of negative other-evaluations.

Findings from Social Psychology

Cognitive models of SAD have led to significant advancements in the treatment of SAD.

However, some researchers suggest that theories of SAD—a conceptually *interpersonal disorder*—have neglected the effect of interpersonal processes. For example, Alden and colleagues (Alden & Phillips, 1990; Alden & Taylor, 2004; Alden & Wallace, 1995) proposed an interpersonal perspective for understanding SAD, which complements existing cognitive models. Next, I will discuss interpersonal models as they pertain to the possible existence of negative other-evaluations, rather than provide an extensive overview of the interpersonal perspectives of SAD.

Interpersonal models. Compared to existing cognitive models of SAD, Alden (2001) explains that SAD is not maintained in isolation; in other words, one's own perceptions and behaviours *contribute* to perceptions and behaviours in others. Regarding the term *perception*, I believe the authors are describing a similar process to cognitive psychologists (Clark, 2001) including orienting one's *attention* to an interaction and subsequently making *assumptions* about how one is coming across to others (e.g., evaluation). The self-perpetuating transaction cycle includes: 1) our perception of someone else; 2) how we act toward the person; 3) how the person interprets our actions; and 4) how the other person responds to us in return. Benjamin (1993) also describes three ways early relationship patterns apply to current relationships: re-enactment, identification, and introjection. For the purposes of this dissertation, I focus on *identification* as Benjamin proposes that this pattern leads people to treat *others* in the ways that they have been previously treated. Although this theory has broad applications, it is directly applicable to SAD. To illustrate, if a person with SAD has a socially traumatic memory of being criticized after blushing during a presentation, as an adult, they might subsequently demonstrate negative evaluations of people who blush.

In addition, traditional cognitive models could be included within this transactional cycle,

wherein attention and interpretation biases could contribute to one's *perception* of an anxious person, which would initiate the cycle. Relatedly, there might also be a precedent for negative other-evaluations using this cycle. For example, if someone 1) negatively *perceives* someone with visible anxiety like they perceive themselves (e.g., *boring, incompetent, weak*); 2) they may act less interpersonally effective or appear standoffish; 3) which might then be perceived by the other person as aggressive or rude; and 4) would be interpreted by the person with SAD as evidence that they are negatively evaluated or unlikeable.

Other social psychology perspectives of SAD focus on the impact of *self-presentation* (Schlenker & Leary, 1982). Particularly relevant to the concept of negative self-evaluations, Leary (2001) outlines the process of assigning self-attributions. Compared to people without SAD, people with SAD do not experience self-serving attributions (e.g., taking credit for a positive experience or blaming others for a negative experience) when negative experiences occur, people with SAD often accept these pieces of negative feedback (Alden, 1987).

Social Projection Theory. One theory in particular from social psychology literature—social projection theory—may be especially important to understanding the role of negative other-evaluations in people with SAD. Social projection theory is a process wherein people project their own thoughts, feelings, and behaviours onto other people (e.g., Baumeister & Vohs, 2007)—a relatively automatic process that leads people to think that others are more *similar* than *different* from us. To the best of my knowledge, no previous studies have examined social projection theory as it may apply to social anxiety; therefore, I will be speculating on how social projection theory *could* be related to social anxiety. However, Krueger (2007) has related social projection theory to the relationship between judgements of the self and judgements of others (irrespective of social anxiety). Taking together the cognitive and interpersonal models of SAD

with social projection theory, I am speculating that self-focused attentional biases, coupled with the overestimation of social flaws (Moscovitch et al., 2012), may lead people to evaluate other visibly anxious people using one's *own* negative self-attributions (Leary, 2001).

Experimental Psychopathology

The aim of experimental psychopathology research is to examine the impact of hypothesized mechanisms on the development and maintenance of a mental health disorder via experimental paradigms (Zvolensky et al., 2001). Experimental psychopathology research has been instrumental in the refinement of research, theory, and treatment of various mental health disorders (see Ouimet et al., 2021). For my dissertation, I conducted two experiments that aim to explore and understand mechanisms that could be related to the development and maintenance of SAD. To do this, I used an *unselected* sample of participants (i.e., undergraduate students and community members); meaning a group of people with a *range* of social anxiety symptoms. Because anxiety in one or more social or performance situations is common (61% of Canadians; Stein et al., 1994), I expect that many of the participants in both of my studies will experience at least some social anxiety in some situations. Consistent with other research (16.1% of a university sample have symptoms that met criteria for SAD; Tillfors & Furmark, 2007), I expect that a small portion of participants in my research will have symptoms at clinical threshold.

I chose an unselected sample on purpose—like many other experimental psychopathology studies (e.g., Alcolado & Radomsky, 2011; Gagné et al., 2021)—because I am trying to *recreate* my hypothesized mechanism in people who do not necessarily have SAD and observe the outcomes. In other words, I want to know whether other-evaluations lead to self-evaluations in general. If those processes are linked, we would observe this phenomenon across people with and without SAD. Another benefit of recruiting participants with a range of social

anxiety symptoms is that is allows me to examine the impact that their social anxiety symptoms have on our primary outcome variables of interest. In this case, experimental psychopathology offers many benefits for researchers including testing proposed mechanisms with convenience samples prior to recruiting people with SAD.

Another element of experimental psychopathology research is the use of experimental conditions, including control (or comparison) groups. Although the "active" condition is often the most stimulating (i.e., high-evaluation, negative-feedback), some researchers believe that choosing control groups can be just as important and potentially more challenging (Blackwell et al., 2017). Because people with SAD experience several cognitive biases (e.g., attention, interpretation, memory), it was important to consider these when developing my conditions. For instance, in Study 1, I am interested in understanding if *only* a high degree of other-evaluations are related to negative self-evaluations, or do *some* other-evaluations lead to similar findings? In Study 2, I posed a different question: would ambiguous feedback (compared to positive feedback) be interpreted similarly or differently than negative feedback? Thus, I conducted two experiments that test causal and maintaining roles of self- and other-evaluations, which I hypothesize could be related to SAD, and might explain why some people do not respond to CBT treatments as expected.

Current Studies

My primary aim for my dissertation was to explore the historically under-researched relationship between negative self-evaluations and negative other-evaluations as it pertains to social anxiety. A limitation of the existing research is that many studies use only observational methods, do not examine other-evaluations as primary research questions, and do not use *visibly* anxious people as their target of other-evaluation. For my studies, I attempted to account for

these methodological and theoretical barriers to understand the role of other-evaluations in social anxiety. In Study 1, I experimentally tested whether negative other-evaluations *cause* negative self-evaluations (see Figure 1). Participants (N = 152) were randomly assigned to provide no-, medium-, or high-evaluations towards a visibly anxious person while watching a videorecorded conversation. I recorded state anxiety ratings and physiological arousal at four time points (i.e., baseline, anticipation of conversation, peak during conversation, during the Video Evaluation Task). Then, participants completed a 10-minute impromptu conversation task with a confederate posing as another participant. I also measured several cognitive outcomes (comments about anxious person; subjective performance evaluations; evaluations of character; cued recall) throughout the study procedure. Behavioural indicators of conversation performance were completed after data collection by independent coders unaware of the study hypotheses. I hypothesized that, compared to participants in the no- and medium-evaluation conditions, people who gave high-evaluations towards the visibly anxious person would: write more negative comments and report more strongly negative evaluations about the anxious person; experience greater subjective anxiety and physiological arousal; display greater social performance flaws; report more strongly negative evaluations of themselves; and recall fewer correct facts from their conversation.

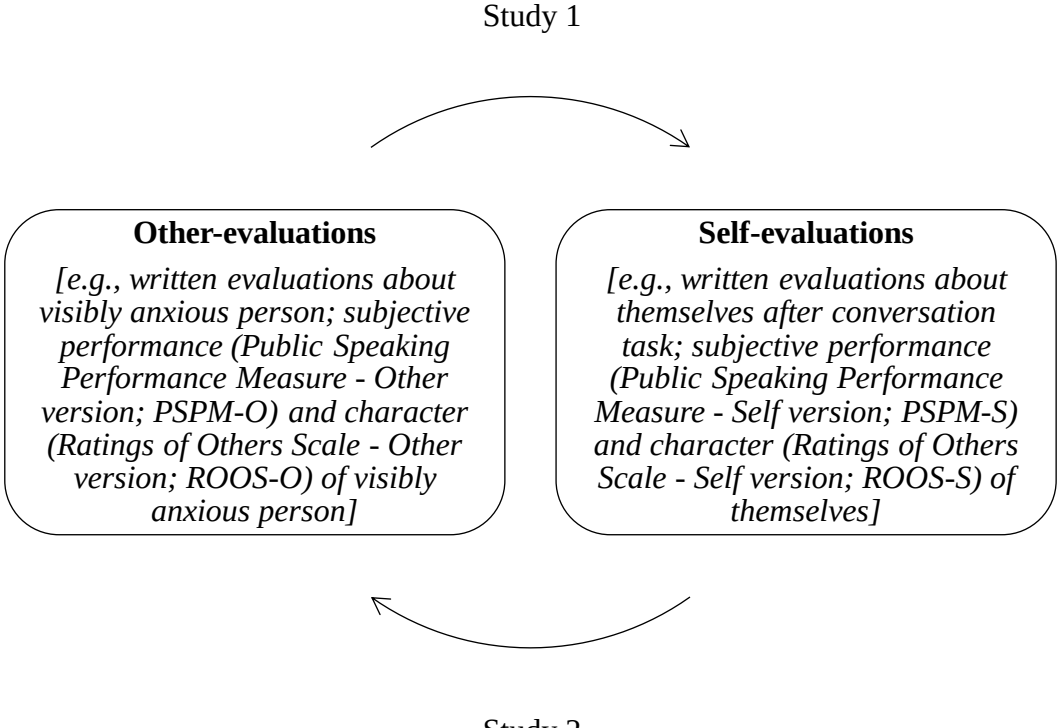
I designed Study 2 to answer the *opposite* question posed by Study 1: do negative self-evaluations *cause* negative other-evaluations. Because CBT often emphasizes the cyclical role of thoughts, feelings, and behaviours (Greenberger & Padesky, 2015), I was interested in examining both sides of my hypothesized coin of negative self- and other-evaluations. Participants (N = 169) completed a similar procedure as Study 1, but in the reverse order, and completely online via Zoom and Qualtrics, given COVID-related public health restrictions. Participants first

completed the impromptu conversation task with a confederate posing as another participant while a social skills judge ostensibly evaluated their performance. Participants then received false-feedback (positive-, ambiguous-, negative-feedback) from the social skills judge and were asked to evaluate themselves on various questionnaires. After, participants watched a videorecorded conversation including a visibly anxious person and evaluated this person's observable social performance and their character. I hypothesized that, compared to participants in the positive- and ambiguous-feedback conditions, participants in the negative-feedback condition would: write more negative comments and report more strongly negative evaluations about themselves after their conversation; experience greater subjective anxiety; write more negative comments and report more negative evaluations about the anxious person.

I pre-registered the hypotheses, methodology, and data analysis plan for both studies on the Open Science Framework prior to data collection (Study 1 Open Science Pre-Registration Link; Study 2 Open Science Pre-Registration Link). To promote transparency and encourage replication of my findings, I have also shared de-identified data sets publicly on the Open Science Framework.

In my dissertation, I aim to examine this phenomenon using carefully designed experiments and committing to open science practices. Because there are inconsistent findings in the literature on other-evaluations, I suspect that whether I observe the presence of other-evaluations (and associated consequences) or not, my results are still important, as my findings will help to clarify these inconsistencies. Furthermore, I hope my findings will provide insights into whether self- and other-evaluations are as problematic for the development and maintenance of SAD as I initially anticipated, or if further research for specific people, is warranted.

Figure 1. An illustration of the proposed cyclical relationship between self- and other-evaluations.



CHAPTER TWO:

Judging Others Makes Me Forget: Assessing the Cognitive, Behavioural, and Emotional Consequences of Other-Evaluations on Self-Evaluations for Social Anxiety

Early cognitive models of social anxiety disorder (SAD) suggest people with social anxiety hold high standards for their social performance and demonstrate a biased view (i.e., attention, memory, interpretation) of themselves during situations wherein they perceive themselves as a social object (i.e., self-focused attention; Clark & Wells, 1995; Rapee & Heimberg, 1997). This attention further activates dysfunctional beliefs (e.g., *I need to calm down*) and perpetuates anxiety and negative self-evaluations (e.g., *I'm awkward*; Clark & Beck, 2010). Because Cognitive Behavioural Therapy (CBT) models emphasize the cyclical role of thoughts, feelings, and behaviours (Greenberger & Padesky, 2015), these negative self-evaluations may lead some people to judge others' anxiety (e.g., *she's nervous and awkward*) similarly to how they judge their own anxiety (e.g., *I'm feeling anxious, they must think I'm awkward*). Following the CBT model, our primary aim was to experimentally test whether the degree of negative evaluations (no-, medium-, high-evaluation) of an anxious person can *cause* people to evaluate themselves more negatively by investigating relevant cognitive (e.g., self-evaluations, memory), behavioural (e.g., coders' ratings), and emotional (e.g., state affect) variables.

Given SAD's characterization as an interpersonal disorder (Alden & Taylor, 2004), social psychologists have used existing interpersonal models to explain SAD's predisposition, precipitation, and perpetuation. Benjamin (1993) identified behavioural patterns that people tend to demonstrate, such as *identification*—evaluating others in the same way that they have been evaluated. Identification may relate to *social projection*, the automatic cognitive process wherein

people believe others are similar to them (Baumeister & Vohs, 2007). According to this theory, when exposed to a person who appears anxious, people with social anxiety who engage in negative self-evaluation (e.g., *I'm socially incompetent*) *project* their own evaluations onto others (Krueger, 2007; e.g., *she's socially incompetent*). Despite evidence from social psychology supporting that people with social anxiety *could* judge others negatively, this concept has not been sufficiently translated into psychopathology research.

Although research on negative evaluations of others is sparse relative to research on negative self-evaluations, there are important findings that direct our research. Jones and Briggs (1984) concluded that shy people *project* their self-evaluations onto others, as they rated their conversation partner and friends (Jones & Carpenter, 1986) less favourably than non-shy people, supporting the contention that individuals with social anxiety hold negative biases of social situations (Clark & Wells, 1995). Researchers found that people with elevated social anxiety, compared to people without: overestimate negative consequences of social blunders by others (Moscovitch, et al., 2012); evaluate hypothetically anxious people negatively (e.g., less attractive; Purdon et al., 2001); demonstrate a *general negative bias* towards themselves and others (Roth et al., 2001); and evaluate their conversation partner *more negatively* (Niels Christensen et al., 2003). More recently, Ferguson and Ouimet (2021) observed that people with varying levels of social anxiety demonstrate differential patterns of evaluations of anxious others (e.g., more/less positive and negative judgements). Research related to negative evaluations of anxious people may have proliferated less than other social anxiety research (e.g., safety behaviours, post-event processing, etc.) because of fewer experimental studies investigating the causes and consequences.

Compared to people without SAD, people with SAD show *less* interpersonal effectiveness (e.g., appears as though they are not listening, greater anxiety signs reported by conversation partners; Heimberg, 2002; Heimberg et al., 2010). A potential explanation for these findings is related to attention and memory. Cognitive models of SAD suggest that when someone engages in self-focused attention (Clark & Wells, 1995) and focuses on external sources of threat (Rapee & Heimberg, 1997), negative consequences (e.g., negative self-evaluation, post-event processing) occur. This type of attention often contributes to re-activating early memories of social exclusion (e.g., Hackmann et al., 2000) and orienting people's attention to their internal experience rather than to their surroundings (Clark, 2001). When people are focused on their internal thoughts, images, feelings, and physical sensations, their attentional resources for other stimuli are necessarily reduced (Woody et al., 1997). Consistently, findings suggest that people with social anxiety demonstrate poorer memory recall for their social interactions (e.g., Daly et al., 1989; Hope et al., 1990), and particularly for situations with positive outcomes (Romano et al., 2020). Consequently, if we induce people to feel anxious in a social situation, and they therefore engage in self-focused attention, we would expect them to remember less information about their conversation partner.

Despite some findings supporting projection of negative self-evaluations onto others, other researchers have failed to find consistent support for this theory. Many findings suggest that socially anxious people demonstrate positive evaluations of others (e.g., Alden & Wallace, 1995; Stopa & Clark, 1993). Furthermore, greater levels of social anxiety did not lead to more negative evaluations of: an anxious presenter (Ashbaugh et al., 2005); people disclosing (or not disclosing) their anxiety (Gee et al., 2012); or a hypothetical nervous interaction partner (Bielak & Moscovitch, 2013). Potential reasons for the equivocal findings in the literature include

participants not viewing the same video stimuli, using written vignettes describing anxious people rather than recorded interactions, focusing primarily on self-evaluation (i.e., exploratory rather than hypothesis-driven tests related to other-evaluations), or using between-participants designs (i.e., watching only one stimulus). We attempted to rectify these methodological limitations and designed our experiment so that *all* people participated in the exact same tasks, to reduce potential confounds and account for within-participant variation.

Current Study

Experimental psychopathology has been at the core of the development and refinement of CBT for various mental health disorders (Ouimet et al., 2021). In experimental psychopathology, researchers frequently use unselected samples (i.e., participants from the general population who likely report a range of mental health symptoms) when experimentally manipulating a process that is hypothesized to be related to a mental health disorder. We used an unselected sample of participants to test our hypothesis that other-evaluations are an important mechanism that may contribute to the cause and maintenance of negative self-evaluation and social anxiety symptoms. If other-evaluations, on their own, lead to self-evaluations, we should see the effect in people who do not necessarily have SAD. If the process exists among people with SAD, recruiting a clinical sample may actually obscure the impact of the manipulation (i.e., there may be ceiling effects). Additionally, an unselected sample enabled us to include people with a range of social anxiety symptoms and thus conduct a moderation analysis to explore the influence of baseline social anxiety symptoms on the primary outcome variables. Indeed, if individuals with social anxiety demonstrate negative evaluations of people who are anxious, it may be an important mechanism to target in CBT. In our current experiment, we manipulated evaluations of a videotaped anxious person, to test whether degree of negative evaluations *causes* people to

evaluate themselves more negatively after a conversation task. We investigated the effects of negative other-evaluations on social anxiety-relevant cognitive, behavioural, and emotional outcomes. After piloting the anxiety-relevance of the video and the effectiveness of the manipulation with a separate sample (see Pilot Study), we randomly assigned unselected participants to one of three experimental conditions: high-evaluation, medium-evaluation, or no-evaluation. After providing their comments about the anxious person, they participated in an *impromptu* conversation task with a confederate (while having their electrodermal activity recorded), subsequently rated their own performance and anxiety, and completed a memory test. Finally, video coders, unaware of the study goals or hypotheses, evaluated participants' outward signs of anxiety. We anticipate these findings will be an important first step in identifying how self- and other-evaluations work together to potentially perpetuate symptoms of SAD.

Pilot Study

Prior to collecting data for our experiment, we piloted the three videos created for the current study and our three manipulation instructions, to: 1) determine which video most clearly depicted an anxious person, and 2) evaluate the usefulness (i.e., clarity, harshness, feedback) of our manipulation instructions (i.e., clarity, harshness, feedback). We had no hypotheses for which video would demonstrate the most anxiety, according to participants. For the manipulation instructions, we expected that participants would give the harshest evaluation and the most amount of feedback in the high-evaluation condition, compared to the other two conditions. We pre-registered the methods, hypotheses, and analysis plan on the Open Science Framework prior to collecting any data (Pilot Study Open Science Pre-Registration Link).

Method

Participants

Twenty-nine participants aged 18 to 55 (M = 29.45, SD = 10.01) years were recruited from a university participation pool for course credit and *via* advertisements on social media for entry into a draw. Two of the individuals did not complete the second part of the study (i.e., instructions); however, the remainder of their data were complete and were thus retained. 93.1% of the sample claimed to be completely fluent in English. Only 2 participants (6.9%) reported understanding approximately 90%. Participants' self-reported sociodemographic information is presented in Table 1.

Measures

We used the Public Speaking Performance Measure-Other version (PSPM-O; Rapee & Lim, 1992) as an indicator of the *subjective performance* of the person with visible anxiety in the video. The PSPM is a 17-item self-report measure that evaluates overt behaviours related to public speaking (e.g., *stuttered, fidgeted, appeared nervous*). Participants rated these items on a 5-point Likert-type scale from 0 (*not at all*) to 4 (*very much*), where a higher score indicated worse performance. A total score for each version is calculated by reversing the appropriate items and then summing all items. The PSPM demonstrated good to excellent internal consistency (α = .79-.86) and good inter-rater reliability (r = .86-.93; Rodebaugh & Chambless, 2002). In our current pilot sample, the PSPM demonstrated acceptable internal consistency (α = .72 - .79).

We created the Ratings of Others Scale (ROOS) to assess participants' evaluation of the *character* of the person with visible anxiety. It includes 10 positive (*ambitious, attractive, compassionate, intelligent, interesting, leader, mentally healthy, reliable, socially skilled, strong character*) and 10 negative (*awkward, boring, failure, foolish, humiliated, inadequate, nervous, stupid, weak, worthless*) attributes, which have been used in previous research (de Jong, 2002;

Table 1. *Sample characteristics for Pilot Study*

Variable	*n*	*%*
Gender		
Women	21	72.4%
Men	8	27.6%
Ethnicity / Race		
White	19	65.5%
Asian	3	10.3%
Indigenous	1	3.4%
European	4	13.8%
Black	1	3.4%
South Asian	1	3.4%
Relationship Status		
Married	9	31.0%
Living Together	8	27.6%
Single	6	20.7%
Long-Term Relationship	5	17.2%
Divorced	1	3.4%
Self-Reported Previous Psychological Dx		
Yes	7	24.1%
No	22	75.9%

Note. $N = 29$.

Egloff & Schmukle, 2002; Gee et al., 2012; Purdon et al., 2001). We asked participants to rate each attribute from -3 (*strongly disagree*) to 3 (*strongly agree*). Two subscale scores are calculated by adding all positive attributes together and all negative attributes together and dividing each by 10. The range of the ROOS total score is from -3 to +3 (one positive attribute score, one negative attribute score). More positive scores reflect more agreement with either the positive or negative attributes. Scores near 0 suggest that participants neither agreed nor disagreed with the attributes. In our current pilot sample, the PSPM demonstrated acceptable internal consistency (α = .72 - .79).

To help prepare for our experimental study, we asked participants to rate 1) how *anxious* the anxious conversation partner in the video looked, and 2) if they would *notice* their anxiety right away on a scale from 1 (not very anxious/not at all) to 7 (very anxious/very much so). After the participants read each manipulation instruction paragraph (see Pilot Manipulation Instructions Link for instructions, we asked them three questions: 1) how *clear* was it for you to understand what we wanted you to do (e.g., evaluate the person in the video); 2) how *harshly* would you evaluate the person; and 3) how much *feedback* would you write down on a scale from 1 (not very clear/not very harshly/I would write no feedback) to 7 (very clear/very harshly/I would write a lot of feedback). Finally, after each question, participants were invited to provide qualitative information to enhance their answer.

Procedure

All videos and questionnaires were administered on Qualtrics™. Participants were told the study's purpose was to validate new tools for studying social interactions. Participants first watched the three videos (in a completely randomized order; "First Date" Stimuli; "Job Interview" Stimuli; "Stranger Meeting" Stimuli). For each video, they completed the PSPM-O

and ROOS, as well as the two self-report questions about the partner's anxiety. Participants were then asked to read the three manipulation instruction paragraphs (in a completely randomized order). After reading each paragraph, they were asked to rate its clarity, the degree to which they would provide harsh feedback, and the amount of feedback they would provide.

Power Analysis

We conducted an *a priori* power analysis using G*Power 3.1 (Faul et al., 2009) to determine an appropriate sample size for the pilot study, for which analyses included a series of within-subjects repeated measures ANOVAs. (f = .30, α = .05, power = .80; Tabachnik & Fidell, 2007). The total estimated sample size was 20 participants.[1]

Results

Data Preparation

Data were prepared by reverse coding the appropriate PSPM-O items and calculating a total score for each video. Total positive and negative ROOS scores were also calculated by summing the appropriate items for each video. This dataset is available on the Open Science Framework (Pilot Study Open Dataset); thus, all identifying information other than age and gender was removed.

Video Ratings

To determine which video would be used in our experiment, we conducted five repeated measures ANOVAs, one for each dependent variable. There were no differences in how participants evaluated the anxious partner's subjective performance (PSPM-O), $F(2, 56) = .37$, p

[1] Originally, I conducted a power analysis for a 3 (stimuli) x 2 (PSPM-O, ROOS) ANOVA, repeated measures within-between interaction. This analysis resulted in an estimated sample of n = 30 participants. However, two separate one-way ANOVAs (one for PSPM-O; one for ROOS) was ultimately more appropriate and required a sample of only n = 20. After realizing I needed to change my planned analysis, I conducted the second power analysis once data collection had finished, which is why there are n = 9 additional individuals.

= .69, η^2_p = .01 or their positive and negative evaluations about the anxious conversation partner's character (ROOS), respectively, $F(2, 56) = .23$, $p = .79$, $\eta^2_p = .01$; $F(2, 56) = .27$, $p = .76$, $\eta^2_p = .01$. A moderate effect approaching statistical significance suggests that participants thought the conversation partner looked most anxious in the first date ($M = 6.07$, $SD = 1.03$) video, compared to the strangers meeting ($M = 5.59$, $SD = 1.32$) or job interview videos ($M = 5.41$, $SD = .91$), $F(2, 56) = 3.06$, $p = .06$, $\eta^2_p = .10$. Participants reported that they would be most likely to notice the person's anxiety right away in the first date ($M = 5.69$, $SD = 1.51$) and job interview ($M = 5.55$, $SD = 1.35$) videos than in the strangers meeting video ($M = 4.83$, $SD = 2.04$), $F(2, 56) = 3.89$, $p = .03$, $\eta^2_p = .12$.

Manipulation Instructions Results

To test if our manipulation instructions were clear and would lead to appropriate evaluation and feedback in our experiment, we conducted three repeated measures ANOVAs. As previously mentioned, two of the participants did not complete this part of the survey ($n = 27$). There was a significant difference in how participants rated the clarity of the three manipulation instructions, $F(2, 52) = 3.32$, $p = .05$, $\eta^2_p = .11$. Participants reported the medium-evaluation condition ($M = 6.41$, $SD = .84$) was the clearest, compared to the no- ($M = 5.48$, $SD = 1.60$) and high-evaluation conditions ($M = 5.96$, $SD = 1.43$). However, as the maximum score for clarity was 7, participants overall rated all instructions as relatively clear. Regarding the harshness of their hypothetical evaluations, there was another significant difference between the conditions, $F(2, 52) = 5.09$, $p = .01$, $\eta^2_p = .16$. Participants reported they would give the harshest feedback in the high-evaluation ($M = 5.19$, $SD = 1.36$) condition. They reported they would provide less harsh feedback in the no- ($M = 4.15$, $SD = 1.73$) and medium-evaluation ($M = 4.41$, $SD = 1.47$) conditions, which did not differ. As expected, participants differed in the amount of feedback

they would write for each condition, $F(2, 52) = 5.38$, $p = .01$, $\eta^2_p = .17$. Participants reported they would write the least amount of feedback in the no-evaluation ($M = 3.74$, $SD = 1.87$) condition, compared to the other two conditions. To our surprise, participants reported they would write the same amount of feedback in both the medium- ($M = 4.67$, $SD = 1.71$) and high-evaluation ($M = 4.67$ $SD = 1.66$) conditions.

Discussion

The purpose of this study was to pilot three videos created by our lab and three manipulation instructions to 1) determine which video should be used in our experiment, and 2) assess if the manipulation instructions would lead participants to answer in accordance with the amount of harshness and feedback that we instructed. Because participants' ratings of the anxious person's observable behaviour and personal character (i.e., evaluation) were similar across the three videos, we focused on their ratings of the person's anxiety and the noticeability of their anxiety. Although not significant at the $p < .05$ level, the first date video had the highest mean anxiety ratings, and the anxiety in the first date and job interview videos were significantly more noticeable than the strangers meeting video. Given that the first date video was rated highly in the anxious and noticeability variables, we selected it to be used in our experiment.

As for the instructions, unsurprisingly, participants believed the no-evaluation instructions were the least clear. Given that we asked "how clear was it for you to understand what we wanted you to do (e.g., evaluate the person in the video)?" we would expect this to be the lowest as they were not told to evaluate anyone. However, we were surprised that the no- and high-evaluations did not differ. Perhaps because the question was asking only about "evaluating the person", participants may have thought that both instructions required them to evaluate equally. In line with our hypotheses, participants indicated they would be mostly likely to give

the harshest evaluation in response to the high-evaluation instructions. Unexpectedly, there were no differences between the no- and medium-evaluation conditions. This finding may be attributable to some participants misunderstanding or misreading the instructions, as the no-evaluation instructions ask participants to passively watch the video. To account for this possibility, we trained experimenters for the larger study to verbally emphasize certain words (i.e., high-evaluation: "this video *must* represent *excellent* social skills" and "we need you to tell us *everything* that might be viewed negatively about this person's social skills"; medium-evaluation: "this video is *trying* to show *good* social skills" and "we would like you to tell us if you have *any feedback* that is likely to make the person's social skills much more effective").

Finally, we were not surprised that the no-evaluation instructions led to the least amount of written feedback. Initially, we anticipated that the medium- and high-evaluation conditions would also differ. However, the amount of feedback is not necessarily a concern; rather, we are interested primarily in the *type* of feedback (i.e., harshness). Considering the lack of group differences, we modified the manipulation instructions slightly to make the medium-evaluation instructions more ambiguous (e.g., "if you want" and "write down anything about the video that you think is important for you to remember") before collecting data for our experiment.

Experimental Study

Prior to any data collection, we pre-registered our methods, hypotheses, and data analysis plan on the Open Science Framework (Experimental Study Open Science Pre-Registration Link). We did not make predictions about differences between the no- and medium-evaluation conditions, as they are both control conditions. Compared to participants in the control conditions, we hypothesized that participants in the high-evaluation condition would:

H1. Write a greater number of negative comments about the anxious conversation partner

(*Manipulation check*).

H2. Report more strongly negative evaluations of others following the video evaluation task on the Public Speaking Performance Measure (PSPM-O) and the Ratings of Others Scale (ROOS-O; *Manipulation check*).

H3. Report greater subjective anxiety (SUDS) during the anticipatory phase and conversation task, relative to the baseline and video evaluation task (*Emotional hypothesis*).

H4. Demonstrate greater physiological arousal (*via* electrodermal activity) during the anticipatory and conversation tasks, compared to the baseline and video evaluation task (*Physiology hypothesis*).

H5. Receive more strongly negative ratings from behavioural coders using the Social Performance Rating Scale (SPRS; *Behavioural hypothesis*).

H6. Report more strongly negative evaluations of themselves on the Public Speaking Performance Measure (PSPM-S) and the Ratings of Others Scale (ROOS-S) after the conversation task (*Cognitive hypothesis*).

H7. Recall fewer facts about their conversation partner during the conversation task (*Cognitive hypothesis*).

Method

Participants

A power analysis ($f = .20$, $\alpha = .05$, power = .80) for our most exhaustive calculation suggested a sample size of $n = 174$. We recruited an unselected sample of undergraduate students ($n = 167$; received one course credit) and community members ($n = 5$; entered into a draw) through a university participation pool ($N = 172$; $n_{no\text{-}evaluation} = 57$, $n_{medium\text{-}evaluation} = 57$, $n_{high\text{-}evaluation} = 58$). Participants needed to understand, read, and communicate well in English.

Baseline Questionnaires[2]

We collected baseline information to characterize our sample and test for equivalence between our conditions. For each baseline questionnaire, one catch question (e.g., *This question is to ensure that you are reading the items. Mark "Very concerned" to this question*) was randomly placed amidst the other items. Participants' data were removed if they answered more than one question incorrectly.

Sociodemographic Questionnaire. Participants provided information about their age, gender identity, race/ethnicity, marital status, household income, and history and treatment of mood or anxiety disorders (see Table 2).

Depression Anxiety and Stress Scale–21 (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 is a 21-item self-report measure of depression, anxiety, and stress symptoms. Participants rated how much each statement applied to them over the past week on a Likert scale (0 = *did not apply to me at all* to 3 = *applied to me very much, or most of the time*). See Table 3 for internal consistency and descriptive statistics of all measures.

Social Phobia Inventory (SPIN; Connor et al., 2000). The SPIN is a 17-item self-report measure that examines fear, avoidance, and physiological discomfort in social situations. Participants responded to each item based on how much it bothered them over the past week on a five-point Likert scale (0 = *not at all* to 4 = *extremely*).

Outcome Questionnaires

Public Speaking Performance Measure (PSPM; Rapee & Lim, 1992). The PSPM measures *subjective* public speaking performance and can be completed by the speaker (PSPM-

[2] Although we administered the Multidimensional Perfectionism Scale Short Form (MPS-SF; Hewitt et al., 2008) and the Negative Self-Portrayal Scale (NSPS; Moscovitch & Huyder, 2011) to potentially later examine as an exploratory analysis, we decided to not conduct these analyses, to avoid increasing multiple comparisons.

Table 2. *Sample characteristics*

Variable	*n*	*%*
Gender		
Women	122	80.3%
Men	28	18.4%
Transgender	1	.7%
Other	1	.7%
Ethnicity / Race		
White	63	41.4%
Asian	16	10.5%
Indigenous	2	1.3%
European	15	9.9%
Black	9	5.9%
South Asian	14	9.2%
Hispanic	3	2.0%
Middle Eastern	20	13.2%
Caribbean	4	2.6%
Other	6	3.9%
Relationship Status		
Married	3	2.0%
Living Together	6	3.9%
Single	114	75.0%
Long-Term Relationship	26	17.1%
Prefer to not answer	3	2.0%
Self-Reported Previous Psychological Dx		
Yes	20	13.2%
No	128	84.2%
Prefer to not answer	4	2.6%

Notes. $N = 152$.

Table 3. *Descriptive statistics by condition for all hypotheses*

	Mean			*SD*			*Min*			*Max*			α
	N	*M*	*H*	*N*	*M*	*H*	*N*	*M*	*H*	*N*	*M*	*H*	
H1 (Manipulation check)													
# of draft comments	1.36	5.70	7.92	2.52	3.73	3.17	.00	.00	4.00	10.00	21.00	16.00	-
# of final comments	.94	4.51	7.04	1.80	3.04	2.95	.00	.00	.00	7.00	11.00	16.00	-
H2 (Manipulation check)													
PSPM-O	43.20	43.35	46.22	9.78	9.87	8.22	23.00	24.00	19.00	61.00	63.00	61.00	.84
ROOS-O+	-.64	-.89	-1.17	.89	.84	.72	-2.30	-2.20	-2.60	1.50	2.20	1.00	.83
ROOS-O-	-.15	-.08	.41	.99	.87	.75	-2.70	-2.90	-1.40	1.60	1.50	1.90	.83
H3 (Emotional hypothesis)													
SUDS1	24.48	21.37	28.71	16.51	14.58	20.50	.00	.00	.00	70.00	70.00	90.00	-
SUDS2	24.20	20.61	24.84	19.03	15.36	18.56	.00	.00	.00	70.00	60.00	90.00	-
SUDS3	42.88	40.85	43.00	21.58	19.68	23.29	.00	.00	.00	90.00	90.00	90.00	-
SUDS4	27.80	32.64	33.31	20.18	20.37	22.48	.00	.00	.00	85.00	80.00	90.00	-
H4 (Physiology hypothesis)													
EDA1 Mean	300.63	300.34	286.84	32.34	47.31	44.29	243.16	227.72	195.04	361.35	412.53	349.63	-
EDA1 Peak	304.22	303.40	290.69	33.51	48.29	44.40	247.18	229.65	200.64	377.92	415.11	351.95	-
EDA2 Mean	305.01	311.89	291.67	35.56	54.12	44.68	236.86	232.16	206.23	393.48	412.42	366.27	-
EDA2 Peak	308.38	314.80	294.64	36.24	55.16	45.61	239.55	234.40	207.93	399.94	414.61	376.24	-
EDA3 Mean	309.09	314.20	297.63	33.49	53.66	46.42	251.37	244.87	210.42	403.44	404.78	377.58	-
EDA3 Peak	313.57	317.81	303.98	35.28	55.93	48.04	262.47	246.19	215.42	421.76	421.76	391.11	-
EDA4	305.0	314.7	296.2	31.47	55.62	44.92	256.0	240.6	209.5	391.5	400.2	369.3	-

Mean EDA4 Peak	2 313.20	1 325.21	0 308.69	32.70	60.15	47.19	7 264.38	9 243.44	1 221.03	2 410.81	6 417.23	4 397.79	-
H5 (Behavioural hypothesis)													
SPRS	17.08	17.54	17.71	2.91	2.57	2.52	12.00	12.00	11.50	23.00	23.00	22.50	.86[3]
H6 (Cognitive hypothesis))													
PSPM-S	20.42	19.25	19.86	8.90	8.47	11.29	2.00	6.00	.00	41.00	36.00	50.00	.88
ROOS-S+	.94	1.04	.89	.86	.71	.88	-1.10	-.50	-1.70	2.90	2.50	3.00	.86
ROOS-S-	-1.38	-1.5	-1.09	.93	.92	1.27	-2.90	-3.00	-3.00	.50	.80	2.10	.90
H7 (Cognitive hypothesis)													
Memory Test	61.48	66.74	51.62	25.87	25.99	17.80	12.50	.00	12.50	100.00	100.00	100.00	-

Notes. PSPM-O, Public Speaking Performance Measure-Other version; ROOS-O+, Ratings of Others Scale-Other version, positive attributes; ROOS-O-, Ratings of Others Scale-Other version, negative attributes; SUDS1, Subjective Units of Distress Scale, Baseline; SUDS2, Subjective Units of Distress Scale, after Video Evaluation Task; SUDS3, Subjective Units of Distress Scale, Anticipatory; SUDS4, Subjective Units of Distress Scale, Peak during Conversation; EDA1, Electrodermal activity Baseline; EDA2, Electrodermal activity Video Evaluation Task, EDA3, Anticipatory; EDA4, Electrodermal activity Conversation Task; SPRS, Social Performance Rating Scale; PSPM-S, Public Speaking Performance Measure-Self version; ROOS-S+, Ratings of Others Scale-Self version, positive attributes; ROOS-S-, Ratings of Others Scale-Self version, negative attributes.

[3] Individual Cronbach alpha estimations suggest acceptable to good reliability for each behavioural coder (α = .73 and .86).

previous research (e.g., de Jong, 2002; Egloff & Schmukle, 2002; Purdon et al., 2001). Participants rated each item using a visual analog scale (-3 = *strongly disagree* to +3 = *strongly agree*). Positive and negative subscale scores are calculated by summing the attributes and dividing by 10 (i.e., range -3 to +3). Positive scores reflect more agreement with the attributes. Scores near 0 suggest participants neither agreed nor disagreed.

Ratings of Others Scale (ROOS). We created the Ratings of Others Scale to examine participants' evaluation of their own character (ROOS-S; self-version) and the character of the visibly anxious person (ROOS-O; other-version). The measure includes 10 positive (e.g., *healthy, socially skilled*) and 10 negative (e.g., *boring, inadequate*) characteristics and participants are instructed to rate each attribute from -3 (*strongly disagree*) to 3 (*strongly agree*). Similar to the pilot study, two subscale scores are calculated by summing the positive (ROOS +) and negative (ROOS -) attributes and dividing each by 10. More positive scores reflect more agreement with the attributes, whereas scores near 0 reflect less agreement.

Social Performance Rating Scale (SPRS; Fydrich et al., 1998). We used the five-item SPRS to measure objective signs that often accompany social anxiety. Using the SPRS, two research assistants, unaware of the study aims, conditions, or hypotheses, rated participants' gaze, vocal quality, length of statements, visible discomfort, and conversation flow during the videorecorded conversation task on a five-point Likert scale (1 = *very poor* to 5 = *very good*). The SPRS has been used in conversation tasks (Dannahy & Stopa, 2007). We calculated an average score for each coder, and an intraclass correlation coefficient (ICC: .66) to determine inter-rater reliability and congruence ratings.

Subjective Units of Distress Scale (SUDS; Wolpe, 1958). The SUDS measures participants' state distress. We modified the measure so that participants indicated their level of

anxiety, rather than *distress*. Participants rated their anxiety on a visual analog scale (0 = *totally relaxed* to 100 = *highest anxiety that you have ever felt*). Three additional scales (anger, guilt, happiness) were included as distractors (Stopa & Clark, 1993).

Memory Test. Because people with social anxiety experience memory impairments from their social interactions (e.g., Hope et al., 1990), we created an open-ended measure for participants to recall four facts their conversation partner disclosed: (1) In which city did your conversation partner grow up?; 2) What program are they studying in University; 3) What is their pet's name?; 4) Where did they say they last visited?). We used a *cued* recall task as it has been used in similar research (Daly et al., 1989; Hope et al., 1990), it more closely resembles remembering information from a "real-life" conversation, and it prevented participants from guessing answers. Their answers were coded as either 1 (*correct*), 0.5 (*partially correct; e.g., "journalism" instead of "digital journalism"*), or 0 (*incorrect*). Eight participants (5.7%) did not hear all four facts (i.e., ended conversation early, spoke more about themselves, etc.); we thus summed all correct facts, divided by the number of facts disclosed, multiplied by 100. During the memory test, we also asked participants if there were any *other* facts about their conversation partner that they remembered (i.e., a *free* recall task). Three video coders who were unaware of our study questions or hypotheses watched and coded the participants' responses to this question as a *hit* (i.e., fact was in the video) or a *miss* (i.e., fact was not present in the video). We had data for n = 137 participants, because some participants gave no response to this question (n = 5) and some participants' conversation task recordings ended early due to camera malfunctions (n = 10). Two of the volunteers coded approximately 10% of the videos as an indicator of inter-rater reliability. Coders demonstrated excellent agreement for the number of hits (ICC: .97) and moderate agreement for the number of misses (ICC: .71).

Self-Assessment Questions. At the end of the study, we asked participants about their perceived *effort*, how much *attention* they gave, and if they thought we should *use* their data[4].

Debriefing Questionnaire. Following the conversation task and removal of psychophysiological sensors, but before debriefing, participants answered several questions (see Debriefing Questionnaire Open Science Link) about the study including how much they considered manipulation instructions when making PSPM-O ratings; how high their standards were when rating the anxious person; how much they focused on small mistakes; and how convinced they were that we were measuring social skills (see Manipulation Check section).

Experimenters

Four experimenters/confederates contributed to data collection. Following Veljaca and Rapee's (1998) suggestions, we trained confederates, unaware of the participants' assigned condition, to display consistent behaviours throughout the conversation tasks and not to provide feedback to participants about their performance (Dannahy & Stopa, 2007).

Computerized Tasks

Video Evaluation Task. After receiving manipulation instructions, all participants watched the same four-minute video of two people on a first date (see creation and selection in Pilot Study; see "Strangers Meeting" Stimuli for video). Consistent with Ashbaugh et al. (2005) and Bielak et al. (2018), one individual displayed obvious signs of anxiety (e.g., mumbles/stutters, fidgets), whereas their partner did not.

Conversation Task

[4] For the first and second questions: "I put forth ___ effort towards this study," and "I gave this study ___ attention, participants received a score of 1 (consider removal) if they responded, "Almost no," "Very little," or "Some." For the final question, "In your honest opinion, should we use your data in our analyses in this study" participants were given a score of 1 if they responded "No." Participants were removed if they had a score of 2 or greater (n = 2) or if they reported "No" to if their data should be used (n = 1).

We told participants that they would be taking part in a 10-minute getting acquainted task with another participant (a trained confederate), which would be recorded and rated by a trained evaluator who assesses social skills. The conversation was unstructured (Thompson & Rapee, 2002; Voncken & Bögels, 2008) and opposite-gender partners were used (Beidel, Turner, & Dancu, 1985). For participants who were non-binary or declined to answer a preliminary gender-identity question, we randomly assigned them to a confederate. The confederate disclosed four facts: 1) they are from Picton, Ontario, 2) they study digital journalism; 3) they have a dog named Rigby; and 4) they recently visited Argentina. Participants could end the conversation at any time, but only two participants (1.2%) chose to end before 10 minutes. Because both participants heard at least three facts, we kept their data in our analyses.

Apparatus

Electrodermal Activity Recording (EDA). We used EDA to measure physiological arousal. EDA measures skin conductance levels from the eccrine sweat glands in response to emotional stimuli and activation of the sympathetic nervous system (Dawson, Schell, & Filion, 2007). Data were recorded using the iWorx IX-B3G Isolated Biopotential & GSR Recorder on the participants' non-dominant hand. We analyzed the mean and peak activation at four epochs: baseline, video evaluation task, anticipatory phase, and the conversation task. Unfortunately, due to device-recording errors, the EDA recordings from the first 61% of the sample were uninterpretable (i.e., incorrect settings, impossible durations/epoch numbers). We were able to retain data from the remaining 59 participants (39% of the sample; $n_{no\text{-}evaluation} = 22$, $n_{medium\text{-}evaluation} = 21$, $n_{high\text{-}evaluation} = 16$). There were no differences between the participants with EDA data and those without on age [$t(150) = 1.05$, $p = .30$], gender [X^2 (3, $N = 152$) = 1.98, $p = .58$], or baseline SPIN scores [$t(150) = .01$, $p = .99$] suggesting that the 59 participants are

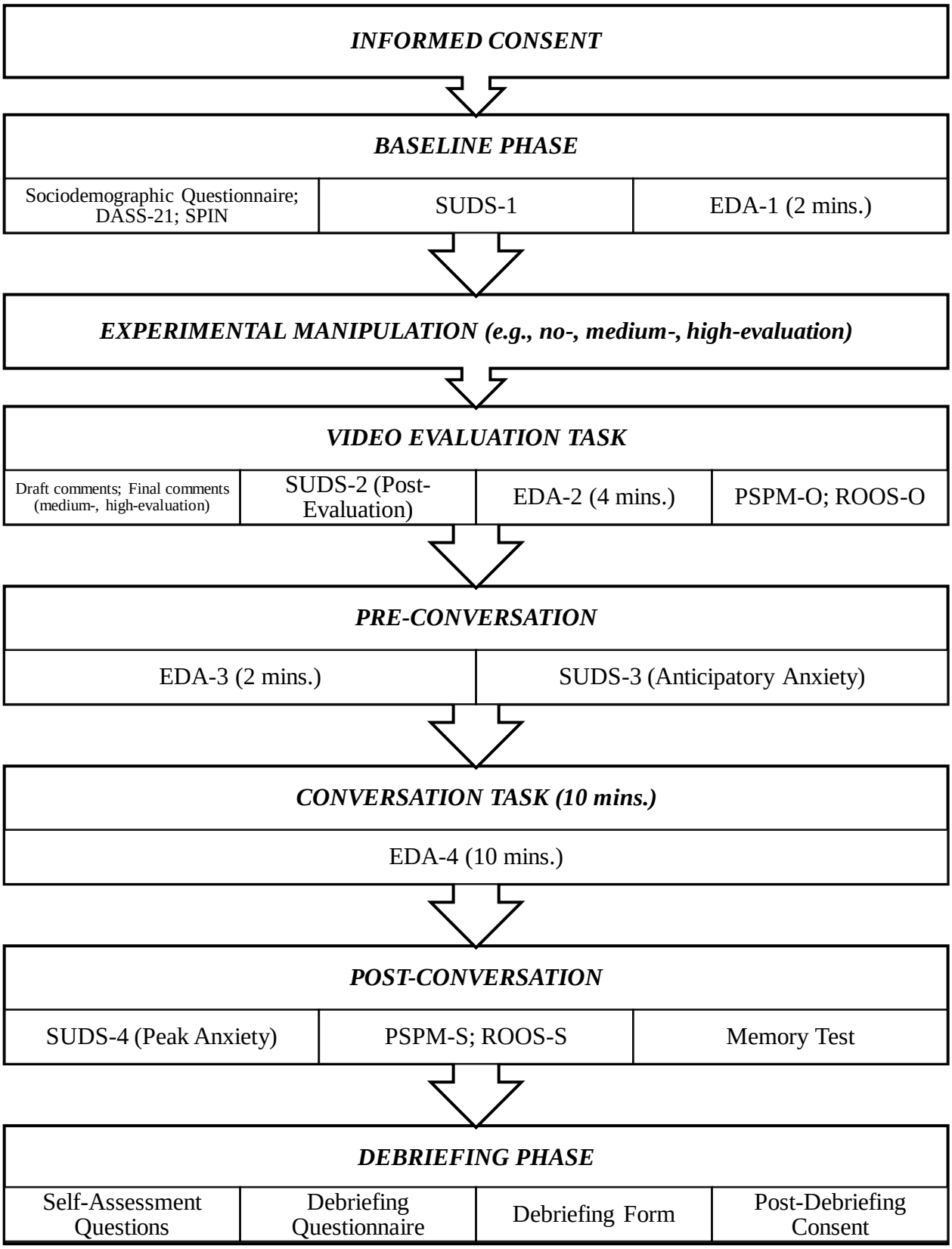
representative of the remaining 93 participants.

Procedure

Our study was reviewed and approved by the University Research Ethics Board (certificate no. H-01-19-1878). We informed participants that we were testing a new way of measuring social skills. After obtaining consent, participants completed baseline questionnaires (completely randomized order) and a baseline SUDS score (see Figure 1 for a procedure diagram). Afterward, the EDA device was applied to the participants' non-dominant hand before recording a baseline measure. Participants were randomly assigned to a condition: 1) no-evaluation (i.e., "how your body responds"); 2) medium-evaluation (i.e., "any feedback to make the person's social skills much more effective"); or 3) high-evaluation (i.e., "tell us EVERYTHING that might be viewed negatively about this person's social skills"; see Manipulation Instructions Link for instructions).

All participants were given a piece of blank paper to write down their rough "drafts" while watching the video but were encouraged to keep their attention on the video. We allowed participants in the medium- and high-evaluation conditions to re-write their answers on the back ("final version") after the video finished so they could spend more time thinking about possible negative evaluations. Because participants in the no-evaluation condition were not asked to give feedback on the video, we did not have them complete a "final" version, because it would have been inconsistent with the manipulation instructions. Then, participants provided a second SUDS rating and their subjective evaluations of the anxious person (PSPM-O/ROOS-O). Participants then had an *impromptu* conversation task with a confederate. Just before the conversation and immediately after, participants completed anticipatory (SUDS 3) and peak (SUDS 4) anxiety ratings, respectively. Participants then evaluated their own conversation performance (PSPM-S,

Figure 1. *Procedure Diagram*



ROSS-S), before debriefing. Participants were asked again for consent given the use of mild deception (see Post-Debriefing Consent Form Link).

Data Preparation

Twelve participants did not complete the conversation task (late arrival, saw conversation partner too early), three withdrew consent after learning about the mild deception during debriefing, three were removed for concerns about lack of attention/effort (Self-Assessment Questions), one was removed because they had two errors on the catch questions, and one was removed for reporting very low believability that our study was measuring social skills. Data were visually scanned for any impossible values. Condition was anonymized until all data were analyzed. We ran a single imputation using SPSS to address the 0.4% of missing data from primary outcome variables. Our final sample was $N = 152$ ($n_{no\text{-}evaluation} = 50$, $n_{medium\text{-}evaluation} = 53$, $n_{high\text{-}evaluation} = 49$)[5], 22 fewer people than our power analysis suggested. However, as our power analysis was for our most complicated analysis, the majority of our simpler analyses were sufficiently powered. We also conducted separate moderation analyses using the PROCESS macro for SPSS[6] (Model 1; Hayes, 2018) to understand how participants' level of social anxiety influences the effect of condition on our dependent variables. We did not have hypotheses about the direction of the moderation.

Hypothesis Testing

To test if condition affected participants' self-reported anxiety (H3), we conducted a 3 (condition) x 4 (time) MANOVA. To test if condition affected participants' objective (i.e., video

[5] Of the $N = 152$, $n = 148$ were undergraduate students and $n = 4$ were community members. Two community members were in the medium-evaluation condition and the other two were in the high-evaluation condition.
[6] Although this analysis was planned, we did not specify any predictions and did not conduct an a priori power analysis. We conducted a sensitivity power analysis and were adequately powered to detect a very small effect size ($f = .05$) if one existed.

coded) conversation performance (H5), we conducted a MANOVA. To test whether condition affected negative self-evaluations (H6), we conducted two separate one-way ANOVAs using PSPM-S and ROOS-S. To test if condition affected participants' recall of their conversation partner's facts (H7), we conducted a one-way ANOVA using the percent correct variable. Given our number of comparisons (5 separate analyses for manipulation check, 8 for hypothesis testing), we conducted a *p*-value correction that accounted for false discovery rate (FDR; Benjamini & Hochberg, 2000). For all significant effects, we indicate the adjusted *p*-value following FDR adjustment. To do this, we initially rank the *p*-values from smallest to largest and assign a number to each starting with 1. We then take the calculated *p*-value for a given analysis, multiply it by the number of separate analyses conducted, and divide by its rank number (i.e., .001*5/1 = .005; .008*5/4 = .01). We did not report an adjusted *p*-value for non-significant effects because the *p*-value correction is more stringent; therefore any non-significant finding will remain non-significant after the correction. For post-hoc tests, we used a *p*-value of .05 for determining statistical significance.

Results

Manipulation and Data Integrity Checks[7]

For primary analyses with *p*-value corrections, we report the adjusted *p*-value in parentheses with a note if the analysis remained significant. The three conditions differed significantly on the number of written comments about the anxious person after the Video Evaluation Task on the draft version, $F(2, 149) = 54.25$, $p < .001$, $\eta_p^2 = .42$ (remained significant after the FDR adjustment; *p*-adj = .005), and final version, $F(2, 149) = 65.60$, $p < .001$, $\eta_p^2 = .47$

[7] We conducted a manipulation check at $n = 30$ to test if the means of our dependent variables related to the manipulation (i.e., number of negative comments written, PSPM-O/ROOS ratings) were in the expected direction, prior to continuing with large-scale data collection (see Appendix A).

(H1; remained significant after the FDR adjustment*; p*-adj = .003). We expected the high-evaluation condition to write significantly more negative comments about the visibly anxious person, compared to the no-evaluation condition. We did not have any hypotheses for the lenient-evaluation condition. As expected, the high-evaluation condition wrote significantly more negative comments, followed by the medium-, then no-evaluation conditions. Therefore, participants followed the manipulation instructions. For the other-evaluation manipulation checks (i.e., PSPM/ROOS), we expected the high-evaluation condition to report significantly higher levels of performance/character flaws, compared to the no-evaluation condition. We did not have any hypotheses for the lenient-evaluation condition. There was no significant effect of condition on subjective other-performance (PSPM-O), $F(2, 149) = 1.65$, $p = .20$, $\eta_p^2 = .02$. There was a significant effect of condition on the positive other-characteristics (ROOS-O), $F(2, 147) = 4.94$, $p = .008$, $\eta_p^2 = .06$ (remained significant after the FDR adjustment; *p*-adj = .01); participants in the high-evaluation condition reported significantly *lower* positive ratings of the anxious person compared to the no-evaluation condition, $t(95) = 3.19$, $p = .002$, $d = .65$. There was also a significant effect of condition on negative other-characteristics (ROOS-O), $F(2, 147) = 5.93$, $p = .003$, $\eta_p^2 = .08$ (remained significant after the FDR adjustment; *p*-adj = .003); individuals in the high-evaluation condition reported significantly more *negative* ratings about the anxious person, than the medium-, $t(10) = 3.00$, $p = .004$, $d = .59$, and no-evaluation conditions, $t(95) = 3.15$, $p = .002$, $d = .64$ (H2). In fact, the high-evaluation condition was the only condition that had a positive mean across participants; meaning they *agreed* with some of the negative attributes. The no- and medium-evaluation conditions did not differ, $t(99) = -.42$, $p = .67$, $d = .08$. Overall, our written manipulation check led to findings in the expected directions, however, we observed no differences in the ratings of a visibly anxious persons subjective

performance.

Debriefing Questionnaire. During the debriefing questions, 1) the high-evaluation condition considered their manipulation instructions more when completing the PSPM-O than the no-evaluation condition, $F(2, 149) = 3.29$, $p = .04$, $\eta_p^2 = .04$. However, when conducting follow-up *t*-tests, there was a significant difference wherein the medium-evaluation condition reported more consideration of the manipulation instructions than the no-evaluation condition, $t(101) = 2.02$, $p = .046$, $d = .40$, that was not detected by the previous analysis. 2) The degree of consideration reported by people in the high-evaluation condition was no different than in the medium-evaluation condition, $t(100) = .48$, $p = .63$, $d = .10$. Participants in the high-evaluation condition reported having higher standards than the no-evaluation condition when evaluating the anxious person, $F(2, 149) = 4.87$, $p = .009$, $\eta_p^2 = .06$. The standards reported by people in the high-evaluation condition were no different than those in the medium-evaluation condition, $t(100) = 1.92$, $p = .06$, $d = .38$; there were no differences between the no- and medium-evaluation conditions, $t(101) = 1.23$, $p = .22$, $d = .24$. 3) Participants across all conditions similarly focused on small details and potential mistakes of the anxious person, $F(2, 149) = 1.37$, $p = .26$, $\eta_p^2 = .02$, and 4) were similarly convinced the study was examining social skills, $F(2, 149) = .58$, $p = .56$, $\eta_p^2 = .01$. Following the manipulation and data integrity checks, we are reasonably convinced our manipulation was effective.

Participants across the three conditions did not differ on any of the baseline questionnaires (DASS-21, SPIN; all $Fs < .47$, $ps > .63$). Participants' average social anxiety scores fell within the *mild* range on the SPIN (Connor et al., 2000) and within the *normal* range on the DASS-21 (Lovibond & Lovibond, 1995). There were no significant effects of experimental condition on self-reported anxiety (H3), physiological arousal (H4), objective

conversation performance (H5), subjective conversation performance or ratings of one's own positive or negative characteristics (H6; see Table 4). We found a significant effect of condition on the percentage of correct facts recalled from the cued recall task (H7), $F(2, 148) = 5.35$, $p = .006$, $\eta_p^2 = .07$ (remained significant after the FDR adjustment*;* p-adj = .048). Participants in the high-evaluation condition recalled significantly *fewer* correct facts compared to the medium-, $t(100) = 3.40$, $p < .001$, $d = .68$, and no-evaluation conditions, $t(96) = 2.20$, $p = .03$, $d = .44$. The no- and medium-evaluation conditions did not differ, $t(100) = 1.03$, $p = .31$, $d = .20$.

For all but one of our primary hypotheses, participants' social anxiety had little to no impact on the outcome variable (see Table 5). Social anxiety symptoms had a marginally significant effect on the relationship between condition and participants' subjective evaluations of their conversation performance (i.e., PSPM-S), $t(149) = 1.94$, $p = 0.055$, 95% CI [-.0022, .2312]. The interaction accounted for an additional 1.9%, $\Delta R^2 = .018$, $\Delta F(1, 148) = 3.76$, $p = .055$, (see Figure 2) of the variance in self-evaluations over and above condition alone. However, when we followed up the interaction, there were no significant effects of condition on self-evaluations at low ($M = 11.36$): $b = -1.84$, $t(148) = -1.57$, $p = .12$, moderate ($M = 25.67$): $b = -.20$, $t(148) = -.24$, $p = .81$, or high levels of social anxiety ($M = 39.99$): $b = 1.44$, $t(148) = 1.19$, $p = .24$. Following a suggestion from an anonymous peer-reviewer, we conducted an exploratory analysis using the facts participants recalled freely about their conversation partner (see Appendix B for Deviations from Pre-Registration). There were no differences between conditions on hits $F(2, 134) = .55$, $p = .58$, $\eta_p^2 = .01$) or misses, $F(2, 134) = 1.02$, $p = .36$, $\eta_p^2 = .02$).

Table 4. *Main effect and interaction estimates for self-reported anxiety, objective conversation performance, subjective conversation performance, positive/negative self-ratings, and cued-recall.*

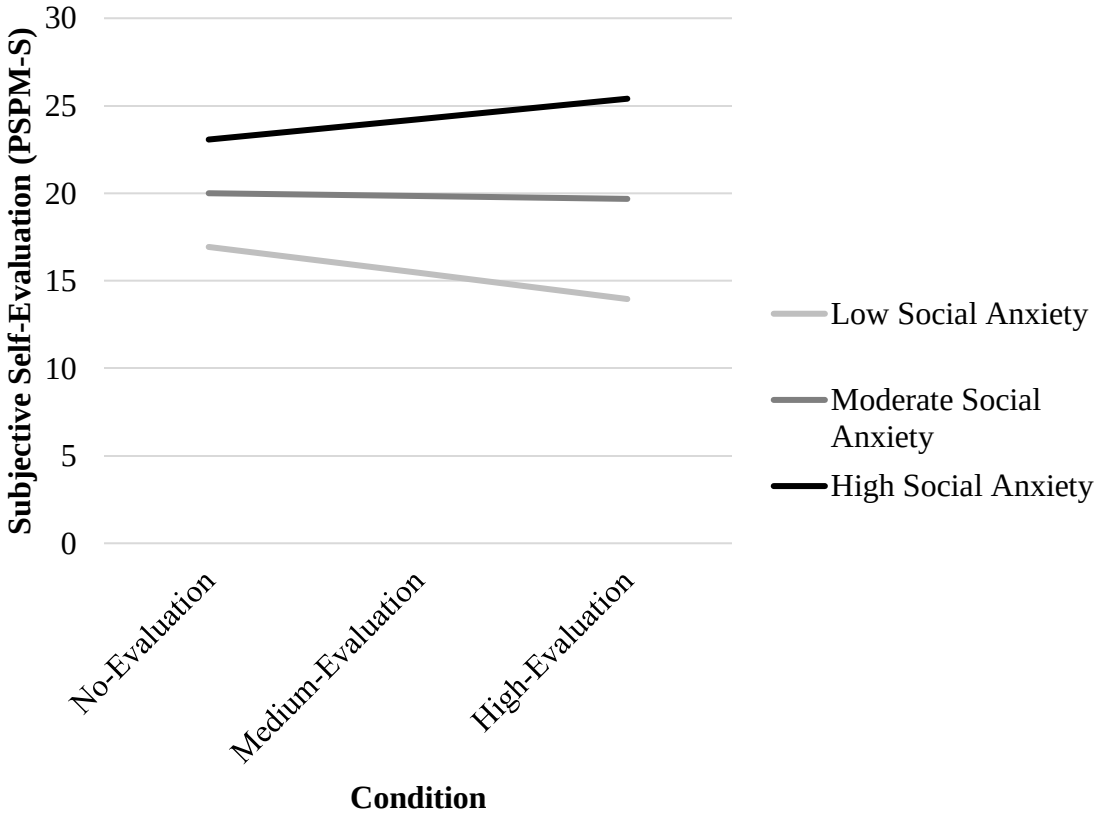
	F	*df*	*p*	η_p^2
Self-reported anxiety (SUDS; H3)				
Main effect condition	61.76	3, 447	< .001	.29
Interaction by time and condition	1.44	6, 447	.20	.02
Physiological arousal mean (H4)				
Main effect condition	12.51	3, 168	< .001	.18
Interaction by time and condition	.99	6, 168	.44	.03
Physiological arousal peak (H4)				
Main effect condition	22.79	3, 168	< .001	.29
Interaction by time and condition	1.55	6, 168	.17	.05
Objective conversation performance (SPRS; H5)	.67	2, 135	.52	.01
Subjective Conversation Performance (PSPM-S; H6)	.19	2, 149	.83	.003
Subjective Characteristics (ROOS-S; H6)				
Positive	.44	2, 147	.65	.01
Negative	2.34	2, 147	.10	.03
Cued-recall memory test (H7)	5.35	2, 148	.006	.07

Table 5. *F-change for exploratory moderation analysis using SPIN as the moderator. For all analyses, condition was used as the predictor variable.*

	ΔF	*df*	*p*	ΔR^2
# of draft comments	.06	1, 148	.81	< .001
# of final comments	.60	1, 148	.48	.002
SUDS1	.46	1, 148	.50	.002
SUDS2	.01	1, 148	.90	< .001
SUDS3	.44	1, 148	.51	.002
SUDS4	.00	1, 148	.98	.00
EDA1 Mean	.32	1, 55	.57	.005
EDA1 Peak	.15	1, 55	.70	.003
EDA2 Mean	.20	1, 55	.66	.004
EDA2 Peak	.15	1, 55	.70	.003
EDA3 Mean	.23	1, 55	.63	.004
EDA3 Peak	.11	1, 55	.75	.002
EDA4 Mean	.21	1, 55	.65	.004
EDA4 Peak	.19	1, 55	.67	.003
Memory Test	.07	1, 148	.79	< .001
PSPM-O	.04	1, 148	.85	< .001
PSPM-S	3.76	1, 148	.05	.02
ROOS-O+	1.05	1, 146	.31	.006
ROOS-O-	1.41	1, 146	.24	.01
ROOS-S+	2.01	1, 146	.16	.01
ROOS-S-	2.18	1, 146	.14	.01

Notes. SUDS1, Subjective Units of Distress Scale, Baseline; SUDS2, Subjective Units of Distress Scale, after Video Evaluation Task; SUDS3, Subjective Units of Distress Scale, Anticipatory; SUDS4, Subjective Units of Distress Scale, Peak during Conversation; EDA1, Electrodermal activity Baseline; EDA2, Electrodermal activity Video Evaluation Task, EDA3, Anticipatory; EDA4, Electrodermal activity Conversation Task; PSPM-O, Public Speaking Performance Measure-Other version; PSPM-S, Public Speaking Performance Measure-Self version; ROOS-O+, Ratings of Others Scale-Other version, positive attributes; ROOS-O-, Ratings of Others Scale-Other version, negative attributes; ROOS-S+, Ratings of Others Scale-Self version, positive attributes; ROOS-S-, Ratings of Others Scale-Self version, negative attributes.

Figure 2. *Moderation of the effect of condition on subjective self-evaluation by social anxiety symptoms*.



Discussion

Given previous equivocal findings on the presence of negative evaluations of others in people with social anxiety, our primary aim was to explore the cognitive, behavioural, and emotional consequences of negatively evaluating another person with visible anxiety. Specifically, we tested whether evaluating others *causes* someone to negatively evaluate themselves after an anxiety-provoking task. To our knowledge, this is the first study to experimentally examine the relationship between negative other- and self-evaluations as a primary goal. We sought to enhance current models of social anxiety by bridging social and clinical psychology to potentially improve CBT for social anxiety.

In general, participants in the high-evaluation condition responded to the manipulation instructions as planned: they wrote *more negative* comments about the anxious person than the other conditions; they gave *fewer positive* evaluations of the anxious person's character compared to the no-evaluation condition, and *more negative* evaluations than the other two conditions. There appeared to be homogeneity in the subjective ratings of the anxious person's performance (PSPM-O) as all participants provided similar evaluations (Grand mean = 44.30, possible range between 0 and 68). It is thus perhaps not surprising that we did not find significant differences between conditions on many of our outcome variables, given previous findings that anxious individuals are rated more poorly than confident individuals, regardless of the rater's anxiety (Ashbaugh et al., 2005; Bielak et al., 2018). We question whether the PSPM was the best tool for measuring *subtle* differences in subjective performance, as Tutino et al. (2020) found similar non-significant group differences. People with and without social anxiety appear equally able to recognize social performance flaws in others.

We found no support for most of our primary hypotheses; there were no differences between conditions on behavioural or emotional outcomes. Because our non-significant effect sizes were small (i.e., near zero), our findings likely reflect an actual lack of differences, rather than Type II error. Nonetheless, our findings help clarify the consequences (or lack thereof) of negative other-evaluations on negative self-evaluations. Despite previous research findings suggesting that people with elevated social anxiety exhibit more conversation performance deficits (Beidel et al., 1985), Dannahy and Stopa (2007) found no effect of social anxiety on performance using the SPRS. Our non-significant findings related to video coders' ratings suggest that participants' social performance during their conversation task was not impacted by the degree of their negative evaluations of others. Finally, our moderation analyses suggested that degree of negative evaluations of others may have a greater impact at higher levels of social anxiety. However, the differences at each level of social anxiety were non-significant. Replication with a larger sample, or in a clinical sample is warranted to better understand the interacting effects of social anxiety severity and degree of negative evaluations of others on evaluations of the self.

The only clearly statistically significant difference to emerge was that people who negatively evaluated a person with visible anxiety remembered fewer facts about their conversation partner during their own conversation task, compared to people who either did not evaluate the anxious person or gave minor feedback to improve their performance. Unlike people without social anxiety, people with social anxiety experience poorer memory recall from their social interactions (Romano et al., 2020). However, this effect disappeared when participants were allowed to recall *all* facts they could remember about their conversation partner. Because this analysis was exploratory (i.e., not part of our pre-registration), no longer involved a

standardized assessment of facts recalled (i.e., depended on how frequently participants changed topics and how many questions participants asked of their conversations partner), and that some participants did not respond to the item, we are hesitant to over-interpret this particular null finding. Our results extend these findings; *how much* participants negatively evaluate others contributes to remembering less, regardless of their level of social anxiety. In line with the CBT model, participants who paid more attention to potential flaws in the anxious person, would in turn, pay more attention to their own flaws or possibility of making flaws. This contention is consistent with social projection theory; if participants in the high-evaluation condition found similarities between themselves and the anxious person, they may thus have engaged in more socially-anxious cognitive processes (e.g., self-focused attention, post-event processing), negatively impacting their attention and memory during the conversation task.

Limitations and Future Directions

Our study has some important findings and implications, as well as limitations. Due to the COVID-19 pandemic, testing ended a few weeks early, leading to a slightly smaller sample size than anticipated. However, we conducted our power analysis for the most complicated planned analysis; our other analyses were likely adequately powered. Our first manipulation check question (i.e., consideration of manipulation instructions when rating the PSPM-O) was confusing because many forgot the name of the measure, so we began reminding participants roughly half-way into testing. Furthermore, due to device-recording errors, less than half our sample had interpretable psychophysiological data. To determine the minimum effect size that we were able to observe in our smaller sample of participants with complete EDA data, we conducted a sensitivity analysis using G*Power for a repeated measures, within-between interaction. Overall, we were adequately powered to detect a small-to-medium effect size (f =

.17) if one existed.

According to the CBT model, social anxiety-related memory impairments are likely attributable to self-focused attention during social interactions (Mellings & Alden, 2000); however, we did not measure attention directly. Future research using a similar protocol, while measuring self-focused attention (e.g., internal thoughts during the conversation via open-ended questions or implicit associations; Eichstaedt & Silvia, 2003) may be fruitful. In addition to our free and cued recall memory test, a multiple-choice recognition test (e.g., Bahl & Ouimet, 2022) could further illuminate what participants remember *and* forget, especially when correct information is presented to them. Moreover, for this study, we assessed the impact of other-evaluations on self-evaluations, though it is likely that any relationship between the two variables is bi-directional. Future research on the impact of self-evaluations on other-evaluations is warranted. Finally, our findings may not generalize to all individuals as we used a sample of primarily undergraduate students and some community members, and the age (M = 19.72 years) and gender (80.3% women) of our sample does not fully reflect our community.

Despite these limitations, our study included several methodological strengths, including its experimental design, multi-method assessment, and pre-registered approach. By using an experimental design (rather than cross-sectional), we were able to clarify the impact (or lack thereof) of other evaluations on various components of social anxiety.

Implications

This study was the first to begin to test the potentially cyclical relationship between negative other- and self-evaluations, and the associated cognitive, behavioural, and emotional consequences. Using an effective experimental manipulation, we found that people who negatively evaluated another anxious person remembered significantly less than the other

conditions about their conversation task. Because interpersonal interactions are a part of everyday life, understanding the factors that contribute to memory impairments in social situations could lead to improvements in psychotherapy generally, CBT specifically, and daily living for people with SAD.

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Appendix A. *Manipulation check with n = 30.*

At 30 participants, we conducted a manipulation check to ensure that the manipulation was producing means for the manipulation check variables in the expected direction (i.e., not looking for significance, due to analyses being underpowered). Participants in the high-evaluation condition wrote down the most negative comments during the Video Evaluation Task, compared to the no- and medium-evaluation conditions, draft version: $F(2, 27) = 8.66$, $p = .001$; final version: $F(2, 27) = 5.96$, $p = .007$. They also tended to rate the anxious conversation partner's performance behaviours (in the Video Evaluation Task) more negatively ($M = 48.50$; $SD = 6.98$), compared to the no- and medium-evaluation conditions ($M = 40.88$, $SD = 11.33$, and $M = 41.42$, $SD = 13.07$, respectively). On the ROOS, participants asked to harshly evaluate the anxious conversation partner was the only condition that agreed with the negative attributes ($M = .22$, $SD = .73$), whereas the no- and medium-evaluation conditions disagreed ($M = -.39$, $SD = .77$ and $M = -.42$, $SD = .81$, respectively) with them, $F(2, 27) = 2.19$, $p = .13$. The high-evaluation group also tended to disagree most strongly with the positive attributes ($M = -1.28$, $SD = .68$), compared to the no- and medium-evaluation conditions ($M = -1.01$, $SD = .69$ and $M = -.84$, $SD = .68$, respectively), $F(2, 27) = 1.13$, $p = .34$.

For the formal manipulation check questions, participants in the no-evaluation condition reported the highest consideration ($M = 1.88$, $SD = 1.89$) of the manipulation instructions when making ratings on the PSPM-O, then the medium-evaluation condition ($M = 1.17$, $SD = 1.75$), and the high-evaluation ($M = .40$, $SD = 2.80$), $F(2, 27) = 1.02$, $p = .37$. Furthermore, the high- ($M = 1.00$, $SD = 1.56$) and no-evaluation ($M = 1.00$, $SD = 1.20$) conditions reported the highest standards when ratings the anxious person, while the medium-evaluation condition reported the fewest ($M = .08$, $SD = 1.83$), $F(2, 27) = 1.19$, $p = .32$. The medium-evaluation condition reported

focusing the most on potential mistakes (M = 1.38, SD = 1.75), followed by the high-evaluation condition (M = 1.00, SD = 2.31), and the no-evaluation condition (M = .38, SD = 2.72), $F(2, 27) = .49$, $p = .62$. Finally, the no-evaluation condition reported the highest believability (M = 3.00, SD = .00) that our study was measuring social skills, then the high-evaluation condition (M = 2.60, SD = .97), then the medium-evaluation (M = 2.17, SD = 1.27), $F(2, 27) = 1.76$, $p = .19$.

Appendix B. *Deviations from Pre-Registration.*

1. During peer-review of the manuscript, an anonymous reviewer highlighted that the names of our conditions (no-, lenient-, and harsh-evaluation) did not reflect what we were asking participants to do (i.e., 'harsh' reflects severity or 'meanness', rather than volume or breadth). With that in mind, we changed the condition names to no-, medium-, and high-evaluation.
2. Following suggestions during peer-review, we re-coded all recorded conversation tasks to observe whether participants' responses to the open-ended memory test (i.e., free recall) were present in the video (i.e., a hit) or not present in the video (i.e., a miss). We then conducted an exploratory analysis that examined how conditions differed on their hits and misses.
3. Following suggestions during peer-review, we used a Benjamini-Hochberg *p*-value correction to account for false discovery rates for our multiple comparisons. We conducted separate B-H corrections for our manipulation check analyses and for our hypothesis testing analyses.

Appendix C. *Descriptive statistics by condition for all variables of interest*

	Mean			*SD*			*Min*			*Max*			α
	N	*M*	*H*	*N*	*M*	*H*	*N*	*M*	*H*	*N*	*M*	*H*	
DASS-21	38.64	35.81	34.53	23.87	20.72	20.38	.00	4.00	.00	98.00	80.00	98.00	.91
SPIN	25.26	26.60	25.08	19.83	14.14	16.08	2.00	.00	.00	50.00	58.00	65.00	.92
SUDS1	24.48	21.37	28.71	16.51	14.58	20.50	.00	.00	.00	70.00	70.00	90.00	-
# of draft comments	1.36	5/70	7.92	2.52	3.73	3.17	.00	.00	4.00	10.00	21.00	16.00	-
# of final comments	.94	4.51	7.04	1.80	3.04	2.95	.00	.00	.00	7.00	11.00	16.00	-
SUDS2	24.20	20.61	24.84	19.03	15.36	18.56	.00	.00	.00	70.00	60.00	90.00	-
SUDS3	42.88	40.85	43.00	21.58	19.68	23.29	.00	.00	.00	90.00	90.00	90.00	-
SUDS4	27.80	32.64	33.31	20.18	20.37	22.48	.00	.00	.00	85.00	80.00	90.00	-
EDA1 Mean	300.63	300.34	286.84	32.34	47.31	44.29	243.16	227.72	195.04	361.35	412.53	349.63	-
EDA1 Peak	304.22	303.40	290.69	33.51	48.29	44.40	247.18	229.65	200.64	377.92	415.11	351.95	-
EDA2 Mean	305.01	311.89	291.67	35.56	54.12	44.68	236.86	232.16	206.23	393.48	412.42	366.27	-
EDA2 Peak	308.38	314.80	294.64	36.24	55.16	45.61	239.55	234.40	207.93	399.94	414.61	376.24	-
EDA3 Mean	309.09	314.20	297.63	33.49	53.66	46.42	251.37	244.87	210.42	403.44	404.78	377.58	-
EDA3 Peak	313.57	317.81	303.98	35.28	55.93	48.04	262.47	246.19	215.42	421.76	421.76	391.11	-
EDA4 Mean	305.02	314.71	296.20	31.47	55.62	44.92	256.07	240.69	209.51	391.52	400.26	369.34	-
EDA4 Peak	313.20	325.21	308.69	32.70	60.15	47.19	264.38	243.44	221.03	410.81	417.23	397.79	-
Memory Test	61.48	66.74	51.62	25.87	25.99	17.80	12.50	.00	12.50	100.00	100.00	100.00	-
PSPM-O	43.20	43.35	46.22	9.78	9.87	8.22	23.00	24.00	19.00	61.00	63.00	61.00	.84
PSPM-S	20.42	19.25	19.86	8.90	8.47	11.29	2.00	6.00	.00	41.00	36.00	50.00	.88
ROOS-O+	-.64	-.89	-1.17	.89	.84	.72	-2.30	-2.20	-2.60	1.50	2.20	1.00	.83
ROOS-O-	-.15	-.08	.41	.99	.87	.75	-2.70	-2.90	-1.40	1.60	1.50	1.90	.83
ROOS-S+	.94	1.04	.89	.86	.71	.88	-1.10	-.50	-1.70	2.90	2.50	3.00	.86
ROOS-S-	-1.38	-1.5	-1.09	.93	.92	1.27	-2.90	-3.00	-3.00	.50	.80	2.10	.90
SPRS	17.08	17.54	17.71	2.91	2.57	2.52	12.00	12.00	11.50	23.00	23.00	22.50	.86[8]

[8] Individual Cronbach alpha estimations suggest acceptable to good reliability for each behavioural coder (α = .73 and .86).

Notes. DASS-21, Depression Anxiety and Stress Scale–21; MPS-OOP, Multidimensional Perfectionism Scale Short Form, Other-Oriented Perfectionism; NSPS, Negative Self-Portrayal Scale; SPIN, Social Phobia Inventory; SUDS1, Subjective Units of Distress Scale, Baseline; SUDS2, Subjective Units of Distress Scale, after Video Evaluation Task; SUDS3, Subjective Units of Distress Scale, Anticipatory; SUDS4, Subjective Units of Distress Scale, Peak during Conversation; EDA1, Electrodermal activity Baseline; EDA2, Electrodermal activity Video Evaluation Task, EDA3, Anticipatory; EDA4, Electrodermal activity Conversation Task; PSPM-O, Public Speaking Performance Measure-Other version; PSPM-S, Public Speaking Performance Measure-Self version; ROOS-O+, Ratings of Others Scale-Other version, positive attributes; ROOS-O-, Ratings of Others Scale-Other version, negative attributes; ROOS-S+, Ratings of Others Scale-Self version, positive attributes; ROOS-S-, Ratings of Others Scale-Self version, negative attributes; SPRS, Social Performance Rating Scale.

CHAPTER THREE:

BRIDGE

Prior to conducting Study 1, I did not know if negative evaluations of others *cause* people to evaluate themselves negatively. Using existing social and cognitive psychology theories, I designed the first study to investigate the causal role of self-evaluations on other-evaluations, and its cognitive, emotional, behavioural, and physiological consequences. I gave participants specific instructions to give no-, medium-, or high-evaluation towards a visibly anxious person. Participants then took part in a 10-minute conversation task with another participant and subsequently evaluated themselves. Although participants responded in accordance with the manipulation instructions, I did not observe a significant effect on most cognitive, emotional, behavioural, or physiological outcomes. However, participants in the high-evaluation condition remembered fewer facts disclosed by their conversation partner, compared to those in the no and medium conditions. In other words, just because participants evaluated a visibly anxious person, does not mean they evaluate themselves.

The findings from Study 1 are necessary to begin to understand the impact (or lack thereof) of negative other-evaluations as experimental research in this area is lacking. Because Study 1 examines only one side of my proposed relationship, conducting Study 2 in the *opposite* direction is important to understand if negative other-evaluations operate *because* of negative self-evaluations. Currently, I know that negative other-evaluations do not lead to negative self-evaluations, but I do not know if negative self-evaluations lead to negative other-evaluations. Over the past two decades, researchers have recognized numerous cognitive biases and characteristics of people with SAD that are expected to play an important role in the development and maintenance of the disorder. This research suggests that people with SAD: 1)

interpret *ambiguous* social situations as negative (Amir et al., 1998); 2) interpret *negative* social situations as catastrophic (Stopa & Clark, 2000); 3) fear *negative* evaluation (Leary et al., 1983); and 4) fear *positive* evaluations (Weeks et al., 2007). I therefore designed Study 2 to examine how different self-evaluations (e.g., positive, ambiguous, negative) impact evaluations of a visibly anxious person. To test this question, I used a similar procedure to Study 1, however, there are several methodological differences between Study 1 and Study 2.

1. Due to the COVID-19 pandemic, and its associated public health restrictions, I consulted my committee in March 2020 to request approval for modifying my second study to be administered online. I proposed that the study would be nearly identical to the planned research study (i.e., experimenters giving instructions, conversation task, false-feedback delivery, completion of questionnaires), but in a virtual environment. In this virtual environment, I used a Zoom call for the duration of the testing session. Like my previous in-person research, I administered baseline questionnaires and self and other-evaluation measures online using Qualtrics™. For more information about these modifications, myself and colleagues in our research laboratory published two case studies that outline our transition from in-person research to an online setting (Ferguson et al., 2022; Ouimet et al., 2022). Some notable differences between Study 1 and 2 included using a blank Zoom account as the social skills judge, conducting the conversation task over Zoom, and embedding a YouTube link of the Video Evaluation Task into the Qualtrics survey.
2. Likewise, due to data collection in a virtual environment, I was unable to collect psychophysiology data, as I did in Study 1. However, electrodermal activity was not a primary variable of interest in this research plan and I believed it could be removed to facilitate timely data collection online.

3. Participants in my second study received different manipulation instructions compared to my first study. Because I am looking at the *opposite* direction of my proposed cycle, the goal of my second study was to induce negative self-evaluations and subsequently measure negative other-evaluations. To do this, I communicated false-feedback following the participants' impromptu conversation task. I randomly assigned participants to receive *positive-feedback* (e.g., "the judge thought you were engaging, relaxed, and an enjoyable person to talk with"), *ambiguous-feedback* (e.g., "the judge *couldn't decide* whether your video should be used in our training after all"); or *negative-feedback* (e.g., "the judge thought you were nervous, uncomfortable, and a bit awkward, so they told me that we can't use your video at all in our training").
4. Finally, because I am looking at the *opposite* direction of my proposed cycle, I reversed the order of my tasks, compared to Study 1. Whereas in Study 1, participants received their experimental manipulation, completed the Video Evaluation Task, and then the impromptu conversation task, participants in Study 2 completed the conversation task first, then received their experimental manipulation, and then completed the Video Evaluation Task. Because the experimental manipulation comes *after* the conversation task in Study 2, I did not video record the conversation task, as I expect there would be no differences across the three conditions prior to the false-feedback. Unlike Study 1 where participants *first* received the manipulation instructions and then participated in the conversation task, I decided not to include a memory test for Study 2 because the conversation task occurred *before* the false-feedback manipulation.

CHAPTER FOUR:

Negative Self-Evaluations Do Not Cause Negative Other-Evaluations: Findings From a False-Feedback Experiment Examining Cognitive and Emotional Consequences in Social Anxiety

Understanding unhelpful beliefs that clients have about themselves, others, the future, and the world is the foundation of Cognitive Behavioural Therapy (CBT; Beck, 2011). People with social anxiety disorder (SAD)—a disorder characterized by fear of negative evaluation in social or performance situations (American Psychiatric Association, 2013)—may hold negative beliefs about themselves (e.g., *if I tremble, I will look stupid*), others (e.g., *if I tremble, others will judge me*), the future (e.g., *I will always feel anxious at parties*), and the world (e.g., *people are inherently critical*). In addition to evaluating the veracity of these beliefs, other goals of CBT for social anxiety are to reduce self-focused attention, safety behaviour use, and avoidance (e.g., Clark & Beck, 2010; Clark & Wells, 1995; Rapee & Heimberg, 1997). Whereas researchers have focused on how people with SAD think about *themselves* in anxiety-provoking social situations, far less attention has been paid to how they think about *other* anxious people. Even less research has tested this relationship experimentally, which is necessary to understand the causal direction of the potential relationship between self- and other-evaluations. Because SAD is considered an *interpersonal disorder* (Alden, 2005), it is also vital to understand how these individuals interact with the world around them. Therefore, we reviewed both social psychology and clinical psychology literature to inform our study hypotheses. *Social projection theory* is the process where people believe others are more similar than different from themselves (e.g., self: *I'll look awkward when I fumble over my words*; others: *they looked awkward when they fumbled over their words*; Baumeister & Vohs, 2007). Understanding whether people with SAD evaluate other

visibly anxious people negatively *because* they evaluate themselves negatively may have important implications for CBT for SAD.

People with SAD frequently fear they will be criticized, judged, or otherwise negatively evaluated, even when they rarely experience overtly negative evaluations. Research on cognitive biases has examined how people with SAD interpret social or performance situations; people with SAD, compared to those without SAD, interpret ambiguous social situations as *negative*, and negative social situations as *catastrophic* (Amir et al., 1998; Beard & Amir, 2010; Chen et al., 2019; Stopa & Clark, 2000). Although interpretation biases appear to cause several cognitive, emotional, and behavioural consequences, we do not yet know if they also lead people to evaluate other anxious people negatively. Experimental research testing whether negative self-evaluations *cause* negative other-evaluations is vital, given that therapists delivering CBT for SAD could be missing an important element for assessment, conceptualization, and treatment. Indeed, in a recent meta-analysis, Springer et al. (2018) demonstrated that people with SAD experience one of the lowest remission rates (~40-45%) among anxiety disorders following CBT. Because researchers studying negative other-evaluations have used varying methodologies (e.g., few experiments, many observational studies) and examined an assortment of "others" (e.g., anxious people, nonanxious people) for evaluation, it is difficult to consolidate these findings to understand if negative other-evaluations are present and if they could impact the delivery of CBT for SAD.

We have directly observed these types of negative other-evaluations in the clinic. In CBT, clinicians routinely use cognitive techniques to explore how clients think about themselves versus others. The *double-standard technique* (e.g., Leahy, 2017) is often used to generate alternative thoughts (e.g., *Imagine a stranger looked the same way that you described believing*

you looked, what might you think about them?) to those that clients with SAD often report. Although this technique is frequently effective in identifying the double-standard clients hold for themselves, in some cases, clients state they would think just as negatively about the stranger (e.g., *stupid, boring, ineffective*) as they would about themselves. We wonder if these clients who demonstrate negative other-evaluations might be doing so because of their repeated negative evaluations about themselves. This hypothesis is consistent with the cyclical model of CBT that highlights the relationship between thoughts, feelings, and behaviours (Greenberger & Padesky, 2015), which often is maintained through a positive-feedback loop. Moreover, the idea that people with SAD view other anxious people negatively is consistent with *social projection theory*, in that evaluating oneself negatively would theoretically make someone more likely to see parts of themselves (i.e., anxiety, 'incompetence') in others (Krueger, 2007).

Limited research has *directly* examined how people with SAD evaluate other anxious people. Currently, most of what we know about other-evaluations comes from non-experimental studies, which reduces our understanding of the circumstances under which these evaluations appear. There is some evidence from observational research that people with social anxiety evaluate other people more negatively than people without social anxiety (e.g., Jones & Briggs, 1984; Jones & Carpenter, 1986; Niels Christensen et al., 2003; Purdon et al., 2001). Furthermore, Alden & Taylor (2004) suggested that people with SAD might overtly demonstrate more critical and/or aggressive actions towards others. Recent findings have also supported this theory, demonstrating that people with greater social anxiety reported *stronger* aggressive reactions to rejection (Weerdmeester & Lange, 2019) or negative evaluation (Erwin et al., 2003) than people with lower social anxiety.

However, not all studies have found that people with SAD view others negatively. In fact, just as many or more studies found *no differences* in evaluations of others between people with SAD and without (Ashbaugh et al., 2005; Bielak & Moscovitch, 2013; Gee et al., 2012) or found that people with SAD make *positive* evaluations towards others (Alden & Wallace, 1995; Stopa & Clark, 1993). We previously found when clustering groups of participants, that people with severe, mild-to-moderate, and low social anxiety gave mostly no judgements or positive judgements towards vignettes of hypothetical anxious people, rather than negative judgements (Ferguson & Ouimet, 2021). More recently, we conducted a study that experimentally examined the role of negative other-evaluations of a visibly anxious person on negative self-evaluations (Ferguson et al., 2021). Negative other-evaluations had *no* effect on self-evaluative cognitive, behavioural, or emotional outcomes; however, people who were assigned to judge others negatively demonstrated impaired memory for facts from their subsequent conversation task.

These conflicting findings may be attributable to methodological factors, including examining other-evaluations via exploratory analyses related to another primary goal, showing participants different stimuli (i.e., between-participants), or using a cross-sectional design. These studies were instrumental to beginning to understand negative other-evaluations; however, the diversity of methodologies and/or operationalization of other-evaluations across studies may have contributed to a lack of consistent findings. To address these concerns, our primary aim was to understand how negative self-evaluations contribute to other-evaluations and their associated sequalae by developing an experimental study that used a manipulation to induce negative self-evaluations among participants, standardized the study experience (e.g., watching the same stimuli, standard script to deliver instructions), and measured social anxiety-relevant emotional and cognitive variables.

Current Study

CBT focuses on the relationship between the ways we think, feel, and behave. Whereas decades of research have studied this connection for negative self-evaluations, research on how these self-evaluations relate to evaluations of others has resulted in conflicting findings from primarily cross-sectional designs, which limits our ability to understand causal relations. Following results from our earlier study where we found no considerable consequences (besides memory impairment) when we examined whether negative other-evaluations *caused* negative self-evaluations (Ferguson et al., 2021), we examined the opposite potential causal relation: does evaluating *oneself* negatively *cause* people to evaluate *others* negatively?

We recruited an unselected sample of undergraduate students and community members and invited them to participate in a study administered completely online, via interactions on Zoom with the experimenters. They engaged in an impromptu conversation task with a confederate, while a judge ostensibly viewed their conversation. After, we communicated false-feedback (positive, ambiguous, negative; randomly assigned) from the judge about the quality of their performance, to induce different valences of self-evaluations. We then tested the impact of those self-evaluations on participants' evaluation of a visibly anxious individual conversing with a non-anxious person. Our primary aim of this study was to understand whether negative self-evaluations contribute to negative other-evaluations and their associated emotional and cognitive consequences, to inform CBT case conceptualization for SAD.

Prior to any data collection, we pre-registered our methods, hypotheses, and data analysis plan on the Open Science Framework (Open Science Pre-Registration Link). We did not make any hypotheses for the positive- and ambiguous-feedback conditions but considered them both active control conditions. Compared to participants in the positive- and ambiguous-feedback

conditions, we hypothesized that, compared to participants in the positive- and ambiguous-feedback conditions, participants in the negative-feedback condition would:

H1. Write a *greater* number of negative comments about their performance during the conversation task (*Manipulation check*).

H2. Report more *strongly* negative evaluations of themselves on the self-version of the Public Speaking Performance Measure (PSPM-S) and the Ratings of Others Scale (ROOS-S) after the conversation task (*Manipulation check*).

H3. Report *greater* subjective anxiety (SUDS) during the post-conversation task feedback, relative to the baseline, anticipatory phase, and video evaluation task (*Emotional hypothesis*).

H4. Write a *greater* number of negative comments about the visibly anxious individual in the Video Evaluation Task (*Other-evaluation/cognitive hypothesis*).

H5. Report more *strongly* negative evaluations of the visibly anxious individual on the other-version of the Public Speaking Performance Measure (PSPM-O) and the Ratings of Others Scale (ROOS) during the Video Evaluation Task (*Other-evaluation/cognitive hypothesis*).

Method

Participants

A power analysis ($f = .25$, $\alpha = .05$, power = .80) for our primary analysis suggested a sample size of $n = 165$ (see Open Science Sample Size Addendum Link). We recruited an unselected sample of undergraduate students and members of the community using a university participation pool and social media recruitment ($N = 188$; $n_{Positive\text{-}feedback} = 62$, $n_{Ambiguous\text{-}feedback} = 60$, $n_{Negative\text{-}feedback} = 66$). People were eligible for this study if they had a high degree of English

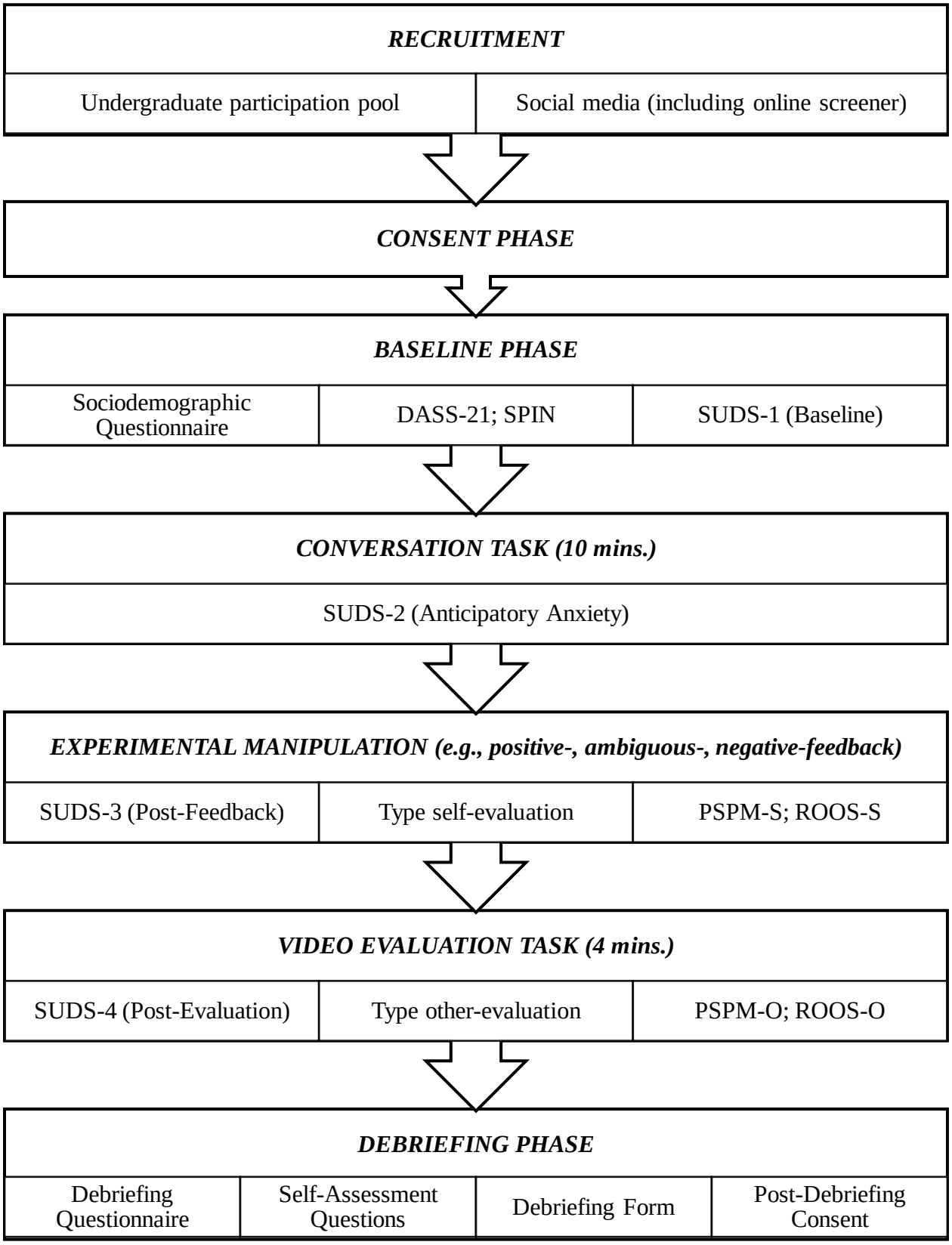
fluency (i.e., >70%), had access to a computer with a webcam and microphone, and were currently residing in Canada. Members of the community (compensated with entry into a draw) needed to be over 18 years old and undergraduate students (compensated with course credit) could be 17 years old. Although pre-screening questions were built into the undergraduate student participation pool, we asked participants recruited through social media to complete a short online screening survey where they reported their age, gender, and English fluency, and confirmed they resided in Canada and had a device with a camera, microphone, and access to Zoom.

Procedure

We began data collection for this study shortly after the restrictions related to the COVID-19 pandemic were enforced. Although we initially planned for this study to take place in-person (laboratory-based study), we modified it to an experimenter-guided online study (for more information, see Ferguson et al., 2022). Study personnel (e.g., experimenter, conversation partner, judge, participant) participated over Zoom and all questionnaires were completed on Qualtrics™. Our study was reviewed and approved by the University Research Ethics Board (certificate no. H-01-20-5352). Before signing up, participants were told the goal of the study was to test new ways of measuring social skills.

Following the consent phase, we asked participants to complete several baseline questionnaires (see Baseline Questionnaires section) in a completely randomized order and then a baseline SUDS score (see Figure 1 for a procedure diagram). Then, we informed participants that they would participate in a 10-minute conversation task with another participant while a social skills judge evaluated their performance for use in our future social skills training. In fact, the social skills judge was an empty Zoom account with the camera and microphone turned off.

Figure 1. *Procedure Diagram*.



Just before the experimenter added the conversation partner and social skills judge to the call for the conversation, we asked participants to complete a second SUDS (i.e., anticipatory anxiety). After 10 minutes had elapsed or after the participant chose to end the conversation early, the experimenter delivered false-feedback about the participant's performance to induce negative interpretation biases and lead participants to evaluate themselves negatively. Participants were told that the judge (*portions in italics varied depending on condition*):

> **Positive-feedback[9]:** "Thank you for participating in our getting acquainted task! We are now going to provide you with some feedback on how you performed during the conversation task. As you know, this recording is very important, as the lab is beginning to develop a training program that aims to increase one's social skills. Therefore, the quality of the data from this study is very important to us and to the status of our research lab. As such, we had a social skills judge evaluate your performance during the conversation task to get an idea of how they thought you did. The judge sent me a few comments that they thought best described your performance during the task. The judge… thought you were *engaging, relaxed, and an enjoyable person to talk with*, so they told me that *we can use your video* in our training! *Please* return to the Qualtrics page and advance to the next page to type something that you think the judge viewed *positively* about your performance during your conversation. In other words, what do you think it was about your performance that they judged so *positively*?"
>
> **Ambiguous-feedback:** "…*couldn't decide* whether your video should be used in our training after all. *If you want,* you can return to the Qualtrics page and advance to the next

[9] Because receiving no-feedback after participants were aware of the social skills judge might have been more ambiguous than intended, we chose to include positive-feedback instead. In addition, given that people with SAD often perceive ambiguous stimuli as negative, we were curious if we would find similar results in our unselected sample.

page to type something about your performance during the conversation that you *could have done better*. For example, if you had the chance to re-do it, *what might you do differently*?"

Negative-feedback: "…thought you were *nervous, uncomfortable, and a bit awkward*, so they told me that *we can't use your video* at all in our training. *Please* return to the Qualtrics page and advance to the next page to type *everything*[10] that you think the judge could have viewed *negatively* about your performance during your conversation. It's *really* important that you type *anything* that they could have viewed *negatively* about you, as this is our *last* possible chance use your data for our future studies."

Immediately after, we asked participants to complete their third SUDS rating (i.e., post-feedback) and then type their thoughts about their performance. They then completed the PSPM-S and ROOS-S about their own performance. Subsequently, participants watched a four-minute Video Evaluation Task and then typed their thoughts about the visibly anxious person, completed a fourth and final SUDS rating (i.e., following other-evaluation), and responded to the PSPM-O and ROOS-O. Prior to debriefing, we asked participants several questions related to the manipulation (Debriefing Questionnaire) and the Self-Assessment Questions. After debriefing, we asked for all participants' consent to continue to use their data, given that we used mild deception.

Baseline Questionnaires[11]

[10] Compared to the positive and ambiguous-feedback conditions, we asked participants in the negative-feedback condition to type *everything* (instead of something) that could have been negatively evaluated. This wording choice is to reflect the rumination/post-event processing that is common in people with SAD, whereas people without SAD often do not spend a lot of time ruminating over positive aspects or aspects that they could have improved.

[11] Given the similarity of measures and experiment design used in this study and Ferguson et al. (2021), there is considerable overlap in the text of these two Methods sections.

We asked participants to complete several questionnaires to characterize our sample and compare total scores at baseline between our conditions. Each baseline questionnaire included one "catch" question (e.g., *This question is to ensure that you are reading the items. Mark "very concerned" to this question*) that was randomly placed. Participants' data were considered for removal if they answered more than two of the four questions incorrectly. See Table 1 for internal consistency and descriptive statistics of all measures.

Sociodemographic Questionnaire. Participants disclosed their age, gender identity, sexual orientation, race/ethnicity, marital status, household income, university/occupational status, primary language, English fluency, and history and treatment of mood or anxiety disorders (see Table 2).

Depression Anxiety and Stress Scale–21 (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 is a 21-item self-report measure of depression, anxiety, and stress symptoms. Participants rated how much each statement applied to them on a Likert scale (0 = *did not apply to me at all* to 3 = *applied to me very much, or most of the time*). The DASS-21 subscales demonstrate good to excellent internal consistency (α = .87 to .94) and good concurrent validity with the Beck Depression Inventory and Beck Anxiety Inventory (Antony et al., 1998).

Social Phobia Inventory (SPIN; Connor et al., 2000). The SPIN is a 17-item self-report measure that examines fear, avoidance, and physiological discomfort in social situations. Participants responded to each item based on how much it bothered them over the past week on a five-point Likert scale (0 = *not at all* to 4 = *extremely*). The SPIN ranges from good to excellent internal consistency (α = .87 to .94) and shows convergent validity with the Brief Social Phobia Scale (Connor et al., 2000).

Outcome Questionnaires

Table 1. *Descriptive statistics by condition for all hypotheses.*

	Mean (SD)			*Min-Max*			α
	Positive	*Ambiguous*	*Negative*	*Positive*	*Ambiguous*	*Negative*	
H1 (Manipulation check)							
# Negative Self-Comments	.49 (.81)	2.14 (1.11)	2.70 (1.56)	0.00-3.00	0.00-5.50	0.00-7.50	-
H2 (Manipulation check)							
PSPM-S	17.83 (7.27)	23.74 (11.37)	26.12 (10.51)	3.00-37.00	3.00-47.00	7.00-53.00	.88
ROOS-S+	1.01 (.88)	.59 (.87)	.33 (1.02)	-1.00-3.00	-1.00-2.60	-2.30-2.90	.89
ROOS-S-	-1.46 (.81)	-.86 (1.15)	-.67 (1.12)	-2.90-.20	-3.00-1.50	-2.50-2.70	.89
H3 (Emotional hypothesis)							
SUDS1-Anxiety	28.98 (19.98)	27.02 (25.58)	25.90 (18.57)	0.00-84.00	0.00-76.00	0.00-82.00	-
SUDS2-Anxiety	37.89 (23.74)	40.67 (25.53)	39.64 (21.53)	0.00-92.00	0.00-100.00	0.00-91.00	-
SUDS3-Anxiety	26.06 (20.31)	31.60 (23.22)	35.14 (23.24)	0.00-80.00	0.00-91.00	0.00-86.00	-
SUDS4-Anxiety	16.52 (13.76)	22.19 (19.73)	24.15 (23.32)	0.00-61.00	0.00-76.00	0.00-100.00	-
H4 (Cognitive hypothesis)							
# Negative Other Comments	5.02 (1.52)	4.71 (1.83)	4.95 (1.88)	2.00-9.00	1.50-9.00	1.50-9.00	-
H5 (Cognitive hypothesis)							
PSPM-O	41.07 (10.72)	41.53 (11.84)	43.12 (11.60)	8.00-58.00	10.00-65.00	2.00-65.00	.90
ROOS-O+	-.85 (.82)	-.88 (.94)	-.97 (.87)	-2.40-2.10	-2.70-1.90	-2.70-2.40	.87
ROOS-O-	-.04 (.89)	.05 (.94)	.25 (.91)	-2.50-2.00	-2.70-1.90	-3.00-2.50	.83

Notes. N = 169. PSPM-S = Public Speaking Performance Measure-Self version; ROOS-S+ = Ratings of Others Scale-Self version, positive attributes; ROOS-S- = Ratings of Others Scale-Self version, negative attributes; SUDS1-Anxiety = Subjective Units of Distress Scale, Baseline; SUDS2-Anxiety = Subjective Units of Distress Scale, Anticipatory; SUDS3-Anxiety = Subjective Units of Distress Scale, After False-Feedback; SUDS4-Anxiety = Subjective Units of Distress Scale, After Other-Evaluation; PSPM-O = Public Speaking Performance Measure-Other version; ROOS-O+ = Ratings of Others Scale-Other version, positive attributes; ROOS-O- = Ratings of Others Scale-Other version, negative attributes.

Table 2. *Sample characteristics*

Variable	*n*	*%*
Gender		
Female	132	78.1%
Male	35	20.7%
Non-binary	2	1.2%
Ethnicity / Race		
White	96	56.8%
European	20	11.8%
Black	19	11.2%
Middle Eastern	18	10.7%
Asian	17	10.1%
South Asian	12	7.1%
Other	7	4.1%
Hispanic/LatinX	6	3.6%
Caribbean	3	1.8%
Indigenous	2	1.2%
Pacific Islander	2	1.2%
Relationship Status		
Single	131	77.5%
Long-Term Relationship	22	13.0%
Living Together	6	3.6%
Married	5	3.0%
Divorced	2	1.2%
Widowed	1	0.6%
Separated	1	0.6%
Prefer not to answer	1	0.6%
Self-Reported Previous Psychological Dx		
Yes	26	15.4%
No	139	82.2%
Prefer not answer	4	2.4%

Notes. $N = 169$. Participants were able to check all ethnicity/race options that applied to them, which is why the frequency data is beyond the sample size.

Public Speaking Performance Measure (PSPM; Rapee & Lim, 1992). We used the PSPM as an indicator of *subjective* public speaking performance. Participants rated themselves after their conversation task (PSPM-S) and the videotaped anxious person (PSPM-O) after the Video Evaluation Task. Participants responded to 17 items including 12 specific items (e.g., *had a clear voice)* and 5 global items (e.g., *generally spoke well*) on a five-point Likert scale (0 = *not at all* to 4 = *very much*). The PSPM specific and global items within the self- and other-versions demonstrate good internal consistency (α = .79 to .86) and good inter-rater reliability (*r* = .86 to .93; Rodebaugh & Chambless, 2002).

Ratings of Others Scale (ROOS; Ferguson et al., 2021). We used the ROOS (see Appendix B) as an indicator of participants' evaluations of their own *character* (ROOS-S; self) or the *character* of the visibly anxious person (ROOS-O; other). Besides the instructions given to participants (i.e., think about yourself *vs* think about the person on the right of the video), both versions are identical and include 10 positive (e.g., *attractive, intelligent*) and 10 negative (e.g., *boring, inadequate*) attributes taken from previous literature (e.g., de Jong, 2002; Egloff & Schmukle, 2002; Purdon et al., 2001). Participants rated each item using a visual analog scale (-3 = *strongly disagree* to +3 = *strongly agree*). We calculated one positive and one negative subscale score by summing all 10 attributes and dividing by 10, leading to a possible range between -3 (strong disagreement with attributes) and +3 (strong agreement with attributes). The positive and negative items on the ROOS self- and other-versions demonstrate good to excellent internal consistency (α = .83 to .90; Ferguson et al., 2021).

Reflections on Performance. After participants completed their 10-minute conversation task and received their false-feedback, they were instructed to type their thoughts about themselves during their conversation (*Conversation Reflection*). Additionally, after participants

completed the Video Evaluation Task, they were similarly asked to type their thoughts about the woman on the right (who appeared anxious; *Video Reflection*). Participants answered using bullet-points or paragraph form. Two research assistants, unaware of the study goals, hypotheses, or the experimental conditions, coded the number of negative comments about: 1) themselves after their conversation task; 2) their conversation partner; 3) the visibly anxious person in the Video Evaluation Task; and 4) the confident person in the Video Evaluation Task. We conducted an intraclass correlation coefficient to determine inter-rater reliability and congruence ratings for all four questions ($ICC_{ConvoSelf}$: .90; $ICC_{ConvoOther}$: .86; $ICC_{VideoAnxious}$: .86; $ICC_{VideoConfident}$: .13[12]). Given the congruence score, we calculated an average of the two scorers to have one variable for each of the four questions.

Subjective Units of Distress Scale (SUDS; Wolpe, 1958). The SUDS measures participants' subjective state distress. We asked participants to rate their level of *anxiety*, rather than *distress*. We also included three additional emotions to reduce response biases (anger, guilt, happiness; Stopa & Clark, 1993). Participants rated the emotions on a visual analog scale (0 = *totally relaxed* to 100 = *highest anxiety that you have ever felt*).

Self-Assessment Questions. Prior to debriefing, we asked participants to rate their perceived *effort*, how much *attention* they gave, and if they thought we should *use* their data.

Debriefing Questionnaire. Prior to debriefing, we asked participants to rate several questions (see Appendix C) about the study including: 1) how much they considered the judge's feedback when rating their own behaviour on the PSPM-O; 2) how high their standards were when rating themselves; 3) how much they focused on their small mistakes; and 4) how

[12] This variable has very low interrater reliability. As participants offered feedback from this question spontaneously (i.e., we did not request it), we suspect the low reliability is related to mostly zeros in the dataset. Nevertheless, this variable was not planned to be used in any analysis, and given the low ICC, we will not use it for exploratory analyses.

convinced[13] they were that we were measuring social skills (see Manipulation Check section).

Computerized Tasks

Conversation Task. The task took place entirely over Zoom (see Ferguson et al., 2022). The conversation partner and 'judge' were added to the Zoom call after the participants received instructions. The conversation was unstructured and used an opposite-gender conversation partner (e.g., Beidel et al., 1985; Ferguson et al., 2021; Thompson & Rapee, 2002). We randomly assigned participants who identified as non-binary or declined to answer a preliminary gender-identity question to any confederate. We informed participants that they could end the conversation at any time; however, only two participants ended before 10 minutes.

Video Evaluation Task (Ferguson et al., 2021). After receiving their false-feedback, participants were instructed to watch a four-minute video of two people on a first date (https://www.youtube.com/watch?v=qmfNmvRj758). One person was trained to display obvious signs of anxiety (e.g., mumbling, stuttering, fidgeting, avoiding eye contact), whereas their partner did not (Ashbaugh et al., 2005; Bielak et al., 2018).

Data Preparation

We deemed 18 participants' data ineligible to be used in our data analyses: 8 participants answered more than two catch questions incorrectly; 4 participants had technology issues and ended the study early; 2 participants knew the confederate was pretending to be another participant; 2 participants went too far in the survey and responded incorrectly to the study questions; 1 participant arrived significantly late and was not tested; and 1 withdrew their consent at the end of the study. Data were visually scanned for any impossible values and for skewness and kurtosis. Prior to analyses, the conditions were anonymized so the first author was

[13] Participants were asked to rate this item on a Likert scale from 0-100, we removed data for any participant who answered the question with "0."

unaware of the conditions until all data were analyzed. Our final sample was N = 169 ($n_{Positive\text{-}feedback}$ = 54, $n_{Ambiguous\text{-}feedback}$ = 57, $n_{Negative\text{-}feedback}$ = 58).

Hypothesis Testing

To test if condition affected the number of negative comments participants wrote about themselves after the conversation task (H1; Manipulation check), we conducted a one-way ANOVA. To test if condition affected participants' self-evaluations (H2; Manipulation check), we conducted two separate one-way ANOVAs using the PSPM-S and ROOS-S as dependent variables. To test if condition affected participants' self-reported anxiety (H3), we conducted a 3 (condition) x 4 (time) repeated measures ANOVA. To test if condition affected the number of negative comments participants wrote about the visibly anxious person in the Video Evaluation Task (H4), we conducted a one-way ANOVA using the combined score from our independent coders. To test if condition affected participants' other-evaluations (H5), we conducted two separate one-way ANOVAs using PSPM-O and ROOS-O as dependent variables. In our pre-registration, we planned to explore whether social anxiety symptoms moderate the relationship between condition and our primary dependent variables. Because these are exploratory analyses, we did not make any specific hypotheses.

Results

We observed a significant difference on participants' baseline SPIN scores, $F(2,166) = 3.09$, $p = .048$, $\eta_p^2 = .04$, but there were no differences between conditions on the DASS-21 (all $Fs < .90$, $ps > .41$). People in the positive-feedback condition reported significantly *fewer* social anxiety symptoms at baseline compared to the negative-feedback condition. There were no differences between the ambiguous- and negative-feedback conditions or the positive- and ambiguous-feedback conditions (see Table 3 for all follow up t-statistics). Due to this difference,

we deviated from our pre-registration (see Appendix D) by using baseline social anxiety scores (SPIN) as a covariate in all primary analyses.

Manipulation and Data Integrity Checks[14]

We found a significant effect of condition on the number of negative comments participants wrote about themselves after their conversation task, while controlling for social anxiety (H1). Social anxiety was a significant covariate (see Table 4 for the F-statistics for all covariate analyses). We expected the negative-feedback condition to write significantly more negative comments about themselves, compared to the positive-feedback condition. We did not have any hypotheses for the ambiguous-feedback condition. Participants in the negative-feedback condition wrote significantly *more* negative comments than the other conditions; the ambiguous-feedback condition wrote fewer than the positive-feedback condition (see Table 3 for all follow up t-statistics). While controlling for social anxiety, we also observed significant effects of condition on subjective self-performance (PSPM-S), *positive* self-characteristics (ROOS-S+), and *negative* self-characteristics (ROOS-S-). For the self-evaluation manipulation checks (i.e., PSPM/ROOS), we expected the negative-feedback condition to report significantly higher levels of performance/character flaws, compared to the positive-feedback condition. We did not have any hypotheses for the ambiguous-feedback condition. Across all significant effects, participants in the positive-feedback condition reported: 1) significantly *fewer* subjective performance flaws (PSPM); 2) stronger *agreement* with the positive characteristics (ROOS-S+); and 3) stronger *disagreement* with the negative characteristics (ROOS-S-) task than the other conditions; the ambiguous- and negative-feedback conditions did not differ from each other. Additional checks using the Debriefing Questionnaire supported overall data integrity (see

[14] See *Appendix A* for a description of our Manipulation Check at n = 30.

Appendix E).

Hypothesis Testing

There were no significant effects of time or condition on self-reported anxiety (H3), while controlling for social anxiety. However, social anxiety was a significant covariate (see Table 4). There was also a statistically significant condition by time interaction on self-reported anxiety. However, when conducting follow up simple main effects tests, we found no significant effects (all $Fs < 2.34$, $ps > .10$), which is consistent with the small effect size found for the significant interaction. While controlling for social anxiety, there were also no significant effects of condition on the number of negative comments written about the visibly anxious person (H4), subjective performance of the visibly anxious person (PSPM-O; H5), or evaluations of the visibly anxious person's positive and negative characteristics (ROOS-O; H5). See Table 4 for all significant and non-significant analyses using SPIN as covariate.

Exploratory Analyses

We initially conducted a series of moderation analyses using the PROCESS macro for SPSS to assess if the relationship between condition and our primary dependent variables was moderated by participants' social anxiety symptoms, consistent with our pre-registration of planned exploratory analyses. However, due to our need to use social anxiety symptoms as a covariate in our primary analyses, we have not reported our moderation findings.

Given that our manipulation included false-feedback, along with some research findings that people with SAD may display more critical or aggressive reactions to rejection or negative evaluation, we decided to examine outcomes on our SUDS-anger variable. While controlling for social anxiety, we found no significant effect of time nor an interaction between time and SPIN covariate on anger (see Table S3). There was a significant effect of condition and a significant

Table 3. *Follow up t-tests for Manipulation and Data Integrity Checks.*

Condition comparisons	*d.f.*	*t*	*p*	*d*
SPIN				
*Positive*Ambiguous*	113	.38	.70	.36
*Negative*Ambiguous*	113	.38	.70	.07
*Negative*Positive*	110	2.57	.01	.49
# Negative Comments				
*Positive*Ambiguous***	102	8.96	<.001	.70
*Negative*Ambiguous***	103	2.20	.03	.25
*Negative*Positive***	87	9.48	<.001	1.78
PSPM-S				
*Positive*Ambiguous***	96	3.28	.001	.62
*Negative*Ambiguous*	113	1.17	.25	.22
*Negative*Positive***	102	4.88	<.001	.92
ROOS-S+				
*Positive*Ambiguous*	109	2.47	.02	.47
*Negative*Ambiguous*	113	1.52	.13	.28
*Negative*Positive*	110	3.78	<.001	.71
ROOS-S-				
*Positive*Ambiguous***	101	3.17	.02	.60
*Negative*Ambiguous*	113	.91	.37	.17
*Negative*Positive*	110	4.24	<.001	.81

Note. SPIN = Social Phobia Inventory; PSPM-S = Public Speaking Performance Measure-Self

Table 4. *Main Analyses with SPIN as a Covariate.*

	Sum of squares	*d.f.*	Mean Square	*F*	*p*	η_p^2
# Negative Self-Comments (H1)*						
Condition	128.57	2,165	64.28	45.07	<.001	.35
Condition*SPIN	7.77	1,165	7.77	5.45	.02	.03
PSPM-S (H2)						
Condition	1119.01	2,165	559.51	7.05	.001	.08
Condition*SPIN	3248.63	1,165	3248.63	40.96	<.001	.20
ROOS-S+ (H2)						
Condition	8.13	2,165	4.07	5.22	.006	.06
Condition*SPIN	15.19	1,165	15.19	19.49	<.001	.11
ROOS-S- (H2)						
Condition	9.43	2,165	4.72	5.48	.005	.06
Condition*SPIN	39.68	1,165	39.68	46.09	<.001	.22
SUDS (H3)*						
Time	1035.96	3,495	369.00	1.71	.17	.01
Condition	2.68	2,165	1.34	.006	.99	<.001
Time*SPIN Time*	3502.13	3,495	1247.44	5.79	.001	.03
Condition	3124.66	6,495	556.49	2.58	.02	.03
# Negative Other-Comments (H4)						
Condition	3.05	2,165	1.53	.49	.61	.006
Condition*SPIN	.20	1,165	.20	.06	.80	<.001
PSPM-O (H5)						
Condition	114.16	2,165	57.08	.44	.65	.001
Condition*SPIN	19.96	1,165	19.96	.15	.70	.005
ROOS-O+ (H5)						
Condition	.44	2,165	.22	.28	.75	.003
Condition*SPIN	<.001	1,165	<.001	.001	.98	<.001
ROOS-O- (H5)						
Condition	2.37	2,165	1.18	1.42	.25	.02
Condition*SPIN	.05	1,165	.05	.06	.81	<.001

Note. PSPM-S = Public Speaking Performance Measure-Self version; ROOS-S+ = Ratings of Others Scale-Self version, positive attributes; ROOS-S- = Ratings of Others Scale-Self version, negative attributes; SUDS = Subjective Units of Distress Scale; PSPM-O = Public Speaking Performance Measure-Other version; ROOS-O+ = Ratings of Others Scale-Other version, positive attributes; ROOS-O- = Ratings of Others Scale-Other version, negative attributes. Some of our analyses violated the assumptions of homogeneity and homoscedasticity. For ANCOVAs that had heterogeneity (denoted with a *), we used the F_{max} rule described by Tabachnick & Fidell (2018; all ratios were acceptable < 4:1).

interaction between time and condition. We used a Dunn-Sidak *p*-value correction ($p = .007$) for multiple comparisons when conducting simple main effects tests to explore the nature of the interaction. People in the positive-feedback condition reported significantly *less* anger at SUDS T4 (Video Evaluation) than T1 (Baseline) and T2 (Anticipatory); their anger was also significantly *lower* at T3 (Post-Feedback) than T2. At both T3 and T4, participants in the negative-feedback condition reported significantly *greater* anger than the other conditions; the positive and ambiguous conditions did not significantly differ. See Appendix F for descriptions of exploratory analyses for the other SUDS emotions and remaining exploratory analyses.

Discussion

To the best of our knowledge, our study was the first to use experimental methods to understand if negative self-evaluation causes people to negatively evaluate others, within the predominately under-researched area of other-evaluations and social anxiety. We found that after successfully delivering an experimental manipulation (positive-, ambiguous-, negative-feedback), which induced participants to evaluate themselves accordingly, participants in the negative-feedback condition did *not* evaluate a visibly anxious person more negatively or report feeling greater anxiety than the other two conditions. Our findings suggest that there is no direct relationship between self- and other-evaluations, at least in the way we initially tested it (i.e., within a single session).

In all experimental studies, interpretations of the outcomes depend necessarily on the validity of the manipulation; we found participants across our three conditions generally followed our manipulation instructions in the way we anticipated. Participants in the positive-feedback condition wrote the *fewest* negative comments about themselves after their conversation task, reported the *fewest* subjective performance flaws on the PSPM-S, reported the

strongest *agreement* with the positive ROOS characteristics and strongest *disagreement* with the negative characteristics. After statistically controlling for the effect of social anxiety, participants in the ambiguous- and negative-feedback conditions reported similar responses to many of our manipulation checks; how they rated their own subjective performance flaws (PSPM-S) and self-characteristics (ROOS-S). Consistent with the interpretation bias literature, those who received the ambiguous- and negative-feedback overall thought about themselves more negatively, compared to people in the positive-feedback condition. This finding is consistent with a large body of evidence that people with higher social anxiety tend to interpret ambiguous situations more negatively (e.g., Stopa & Clark, 2000; Beard & Amir, 2010). Given that we observed this interpretation bias in a university/community sample, this finding highlights that *direct* performance feedback can prompt even people without social anxiety to evaluate themselves negatively. This finding might reflect an overall vulnerability to social anxiety that was present in an unselected sample. People with varying levels of social anxiety who interpret ambiguous feedback no differently than negative feedback may be at risk of developing more clinically significant symptoms.

Our lack of significant effects of self-evaluation on other-evaluation do not support our hypotheses, the CBT model, or social projection theory. We became interested in studying the relationship between negative self- and other-evaluations from our experiences working with clients with SAD. Therefore, we expected people who evaluated themselves negatively to subsequently evaluate a visibly anxious person negatively. Instead, we found that regardless of condition, participants evaluated the visibly anxious person similarly. Although it is possible (or probable) that no true relationship between negative self- and other-evaluations exists—consistent with some prior research findings (e.g., Alden & Wallace, 1995; Ashbaugh et al.,

2005—there may be other reasons for our observed lack of between-condition differences. Perhaps negative self-evaluations only turn *outward* (i.e., negative other-evaluations) in individuals whose symptoms meet diagnostic criteria for Social anxiety disorder and thus have a longer history of negative self-evaluations. Given that we provided only one opportunity for participants to negatively evaluate themselves it is possible that repeated self-evaluations would lead to different results, more aligned with how people with SAD evaluate themselves. Additionally, the visibly anxious person in the Video Evaluation Task demonstrated several noticeable signs of anxiety (e.g., hiding face, fidgeting, stumbling over words). The PSPM includes many *specific* items (i.e., overt performance) and few *global* (i.e., up for interpretation) items; this obvious link between the visibly anxious person's behaviour and the items on the PSPM might explain why participants in all conditions seemingly recognized and reported the anxious person's performance deficits similarly. Perhaps a more subtle display of anxiety would have been detected differently by the negative-feedback condition, who just recently evaluated themselves negatively.

We were surprised that our conditions differed in their baseline social anxiety scores, given random assignment. Notably, we included the SPIN as a co-variate in all primary analyses; however, the SPIN emerged as a significant covariate only for participants' self-evaluation (i.e., # negative self-comments, PSPM-S, ROOS-S), which we used as manipulation checks. The SPIN was not a significant covariate for any of our hypotheses related to other-evaluations (i.e., negative other-comments, PSPM-O, ROOS-O). Indeed, this finding is consistent with research and clinical theory that suggests people with SAD display more criticism towards their own performance than the performance of others (Koban et al., 2017). Furthermore, the lack of impact of SPIN scores on condition and other-evaluations both in our covariate analyses and our

moderation analyses provides more evidence that other-evaluations are likely not a hallmark of SAD.

Although our primary emotional and cognitive hypotheses were not supported, our findings tell us much about the consequences (or lack thereof) of negative self-evaluations. We were surprised that participants in the negative- and ambiguous-feedback conditions did not report significantly *greater* state anxiety than the positive-feedback condition after receiving their false-feedback, even though they wrote down more negative comments about themselves. Consistent with the CBT model, we anticipated that thinking about one's performance after receiving negative feedback would have increased state anxiety. Instead, through our exploratory analyses, we found that participants in the negative-feedback condition reported greater state *anger* than the other conditions. This finding was exclusive to people in the negative-feedback condition, suggesting overt negative evaluation, rather than interpretation biases, leads to detect increased anger. This finding is consistent with increasing evidence that people with SAD may demonstrate critical or angry responses when faced with rejection or negative evaluation (e.g., Alden & Taylor, 2004; Erwin et al., 2003; Weerdmeester & Lange, 2019) and in their everyday life (Kashdan & Collins, 2010). In fact, despite reporting greater state anger, people with SAD display *less* verbal aggression than people without any psychological diagnosis (Moscovitch et al., 2008). Given that many people with SAD have significant socially-traumatic histories (Wild & Clark, 2011), and that shame has been linked as a predecessor for anger (e.g., Tangney et al., 1992), participants in the negative-feedback condition may have experienced shame following the false-feedback and subsequent Video Evaluation Task, which contributed to greater state anger than the other conditions. Because this was an exploratory analysis, we interpret the finding with caution. Future research should further study the role of *anger,* along with anxiety

and shame, as distressing emotional consequences of SAD, with the goal of improving and refining CBT to better serve people with SAD.

Limitations and Future Directions

Although we randomly assigned all participants to their experimental condition prior to their scheduled testing block, participants in the negative-feedback condition reported significantly *greater* social anxiety symptoms on the SPIN, compared to the positive- and ambiguous-feedback conditions at baseline. The average SPIN scores of each condition were above the original clinical cut-off of 19 (Connor et al., 2000), but were all below the more stringent cut-off of 30 more frequently used in recent research (Moser et al., 2008). Because the social anxiety experiences across the conditions were not equal, we were required to statistically control for social anxiety severity for our primary analyses. This decision was important to avoid the potential for social anxiety to act as a confound; however, it may have reduced some of the variability we attempted to include, given our recruitment of an unselected sample.

Our use of an online, experimenter-guided environment might also limit the generalizability of our findings. Although online experimental research is instrumental to maintaining research during a pandemic and increasing accessibility for participants, it may also alter the expected outcomes in diverse ways. For example, as discussed in our recent case study (Ferguson et al., 2022), participants experienced more technology interruptions and distractions, compared to our typical in-person research studies. Additionally, hiding one's body can be an important safety behaviour that reduces anxiety during social anxiety provoking tasks (e.g., standing at a podium during a speech; e.g., Tutino et al., 2020); participants may have felt more comfortable in their own environments, showing only their faces, than in an in-person novel laboratory setting. Taken together, it is possible that data collected online produce different

outcomes than those in-person, particularly with respect to anxiety.

Implications

Research on negative other-evaluations has led to conflicting findings, primarily due to methodological choices, lack of operationalization, and testing other-evaluations only in an exploratory manner. Furthermore, until this point, there were no experiments that tested whether negative self-evaluations (commonly experienced by people with SAD) *lead* to negative other-evaluations. We found that participants' negative self-evaluations did not lead them to see negative aspects in others (i.e., inconsistent with social projection theory) any more than people who received positive- and ambiguous-feedback. Our null results are also important to the treatment of SAD using CBT. People with SAD who appear to evaluate others negatively in the clinic may be doing so because of mechanisms unrelated to social anxiety. Therapists working with clients who continue to report this type of thinking about others might want to consider other variables in their case conceptualization.

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Appendix A. *Manipulation check with n = 30.*

At 30 participants, we conducted a manipulation check to test if our false-feedback manipulation was producing noticeable differences in the number of negative comments participants wrote about their conversation. Because we randomly assigned participants into their condition, we had nearly equal groups (positive-feedback: $n = 9$; ambiguous-feedback: $n = 12$; negative-feedback: $n = 9$). Participants in the negative-feedback condition wrote the most negative comments about the quality of their conversation, followed by the ambiguous-feedback condition with fewer negative comments, and the positive-feedback condition wrote the least number of negative comments, $F(2,27) = 15.20$, $p < .01$, $\eta^2_p = .53$. We did not analyze any other relationships or variables. As our manipulation check was consistent with our expected results, we did not change any feedback instructions and continued with our data collection.

Appendix B. *Ratings of Others Scale (ROOS).*

Self Version (ROOS-S)

We would like you to think about **your performance during the conversation**. Please indicate how you view your performance on each item below -3 to +3. A score of -3 would indicate that you ***strongly disagree*** with the descriptor word, a score of 0 indicates that you ***neither disagree nor agree*** with the descriptor word, and a score of +3 indicates that you ***strongly agree*** with the descriptor word.

Other Version (ROOS-O)

We would like you to think about the **person in the video sitting on the RIGHT**. Please indicate how you view that person on each item below -3 to +3. A score of -3 would indicate that you ***strongly disagree*** with the descriptor word, a score of 0 indicates that you ***neither disagree nor agree*** with the descriptor word, and a score of +3 indicates that you ***strongly agree*** with the descriptor word.

	Strongly disagree			**Neither disagree nor agree**			**Strongly agree**
1) ambitious	-3	-2	-1	0	1	2	3
2) attractive	-3	-2	-1	0	1	2	3
3) awkward	-3	-2	-1	0	1	2	3
4) boring	-3	-2	-1	0	1	2	3
5) compassionate	-3	-2	-1	0	1	2	3
6) failure	-3	-2	-1	0	1	2	3
7) foolish	-3	-2	-1	0	1	2	3
8) humiliated	-3	-2	-1	0	1	2	3
9) inadequate	-3	-2	-1	0	1	2	3
10) intelligent	-3	-2	-1	0	1	2	3
11) interesting	-3	-2	-1	0	1	2	3
12) leader	-3	-2	-1	0	1	2	3
13) mentally healthy	-3	-2	-1	0	1	2	3
14) nervous	-3	-2	-1	0	1	2	3
15) reliable	-3	-2	-1	0	1	2	3
16) socially skilled	-3	-2	-1	0	1	2	3
17) strong character	-3	-2	-1	0	1	2	3
18) stupid	-3	-2	-1	0	1	2	3
19) weak	-3	-2	-1	0	1	2	3
20) worthless	-3	-2	-1	0	1	2	3

Appendix C. *Debriefing Questionnaire.*

1. You may have been given feedback from a social skills judge after you finished the conversation task. First, please check the box below if you received feedback or if you did not.
   ☐ I did receive feedback from a judge.
   ☐ I did not receive feedback from a judge.
   Using this box, answer to what degree you ***considered the judge's feedback*** when rating your ***own*** behaviour during the task on the questionnaire that asked you to rate how much you *stuttered, fidgeted, kept a clear voice, etc.* and the questionnaire that asked you to rate how *boring, intelligent, nervous, weak, etc.* you thought you were. (This question will not be visible to individuals in the no-feedback condition)

-3	-2	-1	0	1	2	3
Didn't think about the feedback at all			Thought about the feedback, but did not use it when rating my behaviour			Answered each item with the feedback in mind

2. How *high* do you think your standards were in evaluating ***yourself*** on the questionnaire that asked you to rate how much you *stuttered, fidgeted, kept a clear voice, etc.* and the questionnaire that asked you to rate how *boring, intelligent, nervous, weak, etc.* you thought you were.

-3	-2	-1	0	1	2	3
Very low			Somewhat high			Very high

3. To what degree did you focus on the ***small details/potential mistakes*** that you might have made during your conversation?

-3	-2	-1	0	1	2	3
Not very much at all			Somewhat			Very much

4. How convinced were you that that we were studying social skills?

-3	-2	-1	0	1	2	3
Not convinced at all			Somewhat convinced			Very convinced

What do you think your Conversation Task and watching First Date video was for? Do you have any ideas about how they might be related?

Appendix D. *Deviations from pre-registration.*

From our initial pre-registration in June 2020, we made a few slight changes to our initial pre-registration plan. However, all but one change was made *prior* to analyzing the data for our primary outcome variables. First, in December 2020, we submitted a sample size addendum on the Open Science Framework (see https://osf.io/fc95j/?view_only=bc46dd670a1040d48f84e9bcb23dac5f). Our sample size justification in our initial registration was related to a power analysis for our most *complicated* analysis (i.e., SUDS); however, upon consultation, we understood that we should have conducted our power analysis for our *primary* analysis (i.e., PSPM-O). Thus, instead of collecting data from n = 180 participants, we instead collected n = 165 (n = 55 in each condition) to account for possible incomplete/unusable data.

Our initial pre-registration included using the Negative Self-Portrayal Scale (NSPS; Moscovitch & Huyder, 2011) and the Multidimensional Perfectionism Scale Short Form (MPS-SF; Hewitt et al., 2008) to characterize our sample and/or to potentially run as exploratory analyses. However, to simplify our results section, we decided not to conduct exploratory analyses with these variables. The NSPS is a 27-item self-report questionnaire that measures one's concerns in anxiety-provoking social situations. Participants rated their level of concern on a five-point Likert scale (0 = *not at all concerned* to 5 = *extremely concerned*). The MPS-SF is a 15-item self-report measure assessing three dimensions of perfectionism: self-oriented, other-oriented, and socially prescribed on a seven-point Likert scale (1 = *strongly disagree* to 3 = *strongly agree*). However, we used only the other-oriented scale (MPS-OOP; e.g., *If I ask someone to do something, I expect it to be done flawlessly*) for our exploratory analyses. See

Supplementary Table 1 for descriptive statistics for the MPS and NSPS. We did not conduct any analyses using these variables.

After all data were collected, we began to clean the data. We noticed that our planned IER cut-offs would result in removing data from a large number of participants. Given recent findings that negative emotions (e.g., anxiety, distress) and thoughts (i.e., unfulfilled, regret) were related to participants being more critical about their performance during the attention and effort questions[15], we modified our IER plan to take into account the anxiety-provoking nature of our experiment. We included data from participants who answered two or fewer "catch questions" incorrectly. We also did not consider participants' responses to the Self-Assessment Questions, which were likely impacted by anxiety/doubt.

As discussed in our manuscript, despite randomly assigning participants to their respected conditions, participants in the negative-feedback condition reported significantly greater social anxiety symptoms during the baseline questionnaires. Since this is quite rare, given random assignment, our change to analyzing our hypotheses using an ANCOVA rather than ANOVA deviates from our initial pre-registration plan.

[15] Ashley, M., & Shaughnessy, K. (2021). Predicting insufficient effort responding: The relation between negative thoughts, emotions, and online survey responses. *Canadian Journal of Behavioural Science.* Advance online publication. https://doi.org/10.1037/cbs0000308.

Table S1. *Descriptive statistics by condition for all variables of interest.*

	Mean (SD)			*Min-Max*			α
	Positive	*Ambiguous*	*Negative*	*Positive*	*Ambiguous*	*Negative*	
MPS-OOP	19.28 (5.42)	18.84 (5.75)	19.02 (5.33)	5.00-31.00	7.00-34.00	5.00-32.00	.67
NSPS	60.37 (20.26)	64.26 (21.85)	65.29 (19.68)	27.00-107.00	28.00-130.00	30.00-107.00	.94

Notes. MPS-OOP = Multidimensional Perfectionism Scale – Other-Oriented Perfectionism; NSPS = Negative Self-Portrayal Scale.

Appendix E. *Results from Debriefing Questionnaire*

1) There was a significant difference in how the conditions considered the social skills judge's feedback after their conversation task, while controlling for social anxiety, $F(2,165) = 12.78$, $p < .001$, $\eta_p^2 = .13$*. Social anxiety was also a significant covariate (see Table 3). Participants in the ambiguous-feedback condition reported considering the social skills judge's feedback significantly *less* than the positive-, $t(101) = 3.56$, $p = .001$, $d = .67$**, and negative-feedback conditions, $t(113) = 4.21$, $p < .001$, $d = .79$. The positive- and negative-feedback conditions did not differ, $t(110) = 1.10$, $p = .27$, $d = .21$. 2) While controlling for social anxiety, there were no differences across the three conditions on their standards when asked to rate their own performance, $F(2,165) = .05$, $p = .96$, $\eta_p^2 = .001$; and 3) their focus on small details or potential mistakes, $F(2,165) = 1.47$, $p = .23$, $\eta_p^2 = .02$. Social anxiety was a significant covariate only for the latter analysis (see Table 3). Finally, 4) we found a significant difference in how convinced participants were that we were studying social skills, while controlling for social anxiety, $F(2,165) = 4.22$, $p = .02$, $\eta_p^2 = .05$*. Social anxiety was also a significant covariate (see Table 1). Participants in the positive-feedback condition reported significantly *greater* beliefs compared to the negative-feedback condition, $t(98) = 2.53$, $p = .01$, $d = .47$**. The positive- and ambiguous-feedback conditions did not differ, $t(109) = 1.15$, $p = .25$, $d = .22$, nor did the ambiguous- and negative-feedback conditions, $t(113) = 1.33$, $p = .19$, $d = .25$.

Table S2. *Debriefing Questionnaire Results with SPIN as a Covariate.*

	Sum of squares	*d.f.*	Mean Square	*F*	*p*	η_p^2
1) Feedback						
Condition	64.74	2,165	32.37	12.78	<.001	.13
Condition*SPIN	30.88	1,165	30.88	12.19	.001	.07
2) Standards						
Condition	.16	2,165	.08	.05	.96	.002
Condition*SPIN	.55	1,165	.55	.31	.58	.001
3) Mistakes						
Condition	7.88	2,165	3.94	1.47	.23	.02
Condition*SPIN	49.29	1,165	49.29	18.37	<.001	.10
4) Convinced						
Condition	3644.08	2,165	1822.04	4.22	.02	.05
Condition*SPIN	2521.95	1,165	2521.95	5.84	.02	.03

Appendix F. *Exploratory Analyses*

Negative comments about conversation partner. We noticed when cleaning the data that some participants wrote comments about their conversation partner, in addition to writing comments about themselves. We were curious how participants in the three conditions differed on the number of negative comments they wrote about their confederate conversation partner during their conversation task. This analysis is exploratory, given that we did not ask participants to write comments or evaluate their conversation partner; therefore, we did not have any hypotheses. There were no significant differences, while controlling for social anxiety, $F(2,165) = 1.78$, $p = .17$, $\eta_p^2 = .02$*. In fact, 87% of participants wrote no negative comments about their conversation partner. Of the 22 (13%) participants who wrote negative comments, 7 were in the positive-feedback condition, 5 from the ambiguous-feedback condition, and 10 from the negative-feedback condition.

SUDS Happiness. While controlling for social anxiety, we found no significant effects of time, condition, or an interaction between time and SPIN covariate (see Table 2) on happiness. There was a significant interaction between time and condition. We used a Dunn-Sidak *p*-value correction ($p = .007$) when conducting simple main effects tests to explore the nature of the interaction. In only T3 (Post-Feedback), participants in the positive-feedback condition reported significantly *greater* happiness than the other conditions; the negative and ambiguous conditions did not significantly differ.

SUDS Guilt. While controlling for social anxiety, we found no significant effects of time, condition, or an interaction between time and SPIN covariate (see Supplemental Table 2). There was a significant interaction between time and condition. However, using a Dunn-Sidak *p*-

value correction (p = .007) to conduct simple main effects tests to explore the nature of the interaction led to detecting no significant differences.

Table S3. *Exploratory Analyses with SPIN as a Covariate.*

Predictor	Sum of squares	*d.f.*	Mean Square	*F*	*p*	η_p^2
SUDS-Anger*						
Time	329.29	3,495	126.04	2.33	.08	.01
Condition	448.51	2,165	224.26	3.34	.04	.04
Time*SPIN (Covariate)	111.32	3,495	42.61	.79	.49	<.01
Time*Condition	1256.95	5,495	240.55	4.44	<.001	.05
SUDS-Happiness						
Time	674.93	2,495	275.71	2.15	.11	.01
Condition	751.89	2,165	375.94	1.24	.29	.02
Time*SPIN (Covariate)	522.46	2,495	213.43	1.67	.18	.01
Time*Condition	3438.94	5,495	702.41	5.49	<.001	.06
SUDS-Guilt*						
Time	186.27	2,495	81.11	.66	.58	.004
Condition	452.94	2,165	226.47	1.55	.22	.02
Time*SPIN (Covariate)	196.13	2,495	85.40	.70	.52	.004
Time*Condition	1455.33	5,495	316.85	2.60	.30	.30

Note. Some of our analyses violated the assumptions of homogeneity. For ANCOVAs that had heterogeneity (denoted with a *), we used the F_{max} rule described by Tabachnick & Fidell (2018; all ratios were acceptable < 4:1).

Appendix G. *Descriptive statistics by condition for all variables of interest.*

	Mean (SD)			*Min-Max*			α
	Positive	*Ambiguous*	*Negative*	*Positive*	*Ambiguous*	*Negative*	
DASS-21	11.59 (7.71)	13.86 (9.96)	12.52 (8.96)	0.00-32.00	0.00-42.00	0.00-38.00	.90
Depression							
Anxiety	10.81 (7.00)	11.05 (10.27)	12.62 (7.41)	0.00-34.00	0.00-42.00	0.00-28.00	-
Stress	16.85 (7.25)	15.68 (7.05)	16.48 (8.05)	4.00-36.00	0.00-36.00	2.00-36.00	-
SPIN	19.98 (11.00)	24.70 (14.88)	25.67 (12.37)	1.00-45.00	1.00-65.00	2.00-52.00	.91
SUDS1-Anxiety	28.98 (19.98)	27.02 (25.58)	25.90 (18.57)	0.00-84.00	0.00-76.00	0.00-82.00	-
SUDS2-Anxiety	37.89 (23.74)	40.67 (25.53)	39.64 (21.53)	0.00-92.00	0.00-100.00	0.00-91.00	-
SUDS3-Anxiety	26.06 (20.31)	31.60 (23.22)	35.14 (23.24)	0.00-80.00	0.00-91.00	0.00-86.00	-
# Negative Self-Comments	.49 (.81)	2.14 (1.11)	2.70 (1.56)	0.00-3.00	0.00-5.50	0.00-7.50	-
PSPM-S	17.83 (7.27)	23.74 (11.37)	26.12 (10.51)	3.00-37.00	3.00-47.00	7.00-53.00	.88
ROOS-S+	1.01 (.88)	.59 (.87)	.33 (1.02)	-1.00-3.00	-1.00-2.60	-2.30-2.90	.89
ROOS-S-	-1.46 (.81)	-.86 (1.15)	-.67 (1.12)	-2.90-.20	-3.00-1.50	-2.50-2.70	.89
SUDS4-Anxiety	16.52 (13.76)	22.19 (19.73)	24.15 (23.32)	0.00-61.00	0.00-76.00	0.00-100.00	-
PSPM-O	41.07 (10.72)	41.53 (11.84)	43.12 (11.60)	8.00-58.00	10.00-65.00	2.00-65.00	.90
ROOS-O+	-.85 (.82)	-.88 (.94)	-.97 (.87)	-2.40-2.10	-2.70-1.90	-2.70-2.40	.87
ROOS-O-	-.04 (.89)	.05 (.94)	.25 (.91)	-2.50-2.00	-2.70-1.90	-3.00-2.50	.83
# Negative Other Comments	5.02 (1.52)	4.71 (1.83)	4.95 (1.88)	2.00-9.00	1.50-9.00	1.50-9.00	-

Notes. N = 169. DASS-21 = Depression Anxiety and Stress Scale–21; SPIN = Social Phobia Inventory; SUDS1-Anxiety = Subjective Units of Distress Scale, Baseline; SUDS2-Anxiety = Subjective Units of Distress Scale, Anticipatory; SUDS3-Anxiety = Subjective Units of Distress Scale, After False-Feedback; PSPM-S = Public Speaking Performance Measure-Self version; ROOS-S+ = Ratings of Others Scale-Self version, positive attributes; ROOS-S- = Ratings of Others Scale-Self version, negative attributes; SUDS4-Anxiety = Subjective Units of Distress Scale, After Other-Evaluation; PSPM-O = Public Speaking Performance Measure-Other version; ROOS-O+ = Ratings of Others Scale-Other version, positive attributes; ROOS-O- = Ratings of Others Scale-Other version, negative attributes

CHAPTER FIVE:

GENERAL DISCUSSION

The primary goal of my dissertation was to understand whether negative self-evaluations and negative other-evaluations are related, and if this relationship might contribute to the development and maintenance of social anxiety isorder (SAD). Theoretical models (Clark & Wells, 1995; Rapee & Heimberg, 1997) and research (e.g., Rapee & Lim, 1992; Stopa & Clark, 1993) have largely focused on how people with SAD evaluate *themselves* in social or performance situations. Despite its considerably lesser focus in research, studies that investigate evaluations of *others* have found some evidence that people with elevated social anxiety might evaluate other anxious people (e.g., friends, strangers, confederates, etc.) negatively, like they do themselves (e.g., Niels Christensen et al., 2003; Purdon et al., 2001). However, findings from this area of research are mixed; in addition to the findings that people with high social anxiety evaluate others negatively, there are findings that suggest they instead view others positively (e.g., Alden & Wallace, 1995), or have no differences (e.g., Ashbaugh et al., 2005) compared to people with low social anxiety. I suspect these differences in research findings are attributable to methodological decisions (e.g., participants not viewing the same stimuli; using written vignettes versus recorded interactions), researchers' focus on self-evaluations, not examining other-evaluations as primary research questions, and a lack of operationalizing other-evaluations (i.e., terms used to define this process; variation in *how* the "other" is evaluated). By using a multi-method approach, I sought to clarify the relationship between negative self-evaluations and negative other-evaluations, including several cognitive, behavioural, emotional, and physiological consequences. My overarching aim for my dissertation was to contribute to the

other-evaluation literature within social anxiety and to potentially derive a more comprehensive conceptualization of SAD within CBT models.

I conducted two experimental studies to test if: 1) negatively evaluating a visibly anxious person *causes* people to evaluate themselves negatively; and 2) negatively evaluating oneself *causes* people to evaluate a visibly anxious person negatively. Within this general discussion, I will summarize my findings from Study 1 and 2, then situate these findings within the Social Anxiety literature, including experimental psychopathology, interpersonal and cognitive models, and research on other-evaluations. I will then discuss how these findings might have implications for the conceptualization and treatment of SAD using CBT. Finally, I will discuss the limitations from my two experiments, consider future solutions for these limitations, as well as explore future directions within this area of research.

Summary of Findings

Study 1. To test if negatively evaluating (using no-, medium-, or high-evaluation) a visibly anxious person *causes* people to evaluate themselves negatively, I recruited 152 participants to watch a recorded conversation of an anxious person talking with a confident person and then participate in their own impromptu conversation with a confederate, while measuring cognitive, behavioural, emotional, and physiological variables. Participants followed our manipulation instructions as expected. There were no statistically significant differences between conditions on our behavioural or emotional variables. These null results between the conditions suggest there are few detrimental effects of focusing on and evaluating others' anxiety and social performance (e.g., anxiety, appear more flawed, evaluate oneself more negatively). However, I found that the participants who gave high-evaluation—compared to no- and medium-evaluation—recalled significantly fewer correct facts about their conversation partner. This

significant finding suggests that evaluating others negatively causes some social impacts (i.e., memory recall), which could be related to attentional and interpretation biases.

Study 2. To test if negatively evaluating oneself (induced by positive, ambiguous, or negative false-feedback) *causes* people to evaluate a visibly anxious person negatively, I recruited 169 people to participate in an impromptu conversation task with a confederate and then watch a recorded conversation of a visibly anxious person talking with a confident partner. Participants again followed my manipulation instructions as expected. There were no statistically significant differences between conditions on the cognitive or emotional variables. This finding suggests that while the manipulation was effective in leading participants to evaluate themselves positively or negatively after their conversation task, there is no immediate link between how someone evaluates themselves and how they evaluate a visibly anxious person. Through my exploratory analyses, I observed that participants who negatively evaluated *themselves* after their conversation reported significantly greater anger than the other two conditions. This effect was observed during post-feedback and following the video evaluation task. This finding suggests that anxiety may not be the emotion to measure when considering the emotional consequences of self- and other-evaluations.

Implications for Social Anxiety Research

Despite the effectiveness of CBT for treating SAD, not everyone experiences immediate and/or sustained therapeutic gains (Heimberg et al., 1998; Loerinc et al., 2015). The purpose of my research fits well within the domain of conducting experimental psychopathology research; which aims to understand if certain hypothesized factors contribute to the clinical picture of a given mental health disorder. First, I will discuss the implications of my findings as they relate to experimental psychopathology research. Second, I will discuss my findings within the context of

social, interpersonal, and cognitive models of SAD before I situate my findings within the existing research area of other-evaluations. Finally, I will describe emotional consequences of other-evaluations and within the larger research area of SAD.

Experimental Psychopathology. Experimental psychopathology aims to identify and test factors that may initiate and maintain mental health disorders (Zvolensky et al., 2013; Ouimet & Ferguson, 2019). To test if these factors play an important role in the development of mental health symptoms, experimental psychopathology researchers use experimental manipulations to induce processes (e.g., thoughts, feelings, or behaviours) they hypothesize are related to a mental health disorder (Ouimet et al., 2021). These manipulations often take the form of delivering specific instructions to participants (e.g., Bahl & Ouimet, 2022; Purdon & Clark, 2001; Tutino et al., 2020) or providing false-feedback from a task (e.g., Alcolado & Radomsky, 2011; Ehlers et al., 1988). Furthermore, many experimental psychopathology studies rely on *some* deception, given that knowledge about the purpose of the manipulation instructions or false-feedback would reveal the purpose of the study too early, and undermine their efficacy. For my dissertation, I proposed that negative self-evaluations and negative other-evaluations might influence the development and maintenance of SAD.

According to my rigorous manipulation checks, the manipulations exerted their intended effects in both studies. In Study 1, I successfully induced participants to provide no-, medium-, or high-evaluations to a visibly anxious person. When initially planning these studies, I quickly realized this would not be an easy task to do, because directly *asking* for negative evaluations would prematurely reveal important elements of my study. Instead, my testers and I told participants that the video they were about to watch was a sample video, for which a final version would be recreated before being used in my future research studies related to social skills

training. As such, participants were free to provide evaluations, as instructed, because they were told their feedback would improve the next set of videos created. My use of experimental manipulation is especially relevant for future other-evaluation research. Whereas experimental research on negative other-evaluations is lacking, it is noteworthy that I found people can be encouraged to provide varying levels of evaluations of others in the context of experiments.

People with SAD are characteristically critical of their own thoughts, feelings, and behaviours in social or performance situations (Clark & Wells, 1995; Leary, 2001; Rapee & Lim, 1992). Therefore, in Study 2, I *induced* negative self-evaluations in an unselected sample of participants. My testing team and I told all participants that a social skills judge was evaluating their performance during their conversation. These instructions likely led to greater believability when the main experimenter subsequently delivered the false-feedback to the participants. Negative interpretation biases for social situations are a key feature of SAD and have been proposed to maintain the disorder (Beard & Amir, 2010). My study provided evidence that negative interpretation biases can be induced in an unselected sample, and therefore, future SAD researchers may find this procedure useful. For example, researchers investigating social anxiety-related processes, such as self-focused attention, post-event processing, or safety behaviours, might benefit from using a similar false-feedback procedure to induce negative self-evaluations prior to measuring their dependent variables of interest.

Finally, although experimental psychopathology research often takes place in laboratory settings, it is worth noting that both my manipulations were effective—one delivered in a laboratory setting and one in a completely virtual testing environment. Therefore, my findings may contribute to more researchers conducting experimental psychopathology remotely. Moreover, virtual testing environments may provide some unexpected benefits for participants,

including decreased travel costs and increased comfort while participating in experimental research (Ferguson et al., 2022; Ouimet et al., 2022). As researchers, we experienced fewer testing space issues and reduced printing costs while collecting data in an online environment.

Interpersonal and Cognitive Models. Given SAD's conceptualization as an *interpersonal disorder* (Alden, 2001), and that my experiments included interpersonal aspects (i.e., conversation tasks, recorded video of two people interacting), it was vital to consult the social psychology literature in addition to clinical and cognitive psychology. Despite its conceptualization as an interpersonal disorder, researchers have yet to experimentally explore the relationship between negative self- and other-evaluations. Because SAD is characterized by negative self-evaluations before, during, and after social or performance situations (Clark & Beck, 2010), I suspected that this cyclical process could be relevant to *social projection theory*. Because people appear more similar than different from us (e.g., Baumeister & Vohs, 2007; Krueger, 2007), if people with SAD think about themselves negatively (e.g., flawed, socially awkward, incompetent) when they feel anxious in a social situation, they may think of someone else who is visibly anxious this way as well. Ultimately, I did not find support for social projection theory within my two studies. However, there may be some explanations for why I did not observe this relationship.

Alden's (2001) self-perpetuation transaction cycle describes four self/other thoughts and behaviours that are hypothesized to maintain SAD (i.e., our perception of someone; how we act toward them; how they interpret our actions; and how they respond to us). Like any cycle, one experience on its own rarely causes psychopathology. Instead, researchers posit that the *repeated* cyclical pattern is what contributes to the development and maintenance of these disorders (e.g., Beard & Amir, 2010). Participants in both of my studies reported social anxiety symptoms

within the *mild* range on the SPIN (Connor et al., 2000). I observed that about 62% of participants in Study 1 and about 71% of participants in Study 2 reported baseline social anxiety symptoms above the more stringent clinical cut-off of 30 for the SPIN (Moser et al., 2008). Although the participants had varied experiences of negative self-evaluations over their lifetime (presumably more frequent for people with greater social anxiety symptoms), these experiences did *not* lead to greater emotional (e.g., state anxiety) or cognitive (more negative subjective performance evaluations; more negative character evaluations) consequences in my study. Furthermore, because my sample experienced a range of social anxiety symptom severity, it is also possible that the *identification* pattern proposed by Benjamin (1993) was not observed. Benjamin (1993) proposed that a reason people treat *others* in the way that they do is because of the ways they have been previously treated. Since all participants did not have SAD—who often experience bullying and socially traumatic histories (Bjornsson et al., 2020)—they may have not reported more negative evaluations of others. In other words, my single manipulation may not have overridden participants' general tendencies to view others more compassionately, which are likely based in their previous experiences with others.

Although I did not design my studies to test existing elements of the cognitive models of SAD, I thought if other-evaluations were present, that these models might need to be revised. Clark and Wells (1995) describe that when a person enters a social situation—and they perceive themselves as a subject for evaluation—the social anxiety process begins. In my studies, I found that when the object of evaluation was *another anxious person*, participants did not report greater self-related negative consequences (e.g., evaluations, anxiety). However, both studies may have unintentionally examined aspects of cognitive models, in the context of other-evaluations. In Study 1, after participants gave high-evaluations towards a visibly anxious person, they

remembered significantly *fewer* facts about their conversation partner. It is possible that the process of evaluating another person negatively could induce *self-focused attention*, because people with greater self-focused attention often experience memory impairments (Mellings & Alden, 2000). Self-focused attention is the process wherein people become aware of their own internal thoughts, feelings, and images, which causes them to misinterpret these in catastrophic ways (Clark, 2001). These findings might overlap with other cognitive research and theory related to worry and anxiety, but outside of the social anxiety literature. For example, Eysenck & Calvo's Processing Efficiency Theory (Eysenck & Calvo, 1992) stipulates that anxiety and worry (the predecessor of anxiety) can overly tax the central executive and contribute to difficulty with storing and processing information during a task. In Study 2, after delivering the false-feedback, I asked participants to review their conversation to find information that supported the judge's evaluation of them (i.e., positive, ambiguous, negative). *Post-event processing* is a cognitive process where people with SAD often replay social or performance situations after the fact (Clark & Beck, 2010). Post-event processing is often problematic because of the biased attention to one's internal states (i.e., self-focused attention) rather than to their external environment, so people with SAD often ruminate over perceived flaws or errors in their social performance (e.g., *I said the wrong word, which was a disaster*). I asked participants in the negative-feedback condition to think about what the social skills judge could have viewed *negatively* about their performance, which may have caused them to *replay* their conversation to subsequently write down their self-evaluations. This process of replaying the conversation, given possibly conflicting evidence (i.e., false-feedback) might have contributed to greater anger or frustration (as observed in my exploratory analyses) but did not lead participants to evaluate others more negatively.

Other-Evaluations. Compared to research on negative self-evaluations in social anxiety, the research on negative evaluations of others has been scarce. Even more, many of these studies have not focused on evaluating a visibly anxious person, which clarifies whether negative self-evaluations that people with SAD experience *lead* to greater negative evaluations of others. Despite my initial anticipation that my research design would lead me to detect significant differences in how people evaluate themselves and others, I did not find such effects. I posed a novel question: could negative self- and other-evaluations work together via a positive feedback loop, where each might affect the other and contribute to the development and maintenance of SAD? Looking at both sides of this proposed cycle enables me to speak more to causality, rather than relations, which complements existing observational studies. Collating the results from both Study 1 and 2 that tested both sides of the hypothesized cycle, I observe that the process of negatively evaluating a visibly anxious person *does not* cause someone to evaluate themselves negatively (Study 1), *nor does* evaluating oneself negatively cause someone to evaluate a visibly anxious person negatively (Study 2). Although the experimental manipulations induced participants to evaluate themselves/others negatively, those evaluations did not lead to differences in the *other* side of the cycle.

Although people with elevated social anxiety symptoms or people with SAD may demonstrate negative evaluations of others (Niels Christensen et al. 2003; Purdon et al., 2001, Roth et al., 2001), my experimental studies suggest that this does *not* occur because of negative *self-evaluations*, and vice versa. In fact, many of my null results are more consistent with other findings from experimental research (Ashbaugh et al., 2005; Bielak and Moscovitch, 2013; Gee et al., 2012) rather than observational studies. Therefore, I wonder if there is an important element that is detectable in some studies and not others. Despite Purdon (2001) observing that

participants with elevated social anxiety reported negative evaluations of a hypothetical anxious person, participants also reported greater compassion towards the described person. Perhaps written vignettes of hypothetical people leave more room for participants to visualize how the person appears and interpret the consequences of their anxiety. Because I used video stimuli, I likely increased internal validity, but the stimuli choice also made the anxious person's social flaws more noticeable to *all* participants. In addition, all experimental studies examined other-evaluations differently (e.g., real-life interactions; recorded stimuli, etc.); therefore, it would be important for research to continue to use *similar* stimuli. For example, would videos displaying more signs of anxiety than others contribute to differences in results? My findings also suggests that subjective performance and character evaluations are not impacted at a *group-level basis*. As such, the other-evaluations we observe in the clinic may be experienced by only a *subset* of people with SAD, suggesting they are exclusively a clinical phenomenon.

I also observed significant effects that indicate social and emotional consequences of other-evaluations that warrant further attention. In Study 1, participants asked to give high-evaluation (compared to no- and medium-evaluation) remembered significantly fewer facts about their conversation partner during a *cued* recall task. However, this significant finding disappeared when I examined results from a *free* recall task. Similarly, Mellings & Alden (2000) found that greater self-focused attention led to lower recall of their conversation partner's information, not for the open-ended—or *free*—recall measure. It is challenging to directly compare our cued versus free recall findings because of the limited cued recall questions (four total) compared to no limit set on the number of freely recalled information. However previous research suggests participants remember more information in recognition/cued recall tasks than in free recall (Padilla-Walker & Poole, 2002). The ease of cued recall is likely why participants

on average recalled more than half of their conversation partner's facts correctly from their conversation task during the cued recall task. However, because this analysis was exploratory and included confounding variables (i.e., some participants changing the topic more often therefore having more facts to report; the degree to which they paid attention to the conversation partner), I am cautious to over-interpret this finding. In Study 2, I found that participants did not differ on their level of state anxiety, but participants in the negative feedback condition reported significantly greater state anger following the false-feedback. These findings suggest that anxiety may not be the emotion that precedes or follows other-evaluations; rather, anger or frustration may be particularly important.

Anger or Anxiety: Emotional Consequences of Social Anxiety Disorder. As an anxiety disorder, SAD has primarily been examined with respect to the degree to which people feel anxious in social or performance situations. However, some researchers have reported that people with elevated social anxiety symptoms display aggressive reactions to negative evaluation and rejection compared to people without social anxiety (e.g., Erwin et al., 2003; Weerdmeester & Lange, 2019). Indeed, following earlier research, Alden & Taylor (2004) discussed that people with SAD might demonstrate more critical or aggressive actions towards other people. I found that participants in the negative-feedback condition reported significantly more anger than participants in the other two conditions, for both timepoints following the experimental manipulation (i.e., post false-feedback; post Video Evaluation Task).

Although research on how people with SAD experience anger has received less attention than their experiences of anxiety, there are important implications for social and cognitive models. Many people with anxiety and related disorders (e.g., OCD, SAD, panic disorder) experience *greater* anger than people without any psychological diagnosis, while nonetheless

displaying *less* verbal aggression (Moscovitch et al., 2008). The researchers also found that people with SAD are more likely than people without any psychological disorder to "bottle up" anger to avoid verbalizing these emotions. In other words, people with SAD seem to experience anger *internally* rather than *externally*. Research demonstrates that people with SAD experience difficulties asserting their thoughts and feelings (Chambless et al., 1982). Another potential area of examination for anger as it pertains to SAD is social trauma. People with SAD often report experiences of bullying, humiliation, and rejection (Bjornsson et al., 2020). Targeting socially traumatic memories has been incorporated into more recent developments of Cognitive Therapy for SAD (Warnock-Parkes et al., 2020), which further emphasize the clinical utility of managing these memories. It is possible that because of these socially traumatic histories, people with SAD experience more internal anger when faced with rejection or negative evaluation as adults.

People with SAD have also been observed to have difficulties understanding their own emotions (e.g., *intrapersonal emotional knowledge*; O'Toole et al., 2013). Emotion identification and regulation strategies are viewed as essential components in several Cognitive-Behavioural (i.e., Dialectical Behaviour Therapy; Linehan, 1993) and Emotion-Focused interventions (e.g., Greenberg & Safran, 1989). Within Linehan's (1993) transactional cycle, differences between *primary* and *secondary* emotions are highlighted. Primary emotions (e.g., sadness, anxiety) are typically considered *universal responses* to a given situation, whereas secondary emotions (e.g., anger, shame) are experienced in reaction to the primary emotion (Greenberg & Safran, 1989). Within Dialectical Behaviour Therapy, anger is often conceptualized as a *secondary* reaction to primary emotions of sadness, anxiety, or shame (Linehan, 1993). Because shame and fear of negative evaluation and criticism are the hallmark of SAD (Clark & Wells, 1995), it is also not surprising that anger might be an important element in the conceptualization of the disorder.

Taken together, the findings from my dissertation and from existing literature on the existence of anger in SAD suggest that anxiety may not always be the most accurate emotional description of someone's experience. Despite emotional knowledge deficits across all anxiety disorders (O'Toole et al., 2013), it is possible that state anxiety measures describe only a portion of one's emotional distress.

Implications for Social Anxiety Treatment

To the best of my knowledge, there are no existing CBT protocols for SAD that directly target other-evaluations. Instead, the two most prevailing models of SAD (Clark & Wells, 1995; Rapee & Heimberg, 1997) emphasize people's attention towards *themselves* or towards *threat* in their environment, what they do when they feel anxious (i.e., avoidance, safety behaviours), and what they do after the situation (i.e., post-event processing). Following my largely null results, there is likely no clinical benefit for everyone with SAD to examine their evaluations of others with visible anxiety.

There remain, however, a number of clinically relevant considerations for the delivery of CBT for SAD. First, my finding that people who gave high evaluations displayed memory impairments for their subsequent interaction may have important clinical implications. Because interpersonal interactions are part of one's daily life, improving people's attention and memory in these types of situations could be beneficial for improving their day-to-day functioning. For instance, cognitive therapy protocols for SAD routinely use behavioural experiments to highlight the consequences of self-focused attention and safety behaviours, compared to externally focused attention (Warnock-Parkes et al., 2020). Similarly, during subsequent de-catastrophizing behavioural experiments, clients are encouraged to focus their attention *externally* on their interaction partner (Warnock-Parkes et al., 2020). These interventions are ultimately beneficial

for clients with SAD because focusing on the interaction (rather than their thoughts, images, and feelings) leads to a more accurate memory of the event.

Whereas people with SAD display more emotion knowledge difficulties than people without anxiety disorders (O'Toole et al., 2013) and considering my finding related to state anger, treatments would likely benefit from discussing other emotions in addition to anxiety. Initial CBT sessions often include psychoeducational components to build a case conceptualization, introduce factors that are believed to maintain the disorder (e.g., self-focused attention, safety behaviours), and outline the aims of treatment (Hope et al., 2010). These psychoeducation sessions would be an important place to also introduce emotional identification, including the differences between primary and secondary emotions. Given that people with SAD experience greater *internal* anger, adjunct sessions focused on assertiveness training (see Unified Protocol for Transdiagnostic Treatment of Emotional Disorders; Barlow et al., 2011) or assertiveness exposure hierarchies could be effective (e.g., Huppert et al., 2003). However, researchers have not found any differences in treatment efficacy between Unified Protocol treatment compared to single disorder protocols for SAD (Steele et al., 2018).

Using my anecdotal experiences of working with clients with SAD and literature suggesting the presence of other-evaluations, I was surprised that I did not find evidence for the role of other-evaluations in social anxiety. It is possible that *some* people might display these types of evaluations, but it is not a disorder-defining characteristic like fear of negative evaluation. Therefore, it might be helpful to query a client's evaluations of others during typical assessment procedures. To illustrate, when developing a client's case conceptualization, a CBT clinician could ask how the client thinks about themselves, others *in general*, other *anxious people*, the future, and the world (Beck, 2011). In addition, if clinicians observe that their clients

do demonstrate negative evaluations of anxious others when conducting cognitive exercises (e.g., *double-standard technique*; Leahy, 2017), a behavioural experiment survey could be helpful to test out these beliefs. For example, if a client thinks "when other people are anxious, they are awkward," together, the client and clinician might write a paragraph that outlines an anxious person acting in the way the client described. Then, they could disseminate the survey to various people to examine how other people think of anxious others. Lastly, it is possible that other-evaluations are not directly related to SAD and are better conceptualized as a consequence of another mental health disorder. However, I explored correlations between other-evaluation measures (e.g., PSPM-O) and the Other-Oriented Perfectionism subscale from the multidimensional Perfectionism Scale (Hewitt et al., 2008) and found no significant relationship (secondary analysis of data for a UROP project; Gardam et al., 2020).

Limitations and Future Directions

My aim for this dissertation was to inform clinical research, theory, and practice for treating SAD using CBT, with a focus on other-evaluations, by taking an experimental psychopathology approach. It is common in experimental psychopathology research to use unselected or subclinical samples (e.g., Alcolado & Radomsky, 2011; Reichenberger et al., 2015). However, I wonder if an exclusively clinical sample would have led to different findings than what I observed. Future researchers might find it fruitful to conduct a similar study procedure in a sample of individuals diagnosed with SAD using a clinical interview (i.e., Anxiety Disorder Interview Schedule, Structed Clinical Interview for DSM-5). If a sample of participants with SAD report greater negative other-evaluations towards a visibly anxious person than people without SAD, other-evaluations may be a diagnostic -specific feature of SAD that is not currently addressed in evidence-based practice. Depending on whether this is true for

everyone with SAD or some, there could be reason to consider SAD through a dimensional rather than from a categorical perspective. Perhaps people who have had symptoms of SAD for several years may be more likely to have negative evaluations of other visibly anxious people due to their repeated negative self-evaluations.

Like other cognitive biases (e.g., attention, interpretation, memory) and disorder-specific features (e.g., self-focused attention, post-event processing), people with SAD experience these processes in vastly different ways than people without SAD (e.g., Steinman et al., 2014). For example, someone with SAD might replay a conversation with a colleague over in their head and evaluate themselves negatively, whereas someone without SAD would likely not think about the conversation again. Early experimental research on SAD highlighted how experimental psychopathology research (i.e., using unselected or subclinical samples) do not always replicate clinical phenomenon, such that people with SAD: report greater negative interpretation bias to ambiguous stimuli than people without anxiety (e.g., Amir et al., 1998); experience greater self-focused attention than people without anxiety (Mellings & Alden, 2000). Taken together with my research findings, it is possible that negative other-evaluations simply cannot be recreated in people without high levels of social anxiety symptoms. Instead, these types of evaluations might reflect merely a clinical phenomenon that should be further examined.

In addition, for both studies, I used a single-session experiment lasting approximately one hour. This short timeframe may have not been sufficient to detect *all* the consequences of negative self- and other-evaluations. I may have observed this bias in clinical settings because clients with SAD have *repeatedly* thought about themselves negatively for years before attending therapy. In other words, participants might have required more time to consider the manipulation instructions (degree of other-evaluations, degree of self-evaluations) prior to full debriefing. In

Study 1, although I found evidence of memory impairments following an impromptu conversation task, I do not know if participants in the high-evaluation condition continued to experience attention or memory differences after the study. In Study 2, I know that negative self-evaluation does not cause *immediate* negative other-evaluations. However, I do not know if participants would continue to consider the judge's feedback when interacting with others in their daily lives. A follow-up session a week later assessing people's evaluations of themselves and the anxious others and their memories of the interactions may have provided insight into downstream effects of the manipulations.

Although conversation tasks have been used for decades (e.g., Bidel et al., 1985; Thompson & Rapee, 2002), these tasks appear to elicit less anxiety compared to speech tasks (Heiser et al., 2009). Although my goal was not to induce anxiety specifically, but rather the *cognitive processes* that people with SAD often experience (i.e., negative self-evaluations), it is possible that a speech task might have also met this need, while also producing more anxiety and potentially greater increases in negative self-evaluations. Future researchers might ask participants to: 1) prepare a 10-minute speech that they deliver in front of a judge, then 2) watch a recorded speech from a "participant" demonstrating visible anxiety signs (e.g., blushing, stuttering, avoiding eye contact). Compared to a conversation task, where the responsibility for one's performance is shared between both members of the task, a speech task puts the entire performance onus onto the participant. In this case, researchers might detect more anticipatory and peak anxiety, which might contribute to greater negative self-evaluations (and stronger relationships between self- and other-evaluations).

Although I observed good internal consistency estimates for the measure I created for the purposes of my dissertation (Ratings of Other Scale; self/other), I was not able to assess the

factor structure of the measure. Because of my use of experimental manipulation (i.e., giving more/less evaluation; focusing more/less on one's conversation flaws) in both studies, this prevented me from conducting an exploratory factor analysis. Despite some evidence from the reliability assessment suggesting there is an association with the positive and negative items of the ROOS, I do not know if there are more factors that better explain the 20 items. Further research that does not use experimental conditions should explore the factor structure of this measure for its future use in research.

Finally, because there were no existing video stimuli that met the needs for my study, I created the stimuli that I used in both studies (for more information about stimuli creation, see Chapter 2 Pilot Study). The video stimulus depicts a conversation between two people, one of whom is visibly anxious. I created this stimulus prior to collecting data for Study 1, before the COVID-19 pandemic. When I transitioned Study 2 to an online environment to prevent delays related to public health restrictions, I decided to use the same stimuli as Study 1 to maintain consistency between my two studies. However, my prioritization of consistency may have overshadowed the possible benefits of creating new stimuli. Because people in Study 1 were participating in a face-to-face conversation with a confederate, the original stimulus I created aligned well with the experimental task. However, participants in Study 2 completed the conversation task over Zoom. Like Study 1, I might have observed more similarities between the conversation task and Video Evaluation Task if I created a separate stimulus featuring a conversation over Zoom.

Despite these limitations, this dissertation has many methodological strengths that have the potential to contribute to current research on social anxiety and cognitive biases. Due to the inconsistent findings from previous research about the presence of negative other-evaluations in

social anxiety, my systematic, multimethod approach to examining cognitive, behavioural, emotional, and physiological outcomes make this dissertation a novel contribution. To the best of my knowledge, I am the first to examine *both* directions of evaluations (e.g., other-evaluations → self-evaluations; self-evaluations → other-evaluations). Another notable strength of this dissertation is my use of multiple measures that aim to examine different facets of other-evaluations; the Public Speaking Performance Measure (PSPM) examined participants' detection of their own/others' *objective* anxiety signs; the Ratings of Others Scale (ROOS) assessed participants' evaluations of their own/others' character. Finally, I also engaged in Open Science practices from initial study design to manuscript preparation. For both studies, we pre-registered our research questions and hypotheses, methodologies, and data analysis plan on the Open Science Framework, and made our datasets publicly available.

Conclusion

SAD remains one of the most prevalent mental health disorders, which causes considerable distress and impairment in one's daily functioning. People with SAD engage in negative self-evaluations before, during, and after social or performance situations. Furthermore, there is inconsistent research on the presence of negative evaluations of others with visible anxiety due to inconsistent language used to define this phenomenon, methodological choices, and lack of testing other-evaluations as a primary research question. In my dissertation, I attempted to resolve these inconsistencies by examining the cyclical role of self- and other-evaluations as it pertains to social anxiety. Using a multi-method approach, I measured self- and other-evaluations using two questionnaires and explored various cognitive, emotional, behavioural, and physiological consequences. Overall, I found no direct evidence that self-evaluations cause other-evaluations and vice versa. However, I found some evidence for other

cognitive and emotional consequences that could be important in future research and cognitive conceptualizations of SAD. Although CBT clinicians have observed other-evaluations in the clinic, I learned that this phenomenon is not as prevalent as I initially expected and does not lead to additional negative consequences. My findings are limited as I used an unselected rather than clinical sample of participants, suggesting that other-evaluations are *not* a primary concern for people experiencing a range of social anxiety symptoms.

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(General Introduction, Bridge, General Discussion)

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APPENDIX A: RECRUITMENT TEXTS

STUDY 1: RECRUITMENT

ISPR/Social Media Recruitment (Pilot study):
Study Name: Tell us what you think! Exploring new tools for studying social skills
Description: The aim of this study is to explore new ways of studying social skills. Individuals willing to participate will be asked to watch three short videos, complete a few online questionnaires, and read a few short paragraphs. For the purposes of this study, participants must be very fluent in English, as the measures and videos are only available in English. Participation will take approximately thirty minutes, and participants will be compensated with 0.5 course credit (*ISPR*)/ a chance to win 1 of 3 Amazon gift cards ($50, $30, $20; *social media).*

ISPR Recruitment (Experimental study):
Study Name: How does that make you feel? Exploring new tools for studying social skills
Description: The aim of this study is to validate new tools for studying social skills. Individuals willing to participate will be asked to complete a number of online questionnaires, in addition to a brief computerized task and a behavioural task. Participants will be asked to wear electrodermal activity sensors on their non-dominant hand for the duration of the laboratory visit. For the purposes of this study, participants must be very fluent in English, as the measures are only available in English. Participation will take approximately one hour, and participants will be compensated with one (1) course credit. Additionally, based on participants' responses, they may be contacted by the CADRe Laboratory for future studies, if they consent and provide their name and email address during the study.

Community ISPR Recruitment (Experimental study):
Title: How does that make you feel? Understanding interpersonal relationships
Description: Researchers at the University of Ottawa are conducting an in-person study to validate new tools for studying social skills. Individuals willing to participate will be asked to complete a number of online questionnaires, in addition to a brief computerized task and a behavioural task. Participants will be asked to wear electrodermal activity sensors on their non-dominant hand for the duration of the laboratory visit. For the purposes of this study, participants must be very fluent in English, as the measures are only available in English.
Primary Contact Person: Ryan Ferguson, [REDACTED EMAIL]
Study Expiration Date: February 6th, 2020
Eligibility Requirements: To participate in this study, you must be 18 years old or older and must be very fluent in English
Duration: 1 hour
Compensation: Chance to win 1 of 3 Amazon gift cards ($50, $30, $20)
Location: 4019 Vanier Hall
How to Participate: Please contact Ryan Ferguson by email [REDACTED EMAIL]

STUDY 2: RECRUITMENT

ISPR Recruitment:
Study Name: What do YOU think? Helping to improve people's interpersonal relationships
Description: The aim of this study is to develop a training program to increase individuals' social skills. Individuals willing to participate in this one-hour online study will be asked to accept a Zoom meeting invitation from a research assistant and stay connected to the meeting for the duration of the study. Participants will complete a number of online questionnaires, in addition to a behavioural task, and a computerized task. For the purposes of this study, participants must be very fluent in English, as the measures are only available in English. We also require that participants have a good internet connection, participate on a computer (e.g., desktop/laptop) or a tablet that has a webcam and microphone that can be turned ON, and a private and distraction-free area (e.g., a closed bedroom in a shared apartment/house) for the duration of the study. Participants will be required to provide their email address, phone number, and current address upon initiating the study, in case of emergency or technological failure. However, once they have completed the study, we will delete this information. Participation will take approximately one hour, and participants will be compensated with one (1) course credit. After signing up, participants can expect an email at least 24 hours in advance with invitations/instructions for Zoom. Additionally, based on participants' responses, they may be contacted by the CADRe Laboratory for future studies, if they consent and provide their name and email address during the study.

Community ISPR Recruitment:
Title: What do YOU think? Helping to improve people's interpersonal relationships
Description: Researchers at the University of Ottawa are conducting an online study to develop a training program to increase individuals' social skills. Individuals willing to participate in this one-hour online study will be asked to accept a Zoom meeting invitation from a research assistant and stay connected to the meeting for the duration of the study. Participants will complete a number of online questionnaires, in addition to a behavioural task, and a computerized task. For the purposes of this study, participants must be very fluent in English, as the measures are only available in English. We also require that participants have a good internet connection, participate on a computer (e.g., desktop/laptop) or a tablet that has a webcam and microphone that can be turned ON, and a private and distraction-free area (e.g., a closed bedroom in a shared apartment/house) for the duration of the study. Participants will be required to provide their email address, phone number, and current address upon initiating the study, in case of emergency or technological failure. However, once they have completed the study, we will delete this information. After signing up, participants can expect an email at least 24-hours in advance with invitations/instructions for Zoom.
Primary Contact Person: Ryan Ferguson, [REDACTED EMAIL]
Eligibility Requirements: To participate in this study, you must be 18 years old or older and must be very fluent in English
Duration: 1 hour
Compensation: Chance to win 1 of 3 Amazon gift cards ($50, $30, $20)
Location: 4025 Vanier Hall
How to Participate: Please contact Ryan Ferguson by email [REDACTED EMAIL]

APPENDIX B: RESEARCH ETHICS BOARD ETHICS APPROVAL

STUDY 1

07/02/2019

Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

CERTIFICAT D'APPROBATION ÉTHIQUE | CERTIFICATE OF ETHICS APPROVAL

Numéro du dossier / Ethics File Number	H-01-19-1878
Titre du projet / Project Title	"If I Judge You, I Also Judge Myself": Assessing the Impact of Other-Evaluations on Self-Evaluations
Type de projet / Project Type	Thèse de doctorat / Doctoral thesis
Statut du projet / Project Status	Approuvé / Approved
Date d'approbation (jj/mm/aaaa) / Approval Date (dd/mm/yyyy)	07/02/2019
Date d'expiration (jj/mm/aaaa) / Expiry Date (dd/mm/yyyy)	06/02/2020

Équipe de recherche / Research Team

Chercheur / Researcher	Affiliation	Role
Ryan FERGUSON	École de psychologie / School of Psychology	Chercheur Principal / Principal Investigator
Allison OUIMET	École de psychologie / School of Psychology	Superviseur / Supervisor

Conditions spéciales ou commentaires / Special conditions or comments

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STUDY 2

12/02/2020

Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

CERTIFICAT D'APPROBATION ÉTHIQUE | CERTIFICATE OF ETHICS APPROVAL

Numéro du dossier / Ethics File Number	H-01-20-5352
Titre du projet / Project Title	"If you judge me, I'll judge you": Assessing the relationship between negative self-evaluations and negative other-evaluations
Type de projet / Project Type	Thèse de doctorat / Doctoral thesis
Statut du projet / Project Status	Approuvé / Approved
Date d'approbation (jj/mm/aaaa) / Approval Date (dd/mm/yyyy)	12/02/2020
Date d'expiration (jj/mm/aaaa) / Expiry Date (dd/mm/yyyy)	11/02/2021

Équipe de recherche / Research Team

Chercheur / Researcher	Affiliation	Role
Ryan FERGUSON	École de psychologie / School of Psychology	Chercheur Principal / Principal Investigator
Allison OUIMET	École de psychologie / School of Psychology	Superviseur / Supervisor

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APPENDIX C: CONSENT FORMS

PILOT STUDY: CONSENT FORM FOR RESEARCH PARTICIPATION

Title: Tell us what you think! Exploring new tools for studying social skills

Researchers:

Ryan J. Ferguson, M.A.
Ph.D. Candidate, Clinical Psychology
[REDACTED INFORMATION]

Allison J. Ouimet, Ph.D., C.Psych.
Associate Professor
[REDACTED INFORMATION]

Invitation to Participate: I am invited to participate in the abovementioned research study conducted by Ryan J. Ferguson, Graduate student in the School of Psychology, as part of his doctoral dissertation. He is supervised by Dr. Allison J. Ouimet at the University of Ottawa.

Purpose of the Study: The purpose of this study is to validate new tools for studying social skills.

Participation: My participation will consist of watching videos, answering questionnaires, and reading paragraphs. During this session, I will be asked to provide general information about myself, such as age, self-identified gender, and family income. Then, I will be asked to watch three short videos. After each video, I will be asked to answer two (2) online questionnaires as well as a few short questions about the people in the video. Afterward, I will be asked to read three (3) short paragraphs which will be used as instructions to participants in future studies. Following each paragraph, I will be asked to answer a few short questions about what I thought after reading the instructions. This study will take **approximately 30 minutes** to complete. I understand that I should be seated comfortably in a quiet room.

Risks: My participation in this study will entail that I volunteer personal information about my thoughts, feelings, and actions. It is possible that I may experience some emotional discomfort when answering questionnaires or completing tasks related to my thoughts, feelings, and actions. Upon completion of or withdrawal from this study, all participants will be provided with a list of self-help and professional resources, should they be interested in receiving more information about emotional difficulties.

Benefits: By participating in this study, I may develop a somewhat increased awareness of my own thoughts, feelings, and actions. Additionally, this experience may contribute to my understanding of psychological research. Finally, my participation will contribute to an advanced understanding of how cognition and social skills are related.

Confidentiality: I understand that the information I will share will remain strictly confidential and the information will be used strictly for research purposes. The only people who will have access to the research data are research personnel of Dr. Allison Ouimet at the University of Ottawa. My data will be identified by my ISPR identity code only—as my name will not be collected during this study. Results will be published in pooled (aggregate) format and presented at professional conferences and in academic journals. Data may also be used in undergraduate

and graduate student thesis projects. If this is the case, data will only be used after ethics approval for secondary use of data is sought through the Research Ethics Board (REB). I understand that my electronic data will be kept indefinitely and that any physical data will be destroyed or de-identified (meaning my identifying information will be replaced with a code that does not directly identify me) 5 years following publication.

Open Science. I understand that, in support of Open Science practices, the dataset from this study might be made available to the public with all identifying information removed (including ISPR number and all demographic variables except for gender and age). The goal of Open Science practices is to change the culture surrounding the production and dissemination of research (i.e., more forthcoming and transparent about hypotheses and analysis of data). Any personal information that could reasonably identify me will be removed or changed before files are shared with other researchers or results are made public.

Conservation of Data: The electronic data collected from the study will be kept in a secure manner. Specifically, all data derived from this study will be electronically password-protected. All participant information and data will be stored on password-protected computers and/or password-protected external hard drives in Dr. Allison Ouimet's office or laboratory space. Both of these spaces are physically locked at all times. Only members of Dr. Ouimet's research team will have access to the rooms, and only members of the research team working directly on this study will have the password to the relevant documents and/or datasets. Due to the nature of Open Science practices (i.e., data available with identifying information removed), the data will be stored in the aforementioned manner indefinitely.

Compensation: In return for my participation in this study, I will be compensated with 0.5 course credit through ISPR, which will be assigned after I complete the study. If I choose to withdraw from the study at any time, I will still receive this compensation.

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time, without suffering any negative consequences. I understand, given the anonymous nature of this study, that once I submit my responses to this survey, I will be unable to withdraw my data from this study as the researchers are unable to identify which responses were mine.

Contacts: If I have any questions about the study, I may contact the researcher(s):

Ryan J. Ferguson, M.A.	Dr. Allison J. Ouimet
[REDACTED INFORMATION]	[REDACTED INFORMATION]

If I have any questions regarding my rights as a study participant, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5. Tel.: (613) 562-5387. E-mail: ethics@uottawa.ca

Consent: It is recommended that I print a copy of the consent form to keep for my personal records by using the printing function of my computer's browser (File > Print) or screenshot the consent form (if on a mobile device).

In order to minimize the risk of security breaches and to help ensure my confidentiality, I should use standard safety measures such as signing out of my account, closing my browser and locking my device when I am no longer using them/when I have completed the study.

By clicking on the button below, I acknowledge that I have read this document and that the study has been explained clearly to me.

- I agree to participate in this study
- I do not wish to participate in this study

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Faculté des sciences sociales
Faculty of Social Sciences

École de psychologie
School of Psychology

STUDY 1: CONSENT FORM FOR RESEARCH PARTICIPATION

Title: How does that make you feel? Understanding interpersonal relationships

Researchers:

Ryan J. Ferguson, M.A.
Ph.D. Candidate, Clinical Psychology
[REDACTED INFORMATION]

Dr. Allison J. Ouimet, C.Psych.
Associate Professor
School of Psychology
[REDACTED INFORMATION]

Invitation to Participate: I am invited to participate in the abovementioned research study conducted by Ryan J. Ferguson, Graduate student in the School of Psychology, as part of his doctoral dissertation. He is supervised by Dr. Allison J. Ouimet at the University of Ottawa.

Purpose of the Study: The purpose of this study is to validate new tools for studying social skills.

Participation: My participation will consist of attending one (1) in-person laboratory session lasting **approximately 1 hour**. During this session, I will be asked to provide general information about myself, such as age, self-identified gender, and family income. I will be asked to complete five (5) questionnaires about my general styles of thinking and feeling. I will also complete a brief computerized task as well as a short behavioural task that will be videorecorded. I understand that my videorecording will be used for data analysis purposes *only*. I understand that the data obtained from my videorecording will be used in academic journals, conference presentations, and available in Open Science databases; however, my individual videorecording will never be shared, will be kept private, and will be deleted after 5 years.

Risks: My participation in this study will entail that I volunteer personal information about my thoughts, feelings, and actions. It is possible that I may experience some emotional discomfort when answering questionnaires or completing tasks related to my thoughts, feelings, and actions. Upon completion of or withdrawal from this study, all participants will be provided with a list of self-help and professional resources, should they be interested in receiving more information about emotional difficulties.

Benefits: By participating in this study, I may develop a somewhat increased awareness of my own thoughts, feelings, and actions. Additionally, this experience may contribute to my understanding of

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psychological research. Finally, my participation will contribute to an advanced understanding of how cognition and interpersonal relationships are related.

Confidentiality: I understand that the information I will share will remain strictly confidential and the information will be used strictly for research purposes. The only people who will have access to the research data are research personnel of Allison Ouimet at the University of Ottawa. My data will be identified by my ISPR identity code only—my name will always be kept separate from my data. Results will be published in pooled (aggregate) format and presented at professional conferences and in academic journals. Data may also be used in undergraduate and graduate student thesis projects. I understand that my electronic information will be kept indefinitely and that any physical data or videorecordings will be destroyed or de-identified (meaning my identifying information will be replaced with a code that does not directly identify me) 5 years following publication. I understand that the principal investigator will keep a link that identifies me to my coded information for 5 years following publication, but that this link will be kept secure and available only to the principal investigator or selected members of the research team. Any information that can identify me will remain confidential.

Open Science. I understand that, in support of Open Science practices, the dataset from this study might be made available to the public with all identifying information removed (including ISPR number and all demographic variables except for gender and age). The goal of Open Science practices is to change the culture surrounding the production and dissemination of research (i.e., more forthcoming and transparent about hypotheses and analysis of data). Any personal information that could reasonably identify me will be removed or changed before files are shared with other researchers or results are made public.

Conservation of Data: The electronic data collected from the study will be kept in a secure manner. Specifically, all data derived from this study will be electronically password-protected. All participant information and data will be stored on password-protected computers and/or password-protected external hard drives in Dr. Allison Ouimet's office or laboratory space. Both of these spaces are physically locked at all times. Only members of Dr. Ouimet's research team will have access to the rooms, and only members of the research team working directly on this study will have the password to the relevant documents and/or datasets. Due to the nature of Open Science practices (i.e., data available with identifying information removed), the data will be stored in the aforementioned manner indefinitely.

Compensation:
University of Ottawa ISPR Students: In return for my participation in this study, I will be compensated with one (1) course credit through ISPR, which will be assigned after I complete the study. If I choose to withdraw from the study at any time, I will still receive this compensation.

Community Members: In appreciation for my contribution to the research project, I will be given the option to enter my name in a draw to win one of three Amazon gift cards, valued at $50, $30, and $20. Three gift cards will be drawn per semester in which I participate (i.e., Sept-Dec, Jan-April, May-Aug). I understand that a name will be randomly selected amongst those who have entered during that specific semester. In other words, if I participate during the Fall

semester, my name will be entered in a single draw for one of three prizes including all individuals who also participated in studies in our lab that offer this compensation during that same semester. The person whose name is drawn will be informed by email. If the person cannot be reached within 14 days from the date of the draw, the prize will be awarded to the second name that is randomly selected, and so on, until the prize has been awarded. I understand that if I am chosen, I will have to answer a simple question in order to receive my prize. I understand that the odds of winning a prize will depend on the number of eligible entries received. The prize must be accepted as awarded or forfeited and cannot be redeemed for cash.

The name and email that I provide when I enter the draw is collected for the purposes of contacting me if my name is selected in the draw. This information will be kept confidential and then destroyed once the prizes have been awarded.

The CADRe Laboratory reserves the right to cancel the draw or cancel the awarding of the prize if the integrity of the draw or the research or the confidentiality of participants is compromised. The draw is governed by the applicable laws of Canada.

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be deleted permanently.

Contacts: If I have any questions about the study, I may contact the researcher(s):

Ryan J. Ferguson, M.A.	Dr. Allison J. Ouimet
[REDACTED INFORMATION]	[REDACTED INFORMATION]

If I have any questions regarding my rights as a study participant, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5
Tel.: (613) 562-5387
E-mail: ethics@uottawa.ca

There are <u>two</u> copies of the consent form, one of which is mine to keep.

By signing my name below, I acknowledge that I have read this document and that the study has been explained clearly to me.

Participant's signature: _____ Date: _____

Researcher's signature: _____ Date: _____

STUDY 2 (ONLINE SCREENER): CONSENT FORM FOR RESEARCH PARTICIPATION

Title: What do YOU think? Helping to improve people's interpersonal relationships

Researchers:

Ryan J. Ferguson, M.A.
Ph.D. Candidate, Clinical Psychology
[REDACTED INFORMATION]

Dr. Allison J. Ouimet, C.Psych.
Associate Professor
School of Psychology
[REDACTED INFORMATION]

Invitation to Participate: I am invited to participate in a brief survey to see if I am eligible for the abovementioned research study conducted by Ryan J. Ferguson, a graduate student in the School of Psychology, as part of his doctoral dissertation. He is supervised by Dr. Allison J. Ouimet at the University of Ottawa.

Participation: My participation will consist of completing one (1) 5-minute online screening questionnaire, where I will be asked questions about my sociodemographic and contact information. ***I will be contacted using my preferred method (e.g., phone, email) only if I am eligible for the online study. If I am not eligible, I will not be contacted.***

Confidentiality: Any information I share will remain strictly confidential and will be used strictly for research purposes. My contact information will be used only to contact me about completing the online portion of the study if I am deemed eligible. I understand that if I am ineligible for the online portion of the study, I will not be asked to provide my contact information.

Conservation of Data: If I am ***ineligible*** for or do not wish to complete the main online study, I understand that the CADRe Lab will ***not*** collect my contact information and my responses to the survey will be deleted. If I am ***eligible for*** and complete the main online study, with my consent, the CADRe Lab will store my study and contact information separately, on a password-protected document on a password-protected computer and/or a secure uOttawa based Google Drive File Stream.

Contacts: If I have any questions about the study, I may contact the researcher(s):

Ryan J. Ferguson, M.A.
[REDACTED INFORMATION]

Dr. Allison J. Ouimet
[REDACTED INFORMATION]

If I have any questions regarding my rights as a study participant, I may contact the:
Protocol Officer for Ethics Research at the University of Ottawa:
Tabaret Hall, 550 Cumberland Street
Room 154, Ottawa, ON K1N 6N5
Tel.: (613) 562-5387
E-mail: ethics@uOttawa.ca

Please check the "accept" box if you consent to participate in this study, and "decline" if you do not consent to participate in this study. By checking "accept", you acknowledge that you have read this document and that the study has been explained clearly to you.

- Accept
- Decline

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Faculty of Social Sciences

École de psychologie
School of Psychology

STUDY 2: CONSENT FORM FOR RESEARCH PARTICIPATION

Title: What do YOU think? Helping to improve people's interpersonal relationships

Researchers:

Ryan J. Ferguson, M.A.
Ph.D. Candidate, Clinical Psychology
[REDACTED INFORMATION]

Dr. Allison J. Ouimet, C.Psych.
Associate Professor
School of Psychology
[REDACTED INFORMATION]

Invitation to Participate: I am invited to participate in the abovementioned research study conducted by Ryan J. Ferguson, a graduate student in the School of Psychology, as part of his doctoral dissertation. He is supervised by Dr. Allison J. Ouimet at the University of Ottawa.

Purpose of the Study: The purpose of this study is to develop a training program to increase individuals' social skills.

Participation: My participation will consist of attending one (1) online laboratory session lasting **approximately 1 hour**. During this session, I will be asked to provide general information about myself, such as age, self-identified gender, and family income. I will be asked to complete five (5) questionnaires about my general styles of thinking and feeling. I will also complete a behavioural task as well as a brief computerized task. I understand that I should be seated comfortably in a quiet room without distractions (i.e., phone muted, no one else in the room, etc.).

Risks: My participation in this study will entail that I volunteer personal information about my thoughts, feelings, and actions. It is possible that I may experience some emotional discomfort when answering questionnaires or completing tasks related to my thoughts, feelings, and actions. Upon completion of or withdrawal from this study, all participants will be provided with a list of self-help and professional resources, should they be interested in receiving more information about emotional difficulties. I also understand that the researcher will send me a copy of the debriefing form via email at the end of my participation.

Benefits: By participating in this study, I may develop a somewhat increased awareness of my own thoughts, feelings, and actions. Additionally, this experience may contribute to my understanding of psychological research. Finally, my participation will contribute to an advanced understanding of how cognition and interpersonal

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relationships are related.

Confidentiality: I understand that the information I share will remain strictly confidential and the information will be used strictly for research purposes. The only people who will have access to the research data are research personnel of Allison Ouimet at the University of Ottawa. My data will be identified by my ISPR identity code only—my name and any other personal identifying information will always be kept separate from my data. I understand that in order to participate in this study, I will have to disclose my email address, phone number, and current address, in case of emergency or technological failure. I understand that the researcher will only store this information electronically and will delete it once I have completed the study. I understand that if I do not provide this information, that I will not be able to participate in this study and will be given my credit without any negative consequences. Results will be published in pooled (aggregate) format and presented at professional conferences and in academic journals. Data may also be used in undergraduate and graduate student thesis projects, after receiving appropriate ethics approval. I understand that my electronic information will be kept indefinitely I understand that the principal investigator will keep a link that identifies me to my coded information for 5 years following publication, but that this link will be kept secure and available only to the principal investigator or selected members of the research team. Any information that can identify me will remain confidential.

I understand that this study is being conducted over Zoom, which is a collaborative, cloud-based videoconferencing service that allows me to communicate remotely with the researchers in real time. I understand that Zoom guarantees privacy through real-time encryption for all calls (all screen sharing content as well as the network connection to Zoom is encrypted). I understand that Zoom has access to my approximate location (by city only via their IP address and OS), email address, meeting name, the date and time of the meeting, and the call data records. I recognize that Zoom does not monitor or use any of this information for any reason other than to provide their services. For my own privacy, I understand that the researchers will create a Zoom waiting room for my timeslot that will be password-protected and locked to other participants once all parties have joined.

> **Open Science.** I understand that, in support of Open Science practices, the raw dataset from this study might be made available to the public with all identifying information removed (including ISPR number and all demographic variables except for gender and age). The goal of Open Science practices is to change the culture surrounding the production and dissemination of research (i.e., more forthcoming and transparent about hypotheses and analysis of data). Any personal information that could reasonably identify me will be removed or changed before files are shared with other researchers or results are made public.

Conservation of Data: The electronic data collected from the study will be kept in a secure manner. Specifically, all data derived from this study will be electronically password-protected. All participant information and data will be stored on password-protected computers and/or a secure uOttawa based Google Drive File Stream. Only members of Dr. Ouimet's research team working directly on this study will have access to the relevant documents and/or datasets. Due to the nature of Open Science practices (i.e., data available with identifying information removed),

the data will be stored in the aforementioned manner indefinitely.

Compensation:

University of Ottawa ISPR Students: In return for my participation in this study, I will be compensated with one (1) course credit through ISPR, which will be assigned after I complete the study. If I choose to withdraw from the study at any time, I will still receive this compensation.

Community Members: In appreciation for my contribution to the research project, I will be given the option to enter my name in a draw to win one of three Amazon gift cards, valued at $50, $30, and $20. Three gift cards will be drawn per semester in which I participate (i.e., Sept-Dec, Jan-April, May-Aug). I understand that a name will be randomly selected amongst those who have entered any study (not only this study) ongoing in our laboratory during that specific semester. In other words, if I participate during the Fall semester, my name will be entered in a single draw for one of three prizes including all individuals who also participated in studies in our lab that offer this compensation during that same semester. The person whose name is drawn will be informed by email. If the person cannot be reached within 14 days from the date of the draw, the prize will be awarded to the second name that is randomly selected, and so on, until the prize has been awarded. I understand that if I am chosen, I will have to answer a simple question in order to receive my prize. I understand that the odds of winning a prize will depend on the number of eligible entries received. The prize must be accepted as awarded or forfeited and cannot be redeemed for cash.

The name and email that I provide when I enter the draw is collected for the purposes of contacting me if my name is selected in the draw. This information will be kept confidential and then destroyed once the prizes have been awarded.

The CADRe Laboratory reserves the right to cancel the draw or cancel the awarding of the prize if the integrity of the draw or the research or the confidentiality of participants is compromised. The draw is governed by the applicable laws of Canada.

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be deleted permanently.

Contacts: If I have any questions about the study, I may contact the researcher(s):

Ryan J. Ferguson, M.A.	Dr. Allison J. Ouimet
[REDACTED INFORMATION]	[REDACTED INFORMATION]

If I have any questions regarding my rights as a study participant, I may contact the:
Protocol Officer for Ethics Research at the University of Ottawa:
Tabaret Hall, 550 Cumberland Street
Room 154, Ottawa, ON K1N 6N5
Tel.: (613) 562-5387
E-mail: ethics@uOttawa.ca

It is recommended that I print a copy of the consent form to keep for my personal records by using the printing function of my computer's browser (File > Print).

By clicking on the button below, I acknowledge that I have read this document and that the study has been explained clearly to me.

- I agree to participate in this study
- I do not wish to participate in this study

APPENDIX D: STUDY QUESTIONNAIRES

Sociodemographic Questionnaire

Please read and answer the following questions as honestly and accurately as possible.

Age: _____

Which of the following describes how you think of yourself?

- Male
- Female
- Transgender: male to female
- Transgender: female to male
- You don't have an option that applies to me. I think of myself as (please specify): _____
- I prefer not to answer

What is your sexual orientation?:

- Heterosexual
- Lesbian
- Gay
- Bisexual
- Bi-curious
- Two-spirited
- Asexual
- Unlabeled
- Unsure
- You don't have an option that applies to me. I identify as (please specify): _____
- I prefer not to answer

Which ethnic or racial background(s) describes you most (check all that apply)?:

- White
- Black
- Hispanic/LatinX
- Asian
- South Asian
- Indigenous
- European
- Pacific Islander
- Caribbean
- Middle Eastern
- Other: _____
- I prefer not to answer

Marital Status (select one):

- Married
- Living Together
- Long-term relationship
- Separated
- Divorced
- Widowed
- Single
- I prefer not to answer

Number of children: _____

Household (family) annual income before taxes:

- Less than $20,000 CAD
- $20,000-40,000 CAD
- $40,000-60,000 CAD
- $60,000-80,000 CAD
- + $80,000 CAD
- I prefer not to answer

What is your university student status?

- Part-time student (less than 12 credits per semester)
- Full-time student (12 credits or more per semester)
- I prefer not to answer
- Does not apply to me

What is your occupational status?

- Part-time employed (25 hours of paid work or less per week)
- Full-time employed (more than 25 hours of paid work per week)
- Not currently employed
- I prefer not to answer

Have you been diagnosed by a professional with a psychological disorder in the past?

- Yes (please specify which psychological disorder): _____
- No
- I prefer not to answer

Have you been treated for a mood or anxiety disorder?

- Yes, in the past (please specify which mood or anxiety disorder): _____
- Yes, currently (please specify which mood or anxiety disorder): _____
- Never
- I prefer not to answer

Were you ever prescribed with medication to treat the disorder(s)?

- Yes, in the past (please specify which medication): _____

- Yes, currently (please specify which medication): _____
- Never
- I prefer not to answer

What is your first language?

- English
- French
- Other (please specify): _____

How fluent do you consider yourself to be in English?

- I am a native speaker or am totally fluent (100%)
- I understand almost everything (>90%)
- I understand a lot (>80%)
- I understand about 70-80%
- I understand about 50-70%
- I understand less than 50%

Subjective Units of Distress Scale (SUDS)

On a scale from 0 to 100, with 0 being not anxious/angry/happy/guilty at all and 100 being the most anxiety/anger/happiness/guilt you can imagine, how anxious/angry/happy/guilty do you feel right now?

—	**100**	Highest anxiety/anger/happiness/guilt that you have ever felt
—	**90**	Extremely anxious/angry/happy/guilty
—	**80**	Very anxious/angry/happy/guilty, can't concentrate
—	**70**	Quite anxious/angry/happy/guilty, interfering with performance
—	**60**	
—	**50**	Moderate anxiety/anger/happiness/guilt, uncomfortable but can continue to perform
—	**40**	
—	**30**	Mild anxiety/anger/happiness/guilt, no interference with performance
—	**20**	Minimal anxiety/anger/happiness/guilt
—	**10**	Alert and awake, concentrating well
—	**0**	Totally relaxed

Rating: _____

Ratings of Others Scale – Self Version (ROOS-S)

We would like you to think about **your performance during the conversation**. Please indicate how you view your performance on each item below -3 to +3. A score of -3 would indicate that you ***strongly disagree*** with the descriptor word, a score of 0 indicates that you ***neither disagree nor agree*** with the descriptor word, and a score of +3 indicates that you ***strongly agree*** with the descriptor word.

Ratings of Others Scale – Other Version (ROOS-O)

We would like you to think about the **person in the video sitting on the RIGHT**. Please indicate how you view that person on each item below -3 to +3. A score of -3 would indicate that you ***strongly disagree*** with the descriptor word, a score of 0 indicates that you ***neither disagree nor agree*** with the descriptor word, and a score of +3 indicates that you ***strongly agree*** with the descriptor word. There are no right or wrong answers, we simply ask that you respond as honestly as possible.

There are no right or wrong answers, we simply ask that you respond as honestly as possible.

	Strongly disagree			**Neither disagree nor agree**			**Strongly agree**
1) ambitious	-3	-2	-1	0	1	2	3
2) attractive	-3	-2	-1	0	1	2	3
3) awkward	-3	-2	-1	0	1	2	3
4) boring	-3	-2	-1	0	1	2	3
5) compassionate	-3	-2	-1	0	1	2	3
6) failure	-3	-2	-1	0	1	2	3
7) foolish	-3	-2	-1	0	1	2	3
8) humiliated	-3	-2	-1	0	1	2	3
9) inadequate	-3	-2	-1	0	1	2	3
10) intelligent	-3	-2	-1	0	1	2	3
11) interesting	-3	-2	-1	0	1	2	3
12) leader	-3	-2	-1	0	1	2	3
13) mentally healthy	-3	-2	-1	0	1	2	3
14) nervous	-3	-2	-1	0	1	2	3
15) reliable	-3	-2	-1	0	1	2	3
16) socially skilled	-3	-2	-1	0	1	2	3
17) strong character	-3	-2	-1	0	1	2	3
18) stupid	-3	-2	-1	0	1	2	3
19) weak	-3	-2	-1	0	1	2	3
20) worthless	-3	-2	-1	0	1	2	3

Check-in Questionnaire (Study 1)

1. In which city did your conversation partner grow up? _____

2. What program are they studying in University? _____

3. What is their pet's name? _____

4. Where did they say they last visited? _____

5. Are there any other facts about your conversation partner that you remember?

APPENDIX E: MANIPULATION INSTRUCTIONS

STUDY 1

High-Evaluation Condition: "We're interested in studying ways to increase social skills. Having good social skills is REALLY important as we often use these skills when making new friends, interviewing for a new job, when dating, and in a variety of other situations. You're about to watch a video that depicts two strangers getting to know each other. We'll be using these videos in upcoming research in our laboratory. For this task, I would like you to watch the video carefully as this video MUST represent EXCELLENT SOCIAL SKILLS. These videos will need to be approved by our professor when she believes they're appropriate to be used in our future research studies. We're asking you to evaluate the person on the right-hand side of the video wearing the red shirt. We need you to tell us EVERYTHING that might be viewed negatively about this person's social skills, so that they can be protected from any negative consequences. Please use this piece of paper to write down EVERYTHING about the video that could be viewed negatively by others; it's REALLY important that you don't forget ANYTHING. After the video is over, you can re-write your answers on the back. Remember, be aware of ANY action that might have negative consequences."

Medium-Evaluation Condition: "We're interested in studying ways to increase social skills. Having good social skills can be important as we often use these skills when making new friends, interviewing for a new job, when dating, and in a variety of other situations. You're about to watch a video that depicts two strangers getting to know each other. We'll be using these videos in upcoming research in our laboratory. For this task, I would like you to watch the video carefully as this video is trying to show good social skills. These videos have already been approved by our professor and she believes they're appropriate to be used in our future research studies. We're asking you to evaluate the person on the right-hand side of the video wearing the red shirt. We would like you to tell us if you have any feedback that is likely to make the person's social skills much more effective, so we can create the final videos next year. You can use this piece of paper to take a few notes if you want, but please keep your attention on the video! After the video is over, you can re-write your answers on the back. Remember, be aware of things that would make the interaction much better."

No-Evaluation Condition: "We're interested in studying ways to increase social skills. Having good social skills is important as we often use these when making new friends, interviewing for a new job, and when dating. You're about to watch a video that depicts two strangers getting to know each other. We'll be using these videos in upcoming research in our laboratory. For this task, I would like you to watch the video carefully as we want to know how your body responds to the video, which is why we connected this device to your palm (point to EDA). These videos have already been approved by our professor and she believes they are appropriate to be used in our future research studies. You can use this piece of paper to take a few notes if you want, but please keep your attention on the video! After the video is over, you can re-write your answers on the back. Remember, just pay attention to the video."

STUDY 2

Negative-Feedback Condition: "Thank you for participating in our getting acquainted task! We are now going to provide you with some feedback on how you performed during the conversation task. As you know, this recording is very important, as the lab is beginning to develop a training program that aims to increase one's social skills. Therefore, the quality of the data from this study is very important to us and to the status of our research lab. As such, we had a social skills judge evaluate your performance during the conversation task to get an idea of how they thought you did. The judge sent me a few comments that they thought best described your performance during the task. **THE JUDGE THOUGHT YOU WERE NERVOUS, UNCOMFORTABLE, AND A BIT AWKWARD, SO THEY TOLD ME THAT WE CAN'T USE YOUR VIDEO AT ALL IN OUR TRAINING**. Please return to the Qualtrics page and advance to the next page to type ***EVERYTHING*** that you think the judge could have viewed negatively about your performance during your conversation. ***It's REALLY important that you type ANYTHING that they could have viewed negatively about you, as this is our LAST possible chance use your data for our future studies***."

Ambiguous-Feedback Condition: "Thank you for participating in our getting acquainted task! We are now going to provide you with some feedback on how you performed during the conversation task. As you know, this recording is very important, as the lab is beginning to develop a training program that aims to increase one's social skills. Therefore, the quality of the data from this study is very important to us and to the status of our research lab. As such, we had a social skills judge evaluate your performance during the conversation task to get an idea of how they thought you did. The judge sent me a few comments that they thought best described your performance during the task. **THE JUDGE COULDN'T DECIDE WHETHER YOUR VIDEO SHOULD BE USED IN OUR TRAINING AFTER ALL**. If you want, you can return to the Qualtrics page and advance to the next page to type something about your performance during the conversation that you could have done better. For example, if you had the chance to re-do it, what might you do differently?"

Positive-Feedback Condition: "Thank you for participating in our getting acquainted task! We are now going to provide you with some feedback on how you performed during the conversation task. As you know, this recording is very important, as the lab is beginning to develop a training program that aims to increase one's social skills. Therefore, the quality of the data from this study is very important to us and to the status of our research lab. As such, we had a social skills judge evaluate your performance during the conversation task to get an idea of how they thought you did. The judge sent me a few comments that they thought best described your performance during the task. **THE JUDGE THOUGHT YOU WERE ENGAGING, RELAXED, AND AN ENJOYABLE PERSON TO TALK WITH, SO THEY TOLD ME THAT WE CAN USE YOUR VIDEO IN OUR TRAING!** Please return to the Qualtrics page and advance to the next page to type something that you think the judge viewed positively about your performance during your conversation. ***In other words, what do you think it was about your performance that they judged so positively?***"

APPENDIX F: CONVERSATION TASK SCRIPTS

STUDY 1

I would like you to take part in a conversation with a person who is waiting for you outside this door. I will be recording the conversation as this will help the lab pilot different tools for measuring and researching interpersonal relationships. Your task is to try to acquaint yourself with this person, similar to what you may do when meeting someone for the first time. The conversation will last for at least 10 minutes, and you will be recorded using a videotape. Following the conversation, a judge will evaluate you on the following criteria: clarity, interest, content, poise, style, and management of emotions.

The conversation will be video recorded so that a group of researchers can also rate your conversation on the criteria mentioned. You can end the conversation at any time, but it's better that you talk for as long as you can, preferably at least 10 minutes, so that the judge has enough information to evaluate. Here is a card that says "STOP" on it [Hand card to participant]. Whenever you want to end the conversation, you can just hold up this card and I will stop the video camera right away. How does that sound? Do you have any questions?

Before we start, please complete this questionnaire. ***Evaluator hands the participant a hard copy of the Subjective Units of Distress Scale (anticipatory anxiety) to fill out.*** I will set up the camera in the meantime, so we'll be ready to start as soon as you're finished with the questionnaire. The evaluator will come in shortly and that's when you can start your conversation! Remember, it's better if you speak for as long as you can, preferably at least 10 minutes, so that I have enough information to evaluate. But you can end the conversation at any time by holding up the "STOP" card. I will let you know when to start talking. Ready? ***Experimenter leaves the room.***

Conversation partner enters the room and conversation task begins. The conversation partner will time the conversation task with a stopwatch. Once 10 minutes has elapsed or the participant holds up the STOP card (whichever is sooner), the conversation partner will pause the stopwatch and turn the camera off. They will leave the room and bring the experimenter back. The stopwatch will be left with the experimenter, so they can record the conversation duration.

Conversation partner will disclose four facts about themselves: 1) they are from Picton, ON; 2) they are studying digital journalism; 3) they have a dog named Rigby; 4) the last country they visited was Argentina. The conversation partner will allow for silences of 7 seconds or more before intervening, which leaves the topic or burden of conversation to the participant.

Thank you for completing the conversation task. Here is another questionnaire to complete and then you're done! ***Experimenter then gives the participant a hard copy of the Subjective Units of Distress Scale (peak anxiety) to fill out. They also complete the check-in questionnaire (i.e., memory test).***

STUDY 2

Now I'd like you to take part in a conversation with another participant who is also participating in our study right now. Your task is to try to get to know this person, similar to what you may do when meeting someone for the first time, as this will help us develop a training program to increase individuals' social skills. We will also invite another researcher into the meeting in a minute to observe your conversation. You will not be able to see them as their camera and microphone will be off, so please pay attention to conversing with the other participant. The conversation will last for 10 minutes. You can end the conversation at <u>any time</u>, but it's better that you talk for as <u>long as you can</u>, preferably 10 minutes, so that we have enough to use for our data analysis. During the conversation, I will mute my microphone and camera as well as turn my volume off on my computer. If you want to end the conversation, you can just hold up your two hands like this [SIMULATE STOP ACTION] and it will stop the conversation. How does that sound? Do you have any questions?

Before we start, can you please go to the next screen on Qualtrics to complete the SUDS-2 questionnaire, while I prepare everything? ***When finished,*** The other participant will be added to the call shortly and that's when you can start your conversation! Remember, it's better if you both speak for <u>as long as you can</u>, preferably at least 10 minutes, so we have enough data for the both of you. But you can end the conversation at any time by holding up your two hands. Ready?

Research assistant will mute their microphone and camera, invite the conversation partner and conversation judge to the call.

Once the participant ends the conversation or 10 minutes has elapsed (whatever happens first), the researcher turns their microphone and camera back on. Conversation partner says: "It was nice to meet you" **and the research assistant will remove the Conversation partner and judge from the Zoom call.**

Thank you! I have a few more questionnaires that I'll ask you to fill out so please turn to the next Qualtrics page. It should begin with the SUDS-3 questionnaire. Again, please be as honest and accurate as possible as there are no right or wrong answers.

Experimenter gives the participant the SUDS-3 (prompt them to answer about how they felt during the conversation), PSPM-S, ROOS-S.

APPENDIX G: MANIPULATION CHECK QUESTIONS

PILOT STUDY

Video Questions:

1. How anxious did the person on the left look?

1	2	3	4	5	6	7
Not very anxious at all			Somewhat anxious			Very anxious

a) Using the box below, please tell us *WHY* you answered the way you did.

2. Do you think you would notice the person on the left's anxiety right away?

1	2	3	4	5	6	7
Not at all			Somewhat			Very much so

b) Using the box below, please tell us *WHY* you answered the way you did.

Instruction Questions:

1. Based on the instructions you received, how *HARSHLY* would you evaluate the people interacting in the video?

1	2	3	4	5	6	7
Not very harshly at all			Somewhat harshly			Very harshly

c) Using the box below, please tell us *WHY* you answered the way you did.

2. Based on the instructions you received, how much feedback would you write down?

1	2	3	4	5	6	7
I would write no feedback			I would write some feedback			I would write a lot of feedback

a) Using the box below, please tell us *WHY* you answered the way you did.

3. Based on the instructions you received, how *CLEAR* was it for you to understand what we wanted you to do (e.g., evaluate the person in the video)?

1	2	3	4	5	6	7
Not very clear at all			Somewhat clear			Very clear

a) Using the box below, please tell us *WHY* you answered the way you did.

STUDY 1

5. You were provided with instructions prior to watching the recorded conversation between two individuals. To what degree did you consider those instructions when making your ratings on the PSPM-O?

-3	-2	-1	0	1	2	3
Didn't think about them at all			Thought about the instructions, but did not use them in my comments			Made every comment with the instructions in mind

6. How *high* were your standards in evaluating the person?

-3	-2	-1	0	1	2	3
Very low			Somewhat high			Very high

7. To what degree did you focus on small details/potential mistakes?

-3	-2	-1	0	1	2	3
Not very much at all			Somewhat			Very much

8. How convinced were you that that we were studying social skills?

-3	-2	-1	0	1	2	3
Not convinced at all			Somewhat convinced			Very convinced

9. What did you think the conversation task was for?

STUDY 2

1. You may have been given feedback from a social skills judge after you finished the conversation task. First, please check the box below if you received feedback or if you did not.
   ☐ I did receive feedback from a judge.
   ☐ I did not receive feedback from a judge.

Using this box, answer to what degree you ***considered the judge's feedback*** when rating your ***own*** behaviour during the task on the questionnaire that asked you to rate how much you *stuttered, fidgeted, kept a clear voice, etc.* and the questionnaire that asked you to rate how *boring, intelligent, nervous, weak, etc.* you thought you were. (This question will not be visible to individuals in the no-feedback condition)

-3	-2	-1	0	1	2	3
Didn't think about the feedback at all			Thought about the feedback, but did not use it when rating my behaviour			Answered each item with the feedback in mind

2. How *high* do you think your standards were in evaluating ***yourself*** on the questionnaire that asked you to rate how much you *stuttered, fidgeted, kept a clear voice, etc.* and the questionnaire that asked you to rate how *boring, intelligent, nervous, weak, etc.* you thought you were.

-3	-2	-1	0	1	2	3
Very low			Somewhat high			Very high

3. To what degree did you focus on the ***small details/potential mistakes*** that you might have made during your conversation?

-3	-2	-1	0	1	2	3
Not very much at all			Somewhat			Very much

4. How convinced were you that that we were studying social skills?

-3	-2	-1	0	1	2	3
Not convinced at all			Somewhat convinced			Very convinced

5. What do you think your Conversation Task and watching First Date video was for? Do you have any ideas about how they might be related?

APPENDIX H: DEBRIEFING FORMS

PILOT STUDY: DEBRIEFING FORM FOR RESEARCH PARTICIPATION

Thank you for participating in our research!

Title: Tell us what you think! Exploring new tools for studying social skills

INVESTIGATORS AND INSTITUTION:
The study you just participated in is being conducted at University of Ottawa by Ryan J. Ferguson (Ph.D. Student) and Allison J. Ouimet, Ph.D., C.Psych in the Cognition and Anxiety Disorders Research Laboratory (CADRe Lab).

STUDY PURPOSE AND IMPLICATIONS:
You were told that the purpose of our study was to validate new tools for studying social skills. The Cognition and Anxiety Disorders Research (CADRe) Laboratory recently created the three videos that you recently watched. Our plan is to use one of these videos during a future study. You were asked to rate the videos; these ratings will be helpful for us to select the video that best portrays a conversation between an anxious and a confident speaker. You were also asked to read three short paragraphs as well as rate how likely you would be to evaluate the person in the video harshly if you were given these instructions before watching the videos. For an upcoming study, participants will receive one of these instructions and will be asked to use the instructions when watching the video. Overall, the purpose of this study was to receive input about how people would think and act after watching the videos and receiving the instructions, thus helping us validate these new tools.

We hope that this study will be an important first step towards creating sufficient tools for measuring social skills, which can be used in various research projects in the CADRe Laboratory.

Since this is any ongoing study, and some information you have learned could bias other people's responses if they knew it before the beginning of the study, we ask that you do not discuss the full content of the study to anyone. We appreciate your cooperation!

In this study, you may have reported high levels of depression and/or social anxiety. Here are some resources that you may find helpful for these types of symptoms:

Antony, M. M., & Norton, P. J. (2009). *The Anti-anxiety workbook.* New York: The Guilford Press.

Antony, M. M., & Swinson, R. P. (2017). *The shyness & social anxiety workbook: Proven, step-by-step techniques for overcoming your fear* (3rd ed.). Oakland, CA: New Harbinger Publications.

Greenberger, D., & Padesky, C. A. (2015). *Mind over mood: Change how you feel by changing the way you think.* New York: The Guilford Press.

For further reading, if interested:

Ashbaugh, A. R., Antony, M. M., McCabe, R. E., Schmidt, L. A., & Swinson, R. P. (2005). Self-evaluative biases in social anxiety. *Cognitive Therapy and Research*, *29*, 387–398. https://doi.org/10.1007/s10608-005-2413-9

Bielak, T., Moscovitch, D. A., & Waechter, S. (2018). Out of my league: Appraisals of anxiety and confidence in others by individuals with and without social anxiety disorder. *Journal of Anxiety Disorders*, *57*, 76–83. https://doi.org/10.1016/j.janxdis.2018.05.005

Dannahy, L., & Stopa, L. (2007). Post-event processing in social anxiety. *Behaviour Research and Therapy*, *45*, 1207–1219. https://doi.org/10.1016/j.brat.2006.08.017

In the course of completing the questionnaires, the cognitive task, or the behavioural task, you may have noticed some emotional discomfort, or become aware of difficulties you are experiencing with anxiety or another type of mental health issue. You can find out more information about anxiety and other mental health problems at the following websites:

- http://www.cpa.ca/psychologyfactsheets/
- http://www.mooddisorderscanada.ca/page/resources
- http://www.bps.org.uk/psychology-public/psychology-and-public
- http://www.anxietycanada.ca/english/brochures.php
- http://www.cmha.ca/mental-health/mental-health-brochures/

If you would like to seek psychological services to help manage and treat your anxiety or other problems, below are some psychological clinics in the Ottawa area that you may find helpful:

- Ottawa Institute of Cognitive Behavioural Therapy, (613) 820-9931
- Ottawa Centre for Cognitive Therapy, (613) 729-0801
- Ottawa Academy of Psychology, (613) 235-2529
- University of Ottawa Centre for Psychological Services and Research (CPSR), (613) 562-5289 (reception) or cpsr@uOttawa.ca

If you would like to receive support or help for psychological problems in the Ottawa area, the following resources may be of use:

- Ottawa Distress Centre, 613-238-3311
- Tel-Aide Outaouais, 613-741-6433
- Centre d'Aide 24-7, 819-595-9999
- Ottawa Academy of Psychology, 613-235-2529
- University of Ottawa Student Academic Success Service, http://www.sass.uottawa.ca/about/mental-health-wellness.php

If you are interested in seeking self-help resources, the Association of Behavioral and Cognitive Therapies maintains a searchable database of recommended books for a series of concerns, which can be found online: http://www.abct.org/SHBooks/

If you have any questions or concerns related to this study, please contact the researchers:

Ryan J. Ferguson
[REDACTED INFORMATION]
Dr. Allison J. Ouimet, C.Psych.

[REDACTED INFORMATION]

If you have any questions relating to your rights as a research participant, please contact the Protocol Officer for Ethics Research at the University of Ottawa:
Tabaret Hall, 550 Cumberland Street
Room 154, Ottawa, ON K1N 6N5
Tel.: (613) 562-5387
E-mail: ethics@uOttawa.ca

If you would like to print this page for your records and for future reference, you may do so by using the printing function of your browser.

We recommend that you to print a copy of this debriefing form to keep for your personal records by using the printing function of your computer's browser (File > Print) or screenshot the debriefing form (if on a mobile device).

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Faculty of Social Sciences

École de psychologie
School of Psychology

STUDY 1: DEBRIEFING FORM FOR RESEARCH PARTICIPATION

The Cognition and Anxiety Disorders Research (CADRe) Lab would like to thank you for participating in our research!

Title: How does that make you feel? Understanding interpersonal relationships

INVESTIGATORS AND INSTITUTION:
The study you just participated in is being conducted at the University of Ottawa by Ryan J. Ferguson, M.A., under the supervision of Dr. Allison J. Ouimet, in the Cognition and Anxiety Disorders Research Laboratory (CADRe Lab).

STUDY PURPOSE AND IMPLICATIONS:
You were told that the purpose of our study was to validate new tools for studying social skills. However, we were actually interested in examining how the initial judgement of someone else influences your conversation task performance, feelings of anxiety, psychophysiological responses, and ratings by independent judges. The video of the conversation task that you did with the research assistant will be judged by independent raters in our laboratory who are specifically looking for various behaviours related to social skills (e.g., gaze patterns, vocal quality, conversation length, visible discomfort, and conversation flow). Furthermore, we were purposely vague in initially describing the nature of our behavioural task (the conversation task) during the consent phase. The reason for this was to keep your anxiety as low as possible, as knowing that you would be completing a "getting acquainted" task might activate some anxious feelings. In this case, we intentionally used a bit of deception to confine your anxiety to the conversation task and not throughout the entire experiment. Nevertheless, if you feel uncomfortable with the way that we obtained these data, please let us know, and we will permanently delete your data from the study.

During the video task, you were either instructed to provide a lot of feedback, a little bit of feedback, or no feedback at all. Our primary interest in doing this was to examine how giving more feedback contributed to changes in your subsequent thoughts, feelings, and behaviours. We hypothesize that, regardless of anxiety level, people in the harsh-evaluation condition will report more strongly negative ratings about the anxious individual in the video, and subsequently be more critical of their performance during their conversation task.

We hope that this study will be an important first step towards better

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understanding how other-relevant negative evaluations may influence the treatment success in individuals undergoing Cognitive Behavioural Therapy. Ultimately, we hope our findings may contribute to the future development of evidence-based treatments for anxiety disorders.

Since this is any ongoing study, and some information you have learned could bias other people's responses if they knew it before the beginning of the study, we ask that you do not discuss the full content of the study to anyone. We appreciate your cooperation!

In this study, you may have reported high levels of depression and/or social anxiety. Here are some resources that you may find helpful for these types of symptoms:

Antony, M. M., & Norton, P. J. (2009). *The Anti-anxiety workbook.* New York: The Guilford Press.

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Dannahy, L., & Stopa, L. (2007). Post-event processing in social anxiety. *Behaviour Research and Therapy*, *45*, 1207–1219. https://doi.org/10.1016/j.brat.2006.08.017

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- http://www.mooddisorderscanada.ca/page/resources
- http://www.bps.org.uk/psychology-public/psychology-and-public
- http://www.anxietycanada.ca/english/brochures.php
- http://www.cmha.ca/mental-health/mental-health-brochures/

If you would like to seek psychological services to help manage and treat your anxiety or other problems, below are some psychological clinics in the Ottawa area that you may find helpful:

Distress Centre Lines:

- Ottawa Distress Centre, (613-238-3311)
- Tel-Aide Outaouais, (613-741-6433)
- Centre d'Aide 24-7, (819-595-9999)

Treatment Resources:

Free:

- University of Ottawa Student Academic Success Service, (http://www.sass.uottawa.ca/about/mental-health-wellness.php)
  - 613-562-5976
- The Walk-In Counselling Clinic, (https://walkincounselling.com/)
  - 613-722-2225
- Counselling at Catholic Family Services (https://cfsottawa.ca/programs-and-services/women/)
  - 613-233-8478
- Pinecrest-Queensway Community Health Centre, (www.pqchc.com/mental-health-services/)
  - 613-820-4922
- Individual counselling at Family Services Ottawa (http://familyservicesottawa.org/adults/individual-counselling/)
  - 613-725-3601 (ext. 117)

Low-Cost:

- University of Ottawa Centre for Psychological Services and Research (CPSR):
  - Reception (613-562-5289) or cpsr@uOttawa.ca

Private Practice (sliding scale available):

- Ottawa Institute of Cognitive Behavioural Therapy, (https://www.ottawacbt.ca/)
  - 613-820-9931
- Ottawa Centre for Cognitive Therapy, (https://ocbt.ca/)
  - 613-729-0801
- Centre for Interpersonal Relationships, (https://www.cfir.ca/)
  - 1 855 779 2347

If you are interested in seeking self-help resources, the Association of Behavioral and Cognitive Therapies maintains a searchable database of recommended books for a series of concerns, which can be found online: http://www.abct.org/SHBooks/

If you have any questions or concerns related to this study, please contact the researchers:

Ryan J. Ferguson
[REDACTED INFORMATION]

Dr. Allison J. Ouimet, C.Psych.
[REDACTED INFORMATION]

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Room 154, Ottawa, ON K1N 6N5
Tel.: (613) 562-5387
E-mail: ethics@uOttawa.ca

This debriefing form is for you to keep for future reference.

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Faculty of Social Sciences

École de psychologie
School of Psychology

STUDY 2: DEBRIEFING FORM FOR RESEARCH PARTICIPATION

The Cognition and Anxiety Disorders Research (CADRe) Lab would like to thank you for participating in our research!

Title: What do YOU think? Helping to improve people's interpersonal relationships

INVESTIGATORS AND INSTITUTION:
The study you just participated in is being conducted at the University of Ottawa by Ryan J. Ferguson, M.A., under the supervision of Dr. Allison J. Ouimet, in the Cognition and Anxiety Disorders Research Laboratory (CADRe Lab).

Ryan J. Ferguson, M.A.
Ph.D. Candidate, Clinical Psychology
[REDACTED INFORMATION]

Dr. Allison J. Ouimet, C.Psych.
Associate Professor
School of Psychology
[REDACTED INFORMATION]

STUDY PURPOSE AND IMPLICATIONS:
You were told that the purpose of our study was to develop a training program to increase individuals' social skills. However, we were actually interested in examining how the feeling of being judged during your conversation task influences your evaluation of another person with visible anxiety, as well as your ratings of anxiety and psychophysiological responses. We were also purposely vague in initially describing the nature of our behavioural task (the conversation task) during the consent phase. The reason for this was to keep your anxiety as low as possible, as knowing that you would be completing a "getting acquainted" task might activate some anxious feelings. In this case, we intentionally used a bit of deception to confine your anxiety to the conversation task and not throughout the entire experiment.

We also deceived you in another way. After the conversation task, you were randomly assigned into one of three conditions, and given either ***1) negative feedback***, ***2) ambiguous feedback***, or ***3) no feedback at all*** regarding the quality of your performance during the task. In fact, nobody evaluated your performance, and the type of feedback you received was based simply on what condition you were in. We did this because we want to know how different feedback makes people think and feel about themselves and others. We hypothesize that people in the negative-feedback condition will report more *strongly negative thoughts* about themselves following the conversation task and will therefore report *more harsh views* of the anxious person in the Video Evaluation Task. ***In a moment, we will***

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go through each of the deception components so that you understand fully.

We hope that this study will be an important first step towards better understanding how negative evaluations of others may influence the treatment success in individuals undergoing Cognitive Behavioural Therapy. We hope our findings may contribute to the future development of evidence-based treatments for anxiety disorders.

Since this is any ongoing study, and some information you have learned could bias other people's responses if they knew it before the beginning of the study, we ask that you do <u>not</u> discuss the full content of the study to anyone. We appreciate your cooperation!

In this study, you may have reported high levels of depression and/or social anxiety. Here are some resources that you may find helpful for these types of symptoms:

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For further reading, if interested:

Ashbaugh, A. R., Antony, M. M., McCabe, R. E., Schmidt, L. A., & Swinson, R. P. (2005). Self-evaluative biases in social anxiety. *Cognitive Therapy and Research*, *29*, 387–398. https://doi.org/10.1007/s10608-005-2413-9

Bielak, T., Moscovitch, D. A., & Waechter, S. (2018). Out of my league: Appraisals of anxiety and confidence in others by individuals with and without social anxiety disorder. *Journal of Anxiety Disorders*, *57*, 76–83. https://doi.org/10.1016/j.janxdis.2018.05.005

Purdon, C., Antony, M., Monteiro, S., & Swinson, R. P. (2001). Social anxiety in college students. *Journal of Anxiety Disorders*, *15*, 203-215. https://dx.doi.org/10.1016/s0887-6185(01)00059-7

In the course of completing the questionnaires, the cognitive task, or the behavioural task, you may have noticed some emotional discomfort, or become aware of difficulties you are experiencing with anxiety or another type of mental health issue. You can find out more information about anxiety and other mental health problems at the following websites:

- http://www.cpa.ca/psychologyfactsheets/
- http://www.mooddisorderscanada.ca/page/resources
- http://www.bps.org.uk/psychology-public/psychology-and-public
- http://www.anxietycanada.ca/english/brochures.php
- http://www.cmha.ca/mental-health/mental-health-brochures/

If you would like to seek psychological services to help manage and treat your anxiety or other problems, below are some psychological clinics in the Ottawa area that you may find helpful:

If you require immediate help, you can find the contact information for local crisis line centres across Canada here: https://thelifelinecanada.ca/help/crisis-centres/canadian-crisis-centres/. You can also find a directory of certified Cognitive Behavioural Therapists across Canada at the following link: https://cacbt.ca/en/certification/find-a-certified-therapist/.

Distress Centre Lines:

- Ottawa Distress Centre, (613-238-3311)
- Tel-Aide Outaouais, (613-741-6433)
- Centre d'Aide 24-7, (819-595-9999)

Treatment Resources:

Free:

- University of Ottawa Student Academic Success Service (613-562-5976), (http://www.sass.uottawa.ca/about/mental-health-wellness.php)
- The Walk-In Counselling Clinic (613-722-2225), (https://walkincounselling.com/)
- Counselling at Catholic Family Services (613-233-8478), (https://cfsottawa.ca/programs-and-services/women/)
- Pinecrest-Queensway Community Health Centre (613-820-4922), (www.pqchc.com/mental-health-services/)
- Individual counselling at Family Services Ottawa (613-725-3601 ext. 117), (http://familyservicesottawa.org/adults/individual-counselling/)

Low-Cost:

- University of Ottawa Centre for Psychological Services and Research (CPSR): Reception (613-562-5289) or cpsr@uOttawa.ca

Private Practice (sliding scale available):

- Ottawa Institute of Cognitive Behavioural Therapy (613-820-9931), (https://www.ottawacbt.ca/)
- Ottawa Centre for Cognitive Therapy (613-729-0801), (https://ocbt.ca/)
- Centre for Interpersonal Relationships (1-855-779-2347), (https://www.cfir.ca/)

If you are interested in seeking self-help resources, the Association of Behavioral and Cognitive Therapies maintains a searchable database of recommended books for a series of concerns, which can be found online: http://www.abct.org/SHBooks/

If you have any questions or concerns related to this study, please contact the researchers:

Ryan J. Ferguson
[REDACTED INFORMATION]

Dr. Allison J. Ouimet, C.Psych.
[REDACTED INFORMATION]
If you have any questions relating to your rights as a research participant, please contact the Protocol Officer for Ethics Research at the University of Ottawa:

Tabaret Hall, 550 Cumberland Street
Room 154, Ottawa, ON K1N 6N5
Tel.: (613) 562-5387
E-mail: ethics@uOttawa.ca

This debriefing form is for you to keep for future reference.

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APPENDIX I: POST-DEBRIEFING CONSENT FORMS

STUDY 1

Deception sometimes occurs in research studies when the researchers attempt to have a participant believe something that was not true. Before you came in to participate today, a researcher selected you (randomly) to be in one of three conditions. You were either instructed by the researcher to provide a lot of feedback, a little bit of feedback, or no feedback at all about the recorded interaction. The instructions that you received included deception as our goal was to make you believe that your responses will be considered for the modification of the videos. Instead, the videos are finalized and will be used to examine your evaluations of others. Our primary interest in using mild deception in this study was to examine how giving more feedback (compared to lesser feedback) contributed to changes in your subsequent thoughts, feelings, and behaviours.

We ask for your consent to use your data, knowing that deception was used in this study. Remember that all data will be anonymized and published in an aggregate format. However, we understand that you may not wish to have your data used in our analyses and, if you prefer, we will delete your data permanently. You will, of course, still receive **full** compensation for your participation in this study.

Please select **one** of the following options:

I understand that deception was used in this study and I would like my data **included** in the study analyses.

I understand that deception was used in this study and I would like my data **destroyed** (i.e., NOT included in the study analyses).

Participant's name: _____

Participant's signature: _____

Date: _____

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STUDY 2

Deception sometimes occurs in research studies when the researchers attempt to have a participant believe something that was not true. The current study used mild deception in three ways:

1. The conversation partner was **not** another participant, they were part of the CADRe Lab (e.g., a volunteer, Honours student, graduate student).
2. There was **no** judge that evaluated your conversation, instead, the researcher added a second account from their device that was not recording anything.
3. Before you came in to participate today, a researcher randomly selected you to be in one of three conditions (no-feedback, ambiguous-feedback, negative-feedback). After the conversation task (which was identical for all participants), the main experimenter would have given you either **1) no feedback, 2) ambiguous feedback, or 3) negative feedback**, as reported by the social skills judge. The purpose of this was to explore how this *initial feeling of judgement* might influence the way you *felt and performed during a subsequent task* (e.g., the video task). Please remember that the feedback you received from the experimenter was **not based on anything that you did**.

We ask for your consent to use your data, knowing that deception was used in this study. A reminder that all data will be anonymized and published in an aggregate format. However, we understand that you may not wish to have your data used in our analyses and, if chosen, we will destroy your electronic data. You will, of course, still receive **full** compensation for your participation in this study.

Please click **one** of the following questions:

☐ I understand that deception was used in this study and I would like my data to be **included** in future analyses.

☐ I understand that deception was used in this study and I would like my data to be **destroyed** and not used in future analyses.

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APPENDIX J: DEVIATIONS FROM PRE-REGISTRATION

Study 1:

1. During peer-review of the manuscript, an anonymous reviewer highlighted that the names of our conditions (no-, lenient-, and harsh-evaluation) did not reflect what we were asking participants to do (i.e., 'harsh' reflects severity or 'meanness', rather than volume or breadth). With that in mind, we changed the condition names to no-, medium-, and high-evaluation.
2. Following suggestions during peer-review, we re-coded all recorded conversation tasks to observe whether participants' responses to the open-ended memory test (i.e., free recall) were present in the video (i.e., a hit) or not present in the video (i.e., a miss). We then conducted an exploratory analysis that examined how conditions differed on their hits and misses.
3. Following suggestions during peer-review, we used a Benjamini-Hochberg *p*-value correction to account for false discovery rates for our multiple comparisons. We conducted separate B-H corrections for our manipulation check analyses and for our hypothesis testing analyses.

Study 2:

1. We initially pre-registered a sample size of $n = 180$. However, after collecting data from $n = 57$, we noticed an error in our power analysis. Therefore, we corrected our pre-registration to reflect a sample size of $n = 165$. For more information, see December 18th, 2020 Addendum to Exploring the Cyclical Relationship of Self- and Other-Evaluations on Cognitive, Behavioural, and Psychophysiological Outcomes in Social Anxiety at https://osf.io/fc95j.