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Cognitive Strategies for Management of Social Anxiety: A Comparison of Brief Cognitive Restructuring and Mindfulness Interventions

Leorra Newman
Ryerson University

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**COGNITIVE STRATEGIES FOR MANAGEMENT OF SOCIAL ANXIETY: A
COMPARISON OF BRIEF COGNITIVE RESTRUCTURING AND MINDFULNESS
INTERVENTIONS**

by

Leorra Newman
H.B.Sc, University of Toronto, 2010

A thesis

presented to Ryerson University

in partial fulfillment of the

requirements for the degree of

Master of Arts

in the Program of

Psychology

Toronto, Ontario, Canada, 2012

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COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Abstract

Cognitive Strategies for Management of Social Anxiety: A Comparison of Brief Cognitive Restructuring and Mindfulness Interventions

Master of Arts, 2012

Psychology

Ryerson University

The gold standard psychological treatment for social anxiety disorder (SAD), one of the most common anxiety disorders, is cognitive-behavioural therapy (CBT), incorporating cognitive restructuring to target maladaptive beliefs thought to maintain SAD. Recent evidence suggests that mindfulness- and acceptance-based approaches, emphasizing nonjudgmental awareness without active pursuit of cognitive change, may also be effective. The goal of the current study was to examine the mechanisms by which each cognitive approach affects symptoms. Eighty-seven adults with elevated social anxiety were randomized to receive training in one of the strategies or to a control condition in which participants completed assessments only.

Participants self-reported similar decreases in symptoms after 1 week of practice, and these improvements were mediated by increases in decentering and decreases in maladaptive beliefs across condition. These results suggest greater overlap between modalities than theory might predict. Implications for clinical practice, including brief treatments and the role of assessment, are reviewed.

Acknowledgements

Many thanks are due to the members of my supervisory committee, Dr. Martin Antony and Dr. Candice Monson, for allowing me to take on this interesting project and for their helpful feedback along the way. Their contributions helped me sharpen my experimental design, refine my statistical analyses, and connect my findings to a broader body of work. Thanks also to Dr. Stephanie Cassin for serving on my examining committee.

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Dedication

For my son, Aaron Samuel Levine, who lights up my life and continues to provide me with my deepest learning.

Table of Contents

Author's Declaration.....	ii
Abstract	iii
Acknowledgements.....	iv
Dedication	v
Table of Contents	vi
List of Tables	vii
List of Figures	viii
List of Appendices	ix
Cognitive Strategies for Management of Social Anxiety: A Comparison of Brief Cognitive Restructuring and Mindfulness Interventions	1
CBT and Social Anxiety	2
Mindfulness and Social Anxiety	4
Overlap between CBT and mindfulness- and acceptance-based therapies.....	11
The Current Study	13
Method	14
Results.....	21
Discussion	35
Conclusions.....	49
References	74

List of Tables

Table 1: Demographics for Study Completers.....	22
Table 2: Means and Standard Deviations for all Self-Report Measures at Each Time Point, by Study Condition	24
Table 3: Correlations Between all Measures at Time 1	26
Table 4: Hierarchical Multiple Regression Analysis Predicting Change in Social Interaction Anxiety Between Time 1 and Time 3 From Study Condition and Change in Mindfulness (FFMQ)	29
Table 5: Hierarchical Multiple Regression Analysis Predicting Change in Social Interaction Anxiety Between Time 1 and Time 3 From Study Condition and Change in Decentering (EQ) 30	
Table 6: Hierarchical Multiple Regression Analysis Predicting Change in Social Interaction Anxiety Between Time 1 and Time 3 From Study Condition and Change in Social Anxiety Beliefs	31
Table 7: Hierarchical Multiple Regression Analysis Predicting Change in Social Interaction Anxiety Between Time 1 and Time 3 From Experiential Avoidance (AAQ) and Study Condition	32
Table 8: Hierarchical Multiple Regression Analysis Predicting Change in Social Interaction Anxiety Between Time 1 and Time 3 From Experiential Avoidance (AAQ-II) and Study Condition.....	33
Table 9: Hierarchical Multiple Regression Analysis Predicting Change in Social Interaction Anxiety Between Time 1 and Time 3 From Thought Suppression (WBSI) and Study Condition	34

List of Figures

Figure 1: Interaction Between Level of Thought Suppression and Change in Social Anxiety in Cognitive Restructuring Condition	36
Figure 2: Social Anxiety at Each Time Point for Each Condition.....	46

List of Appendices

Appendix A: Exit Questionnaire.....	50
Appendix B: Informed Consent Agreement	51
Appendix C: Demographics Questionnaire	54
Appendix D: Intervention script – Cognitive Restructuring Condition.....	56
Appendix E: Intervention script – Mindfulness and Acceptance Condition	63
Appendix F: Risk assessment protocol	70
Appendix G: Debriefing Form.....	71

Cognitive Strategies for Management of Social Anxiety: A Comparison of Brief Cognitive Restructuring and Mindfulness Interventions

Social anxiety disorder (SAD; also known as social phobia) is one of the most common and debilitating anxiety disorders. The Canadian Community Health Survey (Gravel, Connolly, & Bédard, 2002) found that 8% of Canadians reported a lifetime history of SAD, with a mean age of onset in the early teens, and an average duration of 20 years at the time of assessment. SAD is associated with higher risks of drug and alcohol dependence, other anxiety disorders (e.g., panic disorder), and depression. In addition to social isolation, Canadians suffering from SAD symptoms are likely to have lower educational attainment, reduced likelihood of employment, and higher rates of disability. Thus, SAD is a costly disorder, both for its sufferers and for the Canadian economy.

The gold standard psychological treatment for social anxiety is cognitive-behavioural therapy (CBT), which includes a variety of strategies, including exposure techniques and cognitive restructuring. Cognitive restructuring is a technique by which patients learn to identify maladaptive cognitions such as the biases, negative predictions, and inaccurate core beliefs that are thought to maintain SAD. Despite the empirical support for CBT in treatment of SAD, 40%-50% of patients do not show significant improvements after this treatment (Hofmann & Bogels, 2006), suggesting that there is room for improvement in the existing protocols or in the way that they are delivered.

Recent evidence suggests that mindfulness-based approaches are also effective in treatment of SAD (Kocovski et al., 2009; Koszycki et al., 2007; Dalrymple & Herbert, 2007). Similar to CBT, these approaches employ exposure techniques, but their approach to SAD-related cognition differs in that they discourage actively working to change the content of

cognition. Instead, a focus is placed on mindfulness training to encourage cultivation of a present, moment-to-moment, nonjudging awareness of one's internal experiences. This is hypothesized to allow for better tolerance of anxiety symptoms when they occur. To date, only one published study has directly compared CBT with mindfulness-based treatment for SAD, however, with the finding that both interventions led to symptom reduction (Koszycki et al., 2007). Whether this is due to overlap between the treatments (e.g., both employed exposure techniques), or elements unique to each one (e.g., their differing approach to cognition) is an empirical question.

This thesis presents a review of the theory underlying CBT interventions for SAD, as well as the evidence supporting their treatment of SAD. Next, a mindfulness- and acceptance-based model of SAD is introduced. Treatment implications of this model are discussed, and evidence regarding mindfulness- and acceptance-based interventions for SAD is reviewed. Issues of overlap between the intervention types are discussed, and the current project comparing cognitive restructuring with mindfulness approaches to SAD is described. The aim of the current study was to elucidate the effects of each described cognitive intervention on anxiety symptoms, cognitive change, and acceptance, as well as to shed light on whether differences in personal traits such as thought suppression and cognitive avoidance predict the benefits of each intervention based on these characteristics. The results of this therapy analogue study are intended to help inform clinical practice and treatment planning for socially anxious patients.

CBT and Social Anxiety

Cognitive models of SAD (Clark & Wells, 1995; Rapee & Heimberg, 1997) emphasize the role of cognitions in social anxiety. Specifically, individuals who are socially anxious have narrowed attention, such as a heightened focus on the self (as when an individual fears public

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

displays of anxiety) and on external factors relating to social concerns (such as others' approval, or lack thereof). In addition, individuals with SAD hold unrealistically high standards for their performance in social situations, and enter social situations with negative core beliefs about themselves. Furthermore, socially anxious individuals are likely to engage in postevent processing, which refers to prolonged rumination about social situations after they have occurred. Taken together, these cognitive features of SAD fuel avoidance or safety behaviours, which help to maintain the social anxiety by preventing opportunities for individuals to experience a natural decrease in their anxiety. Thus, working with cognitions in SAD is likely to have direct effects on behaviours and ultimately on the severity of the disorder itself.

CBT is the most studied and best supported nonpharmacological treatment for SAD (Rodebaugh, Holaway, & Heimberg, 2004; Heimberg 2002). A commonly included element in CBT for SAD is cognitive restructuring, in which patients learn to identify maladaptive cognitions such as the biases, negative predictions, and inaccurate core beliefs identified in the above-described cognitive models. Once patients learn to identify maladaptive cognitions, the next step is to challenge them by generating alternative beliefs, evaluating the evidence regarding both the original and alternative thoughts, and ultimately generating more "balanced" beliefs that are consistent with the evidence. Typically this is accomplished via a thought record worksheet. Cognitive restructuring has been shown to reduce SAD symptoms to a greater degree than mere recall of social situations without any attempt to modify cognitions (Taylor et al., 1997).

In addition to cognitive restructuring, CBT interventions for SAD typically include exposure (e.g., in vivo exposure and role play simulations) and behavioural experiments, and some studies have included social skills training or relaxation training. The efficacy of CBT and maintenance of gains at follow-up has been supported by several meta-analyses examining SAD

treatment outcomes (Acarturk, Cuijpers, van Straten, & de Graaf, 2009; Fedoroff & Taylor, 2001; Feske & Chambless, 1995, Gould, Buckminster, Pollack, Otto, & Yap, 1997; Taylor, 1996). CBT for SAD is frequently delivered in groups (e.g., CBGT; Heimberg & Becker, 2002) but has been shown to be equally (Scholing & Emmelkamp, 1993; Wlazlo, Schroeder-Hartwig, Hand, Kaiser, & Münchau, 1990) or more (Stangier, Heidenreich, Peitz, Lauterbach, & Clark, 2003) effective when delivered individually. Despite the empirical support for CBT in treatment of SAD, 40%-50% of patients do not show significant improvements after treatment (Hofmann & Bogels, 2006), suggesting that there is room for improvement in the existing protocols or in the way that they are delivered.

Mindfulness and Social Anxiety

A mindfulness or acceptance stance toward cognition entails noticing and observing thoughts as they occur, and adopting a nonjudgmental stance of acceptance towards thoughts rather than attempting to engage with or change them (Kabat-Zinn, 1990). In this way, emphasis is placed on the relationship to one's thoughts rather than on the content of cognition per se. Mindfulness- and acceptance-based interventions are currently the focus of much psychotherapy research, and form a key element of therapies such as Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 1990), Mindfulness-Based Cognitive Therapy (MBCT; Teasdale et al., 2000), Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999), and Dialectical Behavioral Therapy (DBT; Linehan, 1993). Collectively these therapies have been referred to as the "third wave" of cognitive behavioural therapy (CBT), with some proponents hailing them as a radical departure from traditional CBT (e.g., Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Others note that elements of acceptance have always been present in traditional CBT (e.g., Arch & Craske, 2008; Hofmann & Asmundson, 2008). For example, the importance

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

of cultivating a nonjudgmental awareness of anxiety was noted as a key aspect of treatment in one of the original cognitive therapy texts (Beck & Emery, 1985).

Herbert and Cardaciotto (2005) present an acceptance-based model of SAD. These authors postulate that an individual's level of nonjudgmental acceptance of internal experience predicts his or her behavioural response to social anxiety and thus the extent of impairment. Specifically, the model holds that for individuals with SAD, the anxiety elicited by social situations (actual or imagined) leads to an increase in self-focused awareness and a decrease in awareness of external cues. This is likely to be an aversive experience, and individuals who are low in nonjudgmental acceptance will reflexively attempt to control it via avoidance or suppression. Attempts to avoid or suppress internal experience are known as experiential avoidance (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). These efforts at control are likely to fail, however. For instance, safety behaviours and avoidance actually perpetuate social anxiety by preventing individuals from having opportunities to experience natural decreases of anxiety in social situations. Furthermore, such a behavioural disruption is likely to fuel further efforts to control aversive thoughts and feelings, keeping individuals with SAD locked in a cycle of anxiety and avoidance.

By contrast, Herbert and Cardaciotto's (2005) model predicts that individuals who are high in nonjudgmental acceptance are able to simply notice their increase in anxiety and change in awareness without attempting to control or avoid the experience. These individuals are better able to tolerate anxiety activated by social situations and are therefore less likely to try to control the experience or escape it altogether. Thus, Herbert and Cardaciotto's (2005) model suggests two intervention targets for SAD: awareness and acceptance. First, decreasing internal awareness and increasing awareness to external cues should decrease experiential avoidance and

ultimately reduce behavioural disruption. Second, increasing nonjudgmental acceptance of one's internal experience, regardless of content, should decrease the need for experiential control and its resulting behavioural avoidance. Herbert and Cardaciotto (2005) introduce ACT as an appropriate treatment for SAD, in that the therapy explicitly encourages experiential willingness as an alternative to avoidance, with an emphasis on pursuing valued directions and goals in life; this includes discussion of the control strategies that the patient has used and identification of ways in which this has not been a successful approach.

Supporting Herbert and Cardaciotto's (2005) model of SAD is the finding that higher levels of social anxiety are associated with higher levels of experiential avoidance. Glick and Orsillo (2011) surveyed 109 undergraduate students and divided participants into high and low SAD groups based on interquartile division of scores on a measure of social interaction anxiety. Individuals high in social anxiety were more likely to endorse high levels of experiential avoidance and thought suppression than those who were low in social anxiety. Furthermore, for individuals high in social anxiety, experiential avoidance and suppression predicted social anxiety over and above the effect of self-focused attention, and in fact mediated the relationship between social anxiety and self-focused attention. These results suggest that experiential avoidance and thought suppression are important mechanisms to target in treatment of SAD.

Mindfulness encourages openness to all thoughts and sensations, however uncomfortable, without judging them, trying to control them, or avoiding situations as a result of them. Ultimately this is thought to lead to increased distress tolerance and reduced reliance on experiential avoidance. Laboratory studies of emotion provocation procedures have provided evidence that acceptance-oriented strategies are associated with lower distress responses than avoidance or suppression strategies (e.g., Eifert & Heffner, 2003; Feldner, Zvolensky, Eifert, &

Spira, 2003), suggesting that learning acceptance strategies could be a key aspect of treatment targeting distress in SAD.

In contrast with cognitive restructuring, the goal in mindfulness- and acceptance-based interventions for social anxiety is not extinction of the fear or anxiety response. Rather, individuals are encouraged to accept their response whatever it may be. In fact, the active pursuit of cognitive change is viewed as a struggle that creates psychological distress in and of itself (e.g., Hayes et al., 1999).

In a conceptual review, Treanor (2011) has outlined the following model of the ways in which mindfulness may increase the effectiveness of exposure interventions in anxiety disorders such as SAD. First, mindfulness can be conceptualized as a skill that facilitates distress tolerance and increases willingness to engage in anxiety-provoking tasks. In addition, the heightened attentional capacity encouraged in mindfulness exercises may enhance extinction learning by allowing a greater number of cues to come to be associated with anxiety reduction during actual exposure procedures. Furthermore, if mindfulness is paired with exposure it could come to act as a portable retrieval cue, such that activating mindfulness in a novel situation would help generalize the extinction response (Treanor, 2011). Following is a review of studies investigating mindfulness- and acceptance-based interventions for SAD.

Bogels, Sijbers, and Voncken (2006) conducted a pilot intervention for SAD, combining group MBCT and task concentration training (TCT). The intervention was delivered individually, with the first 5 sessions devoted to mindfulness, a further 3 sessions devoted to TCT, and a final evaluation session. TCT targets the self-focused attention that contributes to the maintenance of social anxiety symptoms (Clark & Wells, 1995) in that individuals learn to redirect attention to current tasks. Mindfulness training preceded TCT as it encourages full

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

awareness of the moment and surroundings; the rationale behind this approach was that once patients developed this awareness they could learn to redirect it via TCT. Following the intervention, 7 of 9 treatment completers no longer had symptoms meeting criteria for SAD, and gains were maintained at 2-month follow-up. Participants also experienced significant reductions in cognitive, physical, and behavioural aspects of social anxiety, and in fear of negative evaluation. This study did not include a comparison or control group; instead, the authors instated a waiting period pretreatment in order to provide a baseline assessment of SAD, and rule out any effects of time alone. The average length of the pretreatment waiting period was 2 months, similar to the treatment period itself. It must be noted that no conclusions can be drawn with regard to which component of the intervention (i.e., mindfulness training or TCT) contributed to the effect.

Ossman, Wilson, Storaasli, and McNeil (2006) conducted a preliminary study of group sessions of ACT for SAD in which 12 participants underwent a 10-session group ACT protocol employing mindfulness techniques as well as exposure exercises. Participants reported decreases in experiential avoidance and social anxiety. However, conclusions that can be drawn from this study are limited by its small sample size, as well as lack of comparison conditions or randomization.

Dalrymple and Herbert (2007) conducted a pilot study in which 19 individuals diagnosed with SAD went through a 12-week program of integrated exposure therapy and ACT. Although patients reported significant decreases in levels of fear, their decreases in experiential and behavioural avoidance were even greater. This is consistent with the acceptance-based approach of ACT, which emphasizes not letting anxiety get in the way of engaging in valued behaviours (i.e. placing the emphasis on willingness to experience anxiety rather than on symptom

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

reduction, per se). The authors employed a 4-week baseline period prior to treatment; lack of progress in the outcome measures was taken as evidence that spontaneous recovery was unlikely to explain the end-of-study outcomes. However, this study was limited by a lack of comparison group or control group.

Kocovski and colleagues (2009) conducted an open trial of Mindfulness and Acceptance-Based Group Therapy (MAGT) for SAD. MAGT is based largely on ACT, with some elements of MBCT. It also contains mindfulness, acceptance, and exposure instructions, as well as attention to values and goals in a manner consistent with ACT. Twenty-nine patients diagnosed with SAD completed the trial of 12 2-hour group sessions, with significant reductions in social anxiety symptoms as well as decreases in experiential avoidance and increases in mindfulness, all of which were maintained at 3-month follow-up. Patients also reported reductions in depression and rumination, and indicated that they found the MAGT approach acceptable, and the mindfulness exercises helpful. Results of a hierarchical regression analysis suggested that experiential avoidance mediated social anxiety symptoms; however, causal conclusions cannot be drawn from this open trial so no definitive mediation analysis could be completed.

Jazaieri, Goldin, Werner, Ziv, and Gross (2012) conducted a study in which 56 patients diagnosed with SAD were randomly assigned to 8 weeks of either MBSR or aerobic exercise. Participants in the aerobic exercise group were provided with a 2-month gym membership and were required to complete at least two individual and one group exercise sessions per week, to equate with the weekly individual and group components of MBSR. Participants in the interventions were compared to a separate, untreated group of individuals with SAD. Both MBSR and aerobic exercise resulted in significant reductions of clinical symptoms and enhanced

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

well-being, and these gains were maintained at 3-month follow up, with no significant differences between the two interventions.

Although the studies reviewed above investigated the integration of mindfulness- and acceptance-based interventions into traditional CBT interventions for SAD, recent studies have indicated that when compared directly, mindfulness- and acceptance-based treatments and traditional CBT interventions have similar effects on SAD symptoms. Koszycki, Benger, Shlik, and Bradwejn (2007) conducted a randomized trial in which 53 patients diagnosed with generalized SAD were randomized to 8 weeks of MBSR (27.5 hours total) or 12 weeks CBGT (30 hours total). Patients in the CBGT condition were assigned between-session homework focusing on cognitive restructuring and exposure to social situations; the authors do not report a time total for this aspect of the treatment. Patients in the MBSR group were assigned 30 minutes of meditation practice per day, with additional daily practice and readings some of the weeks. Both interventions led to significant reductions in symptoms, but CBGT led to greater reductions than MBSR. However, as pointed out by Kocovski et al. (2009), the MBSR instructor in this trial was not a mental health professional and had no previous experience treating SAD patients; nor were participants in the MBSR group given a rationale for approaching SAD with mindfulness strategies. Furthermore, this study did not employ a control group, so the role of nonspecific factors is unclear.

Kocovski, Fleming, and Antony (2011) conducted a controlled trial in which 137 patients with SAD were randomly assigned to MAGT, CBGT, or waitlist control group. Both MAGT and CBGT were more effective than the control group but not significantly different from one another. The authors report that cognitive reappraisal was a mechanism of change for CBGT but not for MAGT, and that decentering was a mediator for both treatments. However, conclusions

regarding these processes as mechanisms of change are tempered by the fact that symptom change occurred by mid-treatment for both groups, and there was no demonstration that the proposed mechanisms changed prior to that point. In addition, although the use of cognitive reappraisal was assessed, no measure was taken of social anxiety beliefs per se. Importantly, this was a clinical study employing comprehensive treatment packages with multiple facets (e.g., cognitive, exposure, social skills). In addition, both treatments encouraged participants to confront feared situations. Thus it is not possible to evaluate which component strategies are responsible for the findings.

Overlap between CBT and mindfulness- and acceptance-based therapies

It must be noted that while CBT and acceptance-based therapies differ in theoretical foundation, they share many features and techniques. CBT may use attentional and acceptance techniques that are common to mindfulness exercises; mindfulness- and acceptance-based therapies may challenge thoughts merely by questioning their centrality or importance. Both groups of therapies employ exposure as an important component of treatment. The goal of exposure in mindfulness- and acceptance-based therapies (e.g., ACT) is not fear extinction per se, but mindful acceptance of uncomfortable thoughts and feelings, in order to face what needs to be faced so that one can live in accordance with one's chosen values (Hayes et al., 1999). In CBT, the goal of exposure may be fear extinction, or it may be an opportunity to challenge catastrophic thinking such as in a behavioural experiment; in either case the ability to accept uncomfortable feelings during exposure exercises is essential to the goal. Indeed, exposures are considered maximally effective when patients allow themselves to feel the full extent of their anxiety and attend fully to the situation (Foa & Kozak, 1986).

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Hofmann and Asmundson (2008) have described the critical difference between cognitive and ACT techniques as one of locus of interventions in the stimulus-response chain. Cognitive interventions focus on changing appraisals of stimuli whereas ACT targets the response strategies such as emotional suppression or experiential avoidance. As previously noted, the approach to cognition in ACT and other mindfulness- and acceptance-based interventions is on changing one's relationship with thoughts, rather than their content, to accept unwanted or distressing thoughts without continuing to struggle against or change them. Nonetheless, Hofmann and Asmundson (2008) point out that cognitive reappraisal, a key component of CBT, is one of the best-supported emotion regulation (and thus, distress-reduction) strategies. In addition, reappraisal and decentering may interact with each other to facilitate well-being. For example, it has been proposed that decentering resulting from mindfulness meditation may confer greater ability to positively reappraise stressful life events, creating an “upward spiral” toward overall stress reduction (Garland, Gaylord, & Fredrickson, 2011).

Arch and Craske (2008) catalogue the alleged dichotomies between CBT and ACT, noting that in many cases there are arguments to be made for more overlap than may be initially apparent, and that the interventions may achieve similar results via differing mechanisms. For example, the cognitive techniques emphasized by each appear to differ: ACT emphasizes cognitive defusion and acceptance whereas CBT emphasizes cognitive restructuring and change. However, both of these approaches create distance between the thinker and their thoughts, and both facilitate exposure. ACT emphasizes valued living, encouraging individuals to pursue life-based goals as opposed to anxiety-based goals, whereas CBT refers explicitly to anxiety reduction. However these concepts need not be, and likely never are, mutually exclusive.

The Current Study

The aim of the current project was to examine mechanisms by which the cognitive strategies employed by CBT and mindfulness- and acceptance-based treatments might alleviate symptoms of social interaction anxiety. In addition to improving theoretical models of SAD, an understanding of mechanisms mediating treatment response is important because it may aid in delivering the most parsimonious version of existing therapies, for greater efficiency and wider reach; it may aid in designing and combining treatment packages; and it may frame investigations into how individual differences may affect patients' suitability for different treatments. Participants in this study were randomly assigned to learn and practice cognitive restructuring or mindfulness meditation over a 1-week period; participants in a control condition completed all assessments but did not learn a cognitive strategy.

Specific hypotheses were as follows:

1. Both mindfulness training and cognitive restructuring would lead to reductions in social interaction anxiety after 1 week of practice to a greater extent than monitoring alone; no significant differences between the intervention conditions on this outcome were expected.
2. Reductions in social interaction anxiety would be mediated as follows:
 - a. Change in social interaction anxiety symptoms following 1 week of mindfulness practice would be mediated by changes in mindfulness and acceptance, but not by changes in beliefs.
 - b. Change in social interaction anxiety symptoms following 1 week of cognitive restructuring practice would be mediated by changes in beliefs, but not by changes in mindfulness and acceptance.

- c. For both conditions, change in social interaction anxiety symptoms after 1 week of practice would be mediated by decentering, but there will be no difference in its mediating effect by condition assignment.
3. Individuals with higher trait levels of experiential avoidance and thought suppression would derive less benefit from the mindfulness vs. cognitive restructuring intervention. The opposite pattern was predicted for cognitive restructuring, such that individuals with higher levels of these characteristics would derive more benefit from the cognitive restructuring vs. mindfulness intervention.

Method

Participants

Eighty-seven participants above the age of 18 were recruited from the undergraduate psychology pool at Ryerson University via web-based sign-up, and from the community at large via advertisements posted at local universities and on websites. All prospective participants completed the *Social Interaction Anxiety Scale* (SIAS; Mattick & Clarke, 1998), to assess levels of self-reported social anxiety in interaction situations. Participants scoring 33 or above on the SIAS were recruited for the study, because this is consistent with the cutoff score that has been found to discriminate between individuals with and without SAD (Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992; Mattick & Clarke, 1998). Participants were excluded from participation if they had experience with mindfulness or CBT in the previous 2 years. In accordance with the policies set by the Psychology Ethics Committee and the Department of Psychology at Ryerson University, participants from the undergraduate psychology pool received 1% credit toward their overall course grade for each hour of their participation, up to a maximum of 2% for completion of the full study. Participants from the community who

completed the entire study received \$30 compensation, which is a standard amount for a 2-hour questionnaire-based research study.

Measures

Structured Clinical Interview for DSM-IV (SCID-IV; First, Spitzer, Gibbon, & Williams, 1996). The SCID-IV is a semi-structured diagnostic interview that assesses the diagnostic criteria for various psychological disorders, based on the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR, American Psychiatric Association, 2000). In the current study, the Social Phobia section of the SCID-IV was administered to determine whether participants' symptoms met criteria for a diagnosis of SAD, though a diagnosis was not required for participation in the study. The reliability of a social phobia diagnosis using the Social Phobia module of the SCID-IV has been found to be excellent (Crippa et al., 2008).

Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998). The SIAS is a 19-item self-report scale that measures social anxiety specific to social interactions. Items include assessing the respondent's fears of talking to others, mixing with others, and thinking about topics to discuss. The SIAS has shown to have high internal consistency and test-retest reliability (r_s range from .86 to .92; Heimberg et al., 1992). The alpha for the SIAS in the current study was .87.

Social Thoughts and Beliefs Scale (STABS; Turner, Johnson, Beidel, Heiser, & Lydiard, 2003). The STABS is a 21-item self-report measure that assesses cognitive aspects of SAD, such as beliefs that others are more socially competent or that one is likely to embarrass oneself. The STABS has been found to discriminate individuals with SAD from those in other diagnostic groups, and has demonstrated adequate internal consistency and test-retest reliability (Turner et al., 2003). The alpha for the STABS in the current study was .90.

Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004). There are several versions of the AAQ; the 16-item version was used in the current study. The AAQ is a self-report measure that assesses experiential avoidance and the ability to take action even in the face of unwanted emotions. The AAQ has been found to have satisfactory internal consistency and test-retest reliability and moderate correlations with complementary constructs such as thought control and suppression (Hayes et al., 2004). However, an updated version has been developed, as described below. The alpha for the AAQ in the current study was .68.

Acceptance and Action Questionnaire II (AAQ-II; Bond et al., 2011). The AAQ-II is a newer 7-item self-report measure that assesses the same construct as the AAQ ($r=.97$). It appears to have better psychometric consistency than the AAQ, but has yet to be utilized as frequently in research. Thus, both the AAQ and AAQ-II were administered in the current study. The alpha for the AAQ-II in the current study was .84.

White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994). The WBSI is a 15-item questionnaire that is designed to measure the extent to which individuals engage in thought suppression. The WBSI has demonstrated high internal consistency and acceptable to good test-retest reliability ($r=.69-.92$; Wegner & Zanakos, 1994). The alpha for the WBSI in the current study was .85.

Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). The FFMQ is a 39-item measure consisting of five subscales: observing, describing, acting with awareness, nonjudging of inner experience, and nonreactivity to inner experience. Each of the five subscales has been shown to have good internal consistency (Baer et al., 2006). The alpha for the full FFMQ in the current study was .84.

Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003). The MAAS is a 15-item, single factor, self-report measure of present-moment awareness and attention in daily life that has been shown to have very good internal consistency (.82-.87) and test-retest reliability (Brown & Ryan, 2003). The alpha for the MAAS in the current study was .87.

Experiences Questionnaire (EQ; Fresco et al., 2007). The EQ is a 20-item self-report scale designed to measure decentering, the ability to gain distance from one's thoughts and acknowledge them as temporary mental events. Support for the discriminant validity of the EQ comes from evidence that it correlates negatively with measures of opposing constructs such as experiential avoidance and rumination (Fresco et al., 2007). The current study used the 11-item decentering subscale only; the alpha for this subscale in the current study was .77.

Depression Anxiety Stress Scales – 21 item version (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 is a 21-item self-report measure of depression, anxiety, and tension or stress over the past week. The DASS-21 has been shown to have excellent reliability and validity (Antony, Bieling, Cox, Enns, & Swinson, 1998; Lovibond, 1998). Only the depression subscale was investigated in the current study; the alpha for this subscale was .87.

Exit Questionnaire. The Exit Questionnaire (Appendix A) is an 8-item self-report scale designed for the current project to assess how closely participants followed their chosen intervention, their perception of how the intervention affected their social anxiety, and how they viewed the intervention.

Procedure

Upon first arrival at the laboratory, participants completed an informed consent form (Appendix B) and demographics questionnaire (Appendix C). The experimenter then administered the Social Phobia section of the SCID-IV. Next, participants completed the Time 1

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

assessment, consisting of the SIAS, STABS, AAQ, AAQ-II, WBSI, FFMQ, MAAS, EQ, and DASS-21. Following the completion of questionnaires, participants were oriented to their assigned condition. Participants in the cognitive restructuring condition were taught how to complete a 5-column Anxiety Thought Record (Antony & Norton, 2009), in which maladaptive thoughts are identified and challenged. Participants in the mindfulness condition were taught a meditation exercise in which the emphasis was on noticing and accepting all thoughts regardless of their content. Participants in the control condition did not receive any intervention but remained in the lab for a similar period as the other two conditions; they were not given any particular task to complete and did not have access to a computer during this period. The cognitive restructuring and mindfulness training interventions were scripted to ensure maximum reliability among experimenters (see Appendices D and E). Following the intervention training, participants completed the Time 2 assessments, consisting of the SIAS, STABS, FFMQ, MAAS, EQ, and DASS-21. All participants were then provided with a description of homework and assessments expected during the week following, and were given a debriefing form listing further resources for social anxiety. The entire laboratory visit took approximately 60 to 90 minutes.

Intervention training was delivered either by a graduate student with clinical training in the above-noted interventions (i.e., the thesis author), or a research assistant with an undergraduate degree in psychology and at least 1 year of experience conducting similar interventions in research settings. Before being approved to work with study participants on their own, each research assistant was required to observe the primary experimenter work with each condition with three separate participants; the primary experimenter then observed each research assistant conduct the training with an additional three separate participants per

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

condition. Participants were assigned to conditions based on an order drawn from a random numbers table; separate tables were used for each experimenter to ensure that distribution of conditions would be equal across experimenters. The thesis author provided weekly supervision to the research assistants, as well as ad hoc consultations when needed. In cases of diagnostic or clinical uncertainty, the primary experimenter consulted with the thesis supervisor, a clinical psychologist with extensive expertise in diagnosis and treatment of SAD.

Subsequent to the laboratory session, participants were asked to practice their assigned strategy for 1 week. Specifically, the cognitive restructuring condition completed a thought record daily, and the mindfulness condition followed a guided mindfulness meditation daily. In addition, all participants completed the TMS (Lau et al., 2006) each day. This daily homework and reporting took place online, using Qualtrics survey software that is hosted on secure servers by Qualtrics, Inc., in the United States.

Seven days after the laboratory session, all participants completed the Time 3 assessment (a brief extension was granted in the case of extenuating circumstances such as illness, or if the 7th day was a holiday), including the SIAS, STABS, FFMQ, MAAS, EQ, and DASS-21. Participants were also given the Exit Questionnaire and a final debriefing form explaining the purpose of the study, including descriptions of methods for management of social anxiety, along with further resources. This entire follow-up session occurred online.

Data Analysis

Analyses and results are reported for participants who completed the entire study. Participants were considered to have completed the study if they completed a minimum of 3 (out of 7) days of homework and completed Time 1, 2, and 3 assessments. An alpha level of .05 was used for all statistical tests. Hypothesis 1 was tested with a 3 (condition) x 3 (time) mixed design

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

analysis of variance (ANOVA). Hypotheses 2a, 2b, and 2c were examined with mediation analyses as per Kraemer, Wilson, Fairburn, and Agras (2002). Prior to the mediation tests, change across treatment was evaluated for the following proposed mediators: mindfulness (as assessed by the MAAS and FFMQ), decentering (as assessed by the EQ), and maladaptive social anxiety beliefs (as assessed by the STABS). In addition, change across treatment in depression symptoms (as assessed by the DASS-21) was evaluated. In each case a mixed design ANOVA was conducted, with Condition as the between subjects variable and Time as the within subjects variable. For all analyses of variance, degrees of freedom were corrected using the Greenhouse Geisser estimates of sphericity in cases where this assumption was violated. Any main effects were followed up with Bonferonni-adjusted posthoc comparisons. Effect sizes for repeated measures pairwise comparisons correct for dependence between means, using Morris and DeShon's (2002) equation 8.

In cases in which proposed mediators changed significantly across treatment, mediation tests were conducted with hierarchical linear regressions, to determine whether such change was a predictor of symptom improvement. Separate linear regressions were conducted for each proposed mediator. In each analysis, residualized difference scores were used to capture change between Time 1 and Time 3. The dependent variable in each analysis was change in social interaction anxiety; the predictor variables were Condition (Step 1), residualized change in the mediator (M; Step 2), and the Condition x M interaction term (Step 3). A main effect of M provides evidence of possible similar mediation across conditions, whereas a significant Condition x M interaction indicates possible differential mediation across conditions.

Hypothesis 3 was examined via hierarchical regression analyses evaluating the relationship between individual traits of thought suppression (as assessed by the WBSI) or

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

experiential avoidance (as assessed by the AAQ and the AAQ-II) and change in social anxiety after one week of practice. For each analysis, the dependent variable was change in social interaction anxiety as captured by the residualized SIAS change score from Time 1 to Time 3. Predictor variables were Condition (Step 1), Moderator status at baseline (Step 2), and the Condition x Moderator interaction term (Step 3). A main effect of Moderator provides evidence of possible similar moderation across conditions whereas a significant Condition x Moderator interaction indicates possible differential moderation of outcome by trait across condition.

Results

Attrition

Participants who did not complete the first 2 days of homework were contacted with an e-mail reminder to complete the daily assignments if they were still interested in participating in the study. No further reminder was provided. Of the 32 participants randomized to Cognitive Restructuring, 26 completed the study (81.25%). Of the 29 participants randomized to Mindfulness, 25 completed the study (86.21%). Of the 26 participants randomized to Control, 25 completed the study (96.15%). Reasons for non-completion were not assessed. Non-completion rates did not differ significantly between conditions, $\chi^2(2) = 2.94, p = .236$.

Characteristics of the Sample

Of the treatment completers, 18 were recruited from the SONA research participant pool (23.68%) and 58 were recruited from the community (76.32%). The primary researcher worked with 34 of the study completers and two research assistants worked with 33 and 9 study completers, respectively. There were no differences between experimenters in distribution of experimental conditions. Table 1 presents demographic characteristics of the study completers across condition.

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Table 1

Demographics for Study Completers

	Cognitive Restructuring (<i>n</i> =26)	Mindfulness (<i>n</i> =25)	Control (<i>n</i> =25)	Total (<i>n</i> =76)		
Variable	<i>M</i> or <i>n</i> (SD or %)	<i>M</i> or <i>n</i> (SD or %)	<i>M</i> or <i>n</i> (SD or %)	<i>M</i> or <i>n</i> (SD or %)	<i>F</i> or χ^2	<i>p</i>
Worked with study author	13 (50.0%)	11 (44.0%)	10 (40.0%)	34 (44.7%)	.52	.770
Age (years)	28.62 (10.76)	25.17 (7.03)	28.00 (12.66)	27.29 (10.36)	.77	.469
Female	16 (61.5%)	17 (68.0%)	17 (68.0%)	50 (65.8%)	.32	.853
White/European	14 (53.8%)	13 (52.0%)	17 (68.0%)	44 (57.9%)	9.29	.505
Single	19 (73.1%)	20 (80.0%)	15 (60.0%)	54 (71.1%)	6.56	.585
Some university or college education	22 (84.6%)	22 (88.0%)	17 (68.0%)	61 (80.3%)	3.63	.163
Employed (at least part-time)	12 (46.2%)	11 (44.0%)	13 (52.0%)	36 (47.4%)	.34	.842
SAD diagnosis ^a	19 (73.1%)	18 (72.0%)	13 (52.0%)	50 (65.8%)	4.52	.340
Previous CBT experience ^b	4 (15.4%)	2 (8.0%)	0	6 (7.9%)	4.15	.126
Previous mindfulness experience ^c	0	1 (4.0%)	0	1 (1.3%)	2.07	.356

Note: χ^2 (2) values for demographics variables; *F*(2, 73) values reported for self-report measures. SAD = social anxiety disorder; CBT = cognitive behavioural therapy.

^aSAD diagnosis based on Structured Clinical Interview for DSM-IV. ^{b,c}All prior therapy >2 years before study participation.

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

One-way ANOVAs were conducted to compare baseline scores of study completers on the primary outcome measure, as well as all proposed mediators and moderators. Means and standard deviations for all measures at Time 1 are presented in Table 2 and correlations between all measures at Time 1 are presented in Table 3. There were no significant differences between conditions in social anxiety, mindfulness, decentering, depression status, experiential avoidance, or thought suppression. There were significant differences between conditions in maladaptive social anxiety beliefs, $F(2, 73) = 3.67, p = .030$. Bonferroni-adjusted posthoc analyses revealed that the Mindfulness condition had higher STABS scores at baseline than the Control condition ($p = .025$) but that these did not differ significantly from those of the Cognitive Restructuring condition ($p = .477$). There were no significant differences between the Cognitive Restructuring and Control conditions in baseline STABS scores ($p = .580$).

Primary Outcome

Table 2 presents means and standard deviations for SIAS scores at each time point across conditions. There was no significant main effect of Condition on social anxiety symptoms, $F(2, 73) = .92, p = .405, \eta_p^2 = .02$. However, there was a significant main effect of Time on social anxiety symptoms, $F(1.52, 110.81) = 15.97, p < .001, \eta_p^2 = .18$. Posthoc comparisons revealed that social anxiety symptoms decreased between Time 1 and Time 3, $t(75) = 4.56, p < .001, d = .48$, and Time 2 and Time 3, $t(75) = 4.07, p < .001, d = .47$, but did not change significantly between Time 1 and Time 2, $t(75) = 1.21, p = .692$. The Time x Condition interaction was not significant, $F(3.04, 110.81) = .65, p = .584, \eta_p^2 = .02$.

Mediation Analyses

Change in proposed mediators across treatment. For mindfulness, as assessed by the MAAS (Brown & Ryan, 2003), there was no significant effect of Condition, $F(2, 73) = 1.18, p =$

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Table 2

Means and Standard Deviations for all Self-Report Measures at Each Time Point, by Study Condition

Assessment	Cognitive Restructuring (<i>n</i> =26)		Mindfulness (<i>n</i> =25)		Control (<i>n</i> =25)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Primary Outcome						
Social Interaction Anxiety Scale						
Time 1	52.12	11.36	54.64	11.51	50.72	13.51
Time 2	51.73	10.22	54.36	11.12	49.20	13.03
Time 3	46.19	10.37	49.96	12.38	47.08	12.04
Proposed Mediators						
Mindful Attention Awareness Scale						
Time 1	3.34	.81	3.44	.91	3.58	.80
Time 2	3.32	.93	3.05	.93	3.60	.71
Time 3	3.41	.56	3.35	.93	3.60	.73
Five Facet Mindfulness Questionnaire						
Time 1	14.10	1.81	13.64	1.94	14.61	1.98
Time 2	13.92	1.63	13.04	2.14	14.29	2.08
Time 3	14.49	2.06	13.74	2.43	14.42	2.19
Experiences Questionnaire (Decentering)						
Time 1	31.27	5.81	29.48	5.49	32.04	5.66
Time 2	32.15	5.59	29.48	5.64	32.56	5.74

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Time 3	33.27	6.11	32.48	5.55	32.08	5.69
Social Thoughts and Beliefs Scale						
Time 1	73.96	11.17	78.56	12.69	69.72	10.67
Time 2	72.73	11.02	78.36	11.39	69.08	10.47
Time 3	68.65	10.28	72.32	11.75	66.12	11.01
Depression Anxiety Stress Scale						
Time 1	19.85	9.68	18.32	10.80	16.72	10.16
Time 2	19.46	11.53	18.40	12.26	15.44	11.04
Time 3	18.08	9.49	14.48	11.75	16.16	10.94
Proposed Moderators						
Acceptance and Action Questionnaire						
Time 1	74.42	8.15	74.28	10.71	71.92	10.72
Acceptance and Action Questionnaire - II						
Time 1	34.08	6.88	30.96	7.24	30.52	9.05
White Bear Suppression Inventory						
Time 1	58.92	8.38	54.24	10.01	56.04	7.84

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Table 3

Summary of Correlations for Scores on all Measures at Time 1

Measure	1	2	3	4	5	6	7	8	9
1. SIAS	--	-.34**	-.37**	.77**	-.38**	.53**	.39**	.23*	.33**
2. MAAS	-.34**	--	.64**	-.42**	.40**	-.40**	-.44**	-.24*	-.30**
3. FFMQ	-.37**	.64**	--	-.52**	.67**	-.46**	-.34**	-.12	-.36**
4. STABS	.77**	-.42**	-.52**	--	-.45**	.54**	.44**	.22*	.36**
5. EQ (Decentering)	-.38**	.40**	.67**	-.45**	--	-.47**	-.30**	-.02	-.46**
6. AAQ	.53**	-.40**	-.46**	.54**	-.47**	--	.61**	.39**	.59**
7. AAQ-II	.39**	-.44**	-.34**	.44**	-.30**	.61**	--	.54**	.61**
8. WBSI	.23*	-.24*	-.12	.22*	-.02	.39**	.54**	--	.38*
9. DASS (Depression)	.33**	-.30**	-.36**	.36**	-.46**	.59**	.61**	.38**	--

Note. SIAS = Social Interaction Anxiety Scale; MAAS = Mindful Attention Awareness Scale; FFMQ = Five Facet Mindfulness Questionnaire; STABS = Social Thoughts and Beliefs Scale; EQ = Experiences Questionnaire (Decentering subscale); AAQ = Acceptance and Action Questionnaire; AAQ-II = Acceptance and Action Questionnaire – II; WBSI = White Bear Suppression Inventory; DASS = Depression Anxiety Stress Scales (21-item version, Depression subscale).

* $p < .05$. ** $p < .01$.

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

.313, $\eta_p^2 = .03$, Time, $F(1.52, 111.20) = 2.46$, $p = .102$, $\eta_p^2 = .03$, or Time x Condition, $F(3.05, 111.20) = 2.05$, $p = .110$, $\eta_p^2 = .05$. For mindfulness, as assessed by the FFMQ, there was no significant effect of Condition, $F(2, 73) = 1.78$, $p = .176$, $\eta_p^2 = .05$, but there was a significant main effect of Time, $F(1.35, 98.26) = 4.58$, $p = .024$, $\eta_p^2 = .06$. Posthoc comparisons revealed a decrease in mindfulness between Time 1 and Time 2, $t(75) = 3.91$, $p < .001$, $d = -.47$, and an increase in FFMQ scores between Time 2 and Time 3, $t(75) = -2.65$, $p = .031$, $d = .31$.

Mindfulness did not change significantly between Time 1 and Time 3, $t(75) = -.52$, $p = 1.00$.

The Time x Condition interaction was not significant, $F(2.69, 98.26) = .94$, $p = .417$, $\eta_p^2 = .03$.

For decentering, there was no significant effect of Condition, $F(2, 73) = 1.01$, $p = .370$, $\eta_p^2 = .03$. However, there was a main effect of Time, $F(1.75, 127.61) = 5.40$, $p = .008$, $\eta_p^2 = .07$. Posthoc comparisons revealed that decentering increased between Time 1 and Time 3, $t(75) = -2.76$, $p = .020$, $d = .32$, and between Time 2 and Time 3 at a level approaching significance, $t(75) = -2.17$, $p = .083$, but did not change significantly between Time 1 and Time 2, $t(75) = -1.12$, $p = .825$. The Time x Condition interaction also approached significance, $F(3.50, 127.61) = 2.17$, $p = .085$, $\eta_p^2 = .06$.

Change in social anxiety beliefs was evaluated using an analysis of covariance (ANCOVA) examining the effect of Condition and Time, controlling for STABS score at Time 1. The effect of the covariate was significant, $F(1, 72) = 180.38$, $p < .001$, $\eta_p^2 = .72$. There was no significant effect of Condition, $F(2, 72) = .33$, $p = .723$, $\eta_p^2 = .01$. There was a main effect of Time on social anxiety beliefs, $F(1, 72) = 4.03$, $p = .048$, $\eta_p^2 = .05$. The Condition x Time interaction was not significant, $F(2, 72) = .18$, $p = .834$, $\eta_p^2 = .01$. The analysis was re-run without the covariate to allow for posthoc tests; pairwise comparisons revealed that when collapsed across conditions, maladaptive beliefs decreased between Time 1 and Time 3, $t(75) =$

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

4.91, $p < .001$, $d = .56$. There was no significant change in maladaptive beliefs between Time 1 and Time 2, $t(75) = 1.24$, $p = .683$, $d = .14$, and maladaptive beliefs decreased between Time 2 and Time 3, $t(75) = 4.95$, $p < .001$, $d = .57$.

For depression as assessed by the DASS-21, there was no significant effect of Condition, $F(2, 73) = .632$, $p = .534$, $\eta_p^2 = .02$. The main effect of Time was not significant, $F(1.38, 100.68) = 2.65$, $p = .094$, $\eta_p^2 = .04$. The Time x Condition interaction was not significant, $F(2.76, 100.68) = 1.10$, $p = .350$, $\eta_p^2 = .03$.

Hierarchical regressions. For mindfulness, there was an inverse association between FFMQ scores and changes in social interaction anxiety. When mindfulness was controlled for in the analyses, the Condition x M interaction terms were not significant and their addition did not improve the model, indicating that this inverse relationship held across conditions (Table 4). The same pattern was observed for change on the EQ, such that there was an inverse relationship between decentering and social interaction anxiety but there was no significant Condition x M interaction (Table 5). Results for change on the STABS were similar as well, such that there was a positive relationship between social anxiety beliefs and social interaction anxiety, but there was no significant Condition x M interaction (Table 6).

Moderation Tests

For experiential avoidance, neither the AAQ (Table 7) nor the AAQ-II predicted change in social anxiety symptoms, and there was no significant interaction between level of experiential avoidance and condition membership predicting change in social anxiety symptoms (Table 8). For thought suppression, the overall model including Condition, WBSI score, and the Condition x WBSI interaction were not significant (Table 9). However, the effect for Cognitive Restructuring condition was significant ($p = .044$, $r = .23$), as well as the interaction between

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Table 4

Hierarchical Multiple Regression Analysis Predicting Change in Social Interaction Anxiety Between Time 1 and Time 3 From Study Condition and Change in Mindfulness (FFMQ)

	ΔR^2	b	$SE\ b$	β
<i>Step 1</i>	.01			
Cognitive restructuring vs. Control		-1.83	2.32	-.11
Mindfulness vs. Control		.24	2.34	.01
<i>Step 2</i>	.14**			
Cognitive restructuring vs. Control		-.96	2.18	-.06
Mindfulness vs. Control		.36	2.18	.02
Change in mindfulness		-1.85**	.54	-.38
<i>Step 3</i>	.00			
Cognitive restructuring vs. Control		-.93	2.22	-.05
Mindfulness vs. Control		.42	2.23	.02
Change in mindfulness		-2.17	1.36	-.44
Cognitive restructuring x change in mindfulness		.39	1.64	.05
Mindfulness x change in mindfulness		.38	1.57	.05
Total R^2	.15*			
n	76			

* $p < .05$. ** $p < .01$.

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Table 5

Hierarchical Multiple Regression Analysis Predicting Change in Social Interaction Anxiety Between Time 1 and Time 3 From Study Condition and Change in Decentering (EQ)

	ΔR^2	b	$SE\ b$	β
<i>Step 1</i>	.01			
Cognitive restructuring vs. Control		-1.83	2.32	-.11
Mindfulness vs. Control		-.24	2.34	-.01
<i>Step 2</i>	.14**			
Cognitive restructuring vs. Control		-.74	2.18	-.04
Mindfulness vs. Control		1.48	2.20	.09
Change in decentering		-.67***	.19	-.39
<i>Step 3</i>	.00			
Cognitive restructuring vs. Control		-.72	2.24	-.04
Mindfulness vs. Control		1.55	2.27	.09
Change in decentering		-.70	.42	-.40
Cognitive restructuring x Change in decentering		.08	.51	.03
Mindfulness x Change in decentering		-.01	.53	-.00
Total R^2	.16*			
n	76			

* $p < .05$. ** $p < .01$. *** $p < .001$.

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Table 6

Hierarchical Multiple Regression Analysis Predicting Change in Social Interaction Anxiety Between Time 1 and Time 3 From Study Condition and Change in Social Anxiety Beliefs

	ΔR^2	b	$SE\ b$	β
<i>Step 1</i>	.01			
Cognitive restructuring vs. Control		-1.83	2.32	-.11
Mindfulness vs. Control		.24	2.34	.01
<i>Step 2</i>	.42***			
Cognitive restructuring vs. Control		-1.67	1.77	-.10
Mindfulness vs. Control		-.04	1.79	-.00
Change in beliefs		.66***	.09	.65
<i>Step 3</i>	.01			
Cognitive restructuring vs. Control		-1.66	1.79	-.10
Mindfulness vs. Control		-.06	1.81	-.00
Change in beliefs		.54**	.19	.53
Cognitive restructuring x change in beliefs		.13	.24	.08
Mindfulness x change in beliefs		.19	.25	.11
Total R^2	.43***			
n	76			

** $p < .01$. *** $p < .001$.

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Table 7

Hierarchical Multiple Regression Analysis Predicting Change in Social Interaction Anxiety Between Time 1 and Time 3 From Experiential Avoidance (AAQ) and Study Condition

	ΔR^2	b	$SE\ b$	β
<i>Step 1</i>	.01			
Experiential Avoidance		.09	.10	.11
<i>Step 2</i>	.02			
Experiential Avoidance		.10	.10	.12
Cognitive restructuring vs. Control		-2.08	2.33	-.12
Mindfulness vs. Control		.00	2.35	.00
<i>Step 3</i>	.01			
Experiential Avoidance		.15	.16	.17
Cognitive restructuring vs. Control		8.64	19.22	.50
Mindfulness vs. Control		2.38	16.63	.14
Cognitive restructuring x Experiential Avoidance		-.15	.26	-.64
Mindfulness x Experiential Avoidance		-.03	.23	-.15
Total R^2	.03			
n	76			

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Table 8

Hierarchical Multiple Regression Analysis Predicting Change in Social Interaction Anxiety Between Time 1 and Time 3 From Experiential Avoidance (AAQ-II) and Study Condition

	ΔR^2	b	$SE\ b$	β
<i>Step 1</i>	.00			
Experiential avoidance		-.06	.12	-.06
<i>Step 2</i>	.01			
Experiential avoidance		-.04	.13	-.04
Cognitive restructuring vs. Control		-1.68	2.37	-.10
Mindfulness vs. Control		.25	2.35	.01
<i>Step 3</i>	.04			
Experiential avoidance		.21	.19	.20
Cognitive restructuring vs. Control		12.70	10.21	.74
Mindfulness vs. Control		14.15	9.46	.82
Cognitive restructuring x Experiential avoidance		-.45	.30	-.92
Mindfulness x Experiential avoidance		-.45	.30	-.84
Total R^2	.06			
n	76			

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Table 9

Hierarchical Multiple Regression Analysis Predicting Change in Social Interaction Anxiety Between Time 1 and Time 3 From Thought Suppression (WBSI) and Study Condition

	ΔR^2	b	$SE\ b$	β
<i>Step 1</i>	.01			
Thought suppression		-.07	.11	-.07
<i>Step 2</i>	.01			
Thought suppression		-.05	.11	-.05
Cognitive restructuring vs. Control		-1.70	2.35	-.10
Mindfulness vs. Control		.16	2.36	.01
<i>Step 3</i>	.06			
Thought Suppression		.30	.21	.33
Cognitive restructuring vs. Control		34.27*	16.68	1.99
Mindfulness vs. Control		19.95	15.10	1.15
Cognitive restructuring x Thought suppression		-.63*	.29	-2.18
Mindfulness x Thought suppression		-.35	.27	-1.13
Total R^2	.08			
n	76			

* $p < .05$.

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Cognitive Restructuring and WBSI score, ($p = .033$, $r = .24$). To examine this interaction further, the regression equation was used to calculate change in symptoms for individuals at mean levels of thought suppression as well as those at one standard deviation above and below this mean. These results are illustrated in Figure 1, indicating that for the Cognitive Restructuring condition, baseline thought suppression was inversely associated with change in social anxiety after 1 week of practice.

Exit Questionnaire

One-way ANOVAs were conducted to evaluate between-condition differences for each item on the Exit Questionnaire. There was a significant difference between conditions for question 7 (“I’m interested in continuing to use the techniques that I learned”), $F(2, 73) = 9.34$, $p < .001$, $\eta_p^2 = .20$. Bonferroni-adjusted pairwise comparisons revealed that Cognitive Restructuring participants ($M = 3.12$, $SD = 1.07$) reported that they were more likely to continue to use the techniques than those in the Control condition ($M = 1.84$, $SD = 1.18$), $t(49) = 4.05$, $p = .001$. Mindfulness participants ($M = 3.00$, $SD = 1.22$) also reported that they were more likely to continue to use the techniques than those in the Control condition, $t(48) = 3.41$, $p = .002$. Ratings of Cognitive Restructuring and Mindfulness participants did not differ, $t(49) = .36$, $p = 1.000$.

There were no significant differences between conditions on any of the remaining questions.

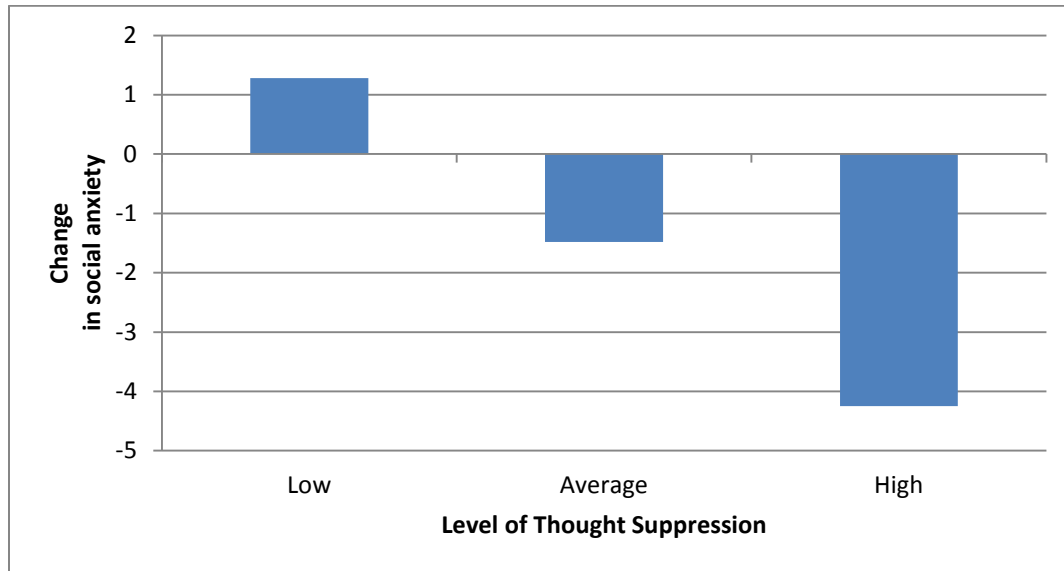
Discussion

The aim of the present study was to compare two specific cognitive strategies in management of social anxiety: cognitive restructuring and mindfulness. The effect of these strategies on symptoms was examined, as were changes in mindfulness, decentering, and

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Figure 1

Interaction Between Level of Thought Suppression and Change in Social Anxiety in Cognitive Restructuring Condition



Note. Change in social anxiety indicates residualized change in SIAS score between Time 1 and Time 3. Negative values indicate decrease in SIAS scores. Average level of thought suppression indicates WBSI scores at the condition mean; low and high levels indicate one *SD* below and above the mean, respectively.

maladaptive beliefs as potential mediators of these effects, and thought suppression and experiential avoidance as potential moderators of these effects.

On the primary outcome measure, there were no differences in social anxiety symptoms between the two training conditions in the follow-up assessments. In addition, there were no differences between the training conditions and the control condition in which participants completed assessments but were not taught a cognitive strategy. Tests of proposed mediators revealed that, although there were overall increases in decentering and decreases in maladaptive beliefs over time, there was no systematic change in mindfulness. Improvements in these proposed mediators accounted for a significant proportion of social anxiety improvement across conditions. There was no systematic change in depression status across assessments. Tests of proposed moderators indicated that, for the Cognitive Restructuring condition only, trait levels of thought suppression were inversely associated with change in social anxiety after 1 week of practice. Level of experiential avoidance did not predict change in social anxiety.

Effects of Training Outcome

The finding that there were no differences in symptom change between the training conditions and the control condition raises questions about the efficacy of the intervention training. One possibility is that the training offered was not more effective than assessment alone. Although brief (i.e., one or two sessions) cognitive interventions have shown promise in the treatment of anxiety and trauma symptoms (De Jongh et al., 1995; Koch, Spates, & Himle, 2004; Öst, Brandberg, & Alm, 1997; Steil, Jung, Stangier, & Jung, 2011), no such trials have been conducted with SAD. Much of the evidence base in psychological treatments for SAD has come from investigation of treatment packages that occur over a number of weeks (or months) and incorporate behavioural strategies in addition to cognitive ones. In both CBT and

mindfulness, cognitive change is expected to take place over a period of time, as participants learn and practice the requisite skills. Although there is evidence for sudden and large reductions of SAD symptoms over the course of CBGT, these gains have most commonly been observed to occur after 5 sessions (Hofmann, Schulz, Meuret, Moscovitch, & Suvak, 2006). Similarly, an evaluation of a 6-week version of CBGT found a decrease in symptoms immediately posttreatment. However, at 6 week follow-up, symptoms had decreased further to the level yielded by traditional 12 week protocols, suggesting a role for continued practice and consolidation even after initial gains (Herbert, Rheingold, & Goldstein, 2002). Thus, it is possible that in this study, training-specific effects would only emerge after additional sessions with the experimenter or more than one week of practice. Conversely, the assessments employed in this study may have been therapeutic in and of themselves. It has been established elsewhere that assessment alone can have an ameliorative effect on target behaviour (Abrams & Wilson, 1979).

Although individuals in the control condition did not complete any task or have computer access during the waiting period in the laboratory visit, their activities over the course of the study were not monitored. Thus one cannot rule out the possibility that they engaged in symptom-reducing processes on their own (e.g., cognitive processing, aerobic exercise, exposure, self-help reading) that was not assigned by the investigator. In addition, the assessment tasks themselves may have had their therapeutic effect through the putative mechanisms. Arch and Craske (2008) have pointed out that both cognitive restructuring and mindfulness create distance between the thinker and the thoughts. Indeed, it has been proposed that the primary mechanism of therapeutic change in cognitive therapy is in decentering (i.e., the ability to distance oneself from cognition, rather than in changing the content of thought)(Ma &

Teasdale, 2004; Teasdale et al., 2002). Similarly, completing repeated questionnaires in which participants are asked to rate how much certain thoughts or statements apply to them may yield a similar mechanism by forcing participants to externalize their cognitions. This latter point is supported by the fact that there were no differences between the control condition and the training conditions on change in decentering or maladaptive beliefs.

In addition to effects directly related to assessment, there may have been nonspecific effects of study participation (i.e., factors common to all conditions) (see Borkovec & Miranda, 1999, for discussion) that could have supported participants' improvement in symptoms. As in clinical trials employing a wait-list design, the control condition in the current study did not receive training but completed all assessments at the same intervals as the training conditions. It has been noted that such designs control for common threats to internal validity such as history, maturation, repeated testing, and selection, but do not allow for conclusions about which elements of the active conditions contribute to outcome (Schnurr, 2007). In the current study, participants contacted the study voluntarily if they wished to participate and social contact with the experimenter in the laboratory session may have yielded therapeutic effects by virtue of being a type of situation that participants might typically avoid. Participants may have had a desire to please the experimenter, or an expectation that participation in the study would improve their symptoms; either of these factors could have led to improvement in symptoms. Finally, it is possible that the improvements seen across conditions might represent other common elements such as statistical regression to the mean or spontaneous improvement as participants completed repeated assessments.

Mediational Analyses

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

In general, improvements in mindfulness, decentering, and maladaptive beliefs predicted improvement in social anxiety across conditions. One possible interpretation of this finding is that although different methods might be used to manipulate processes, their mechanisms may in fact be shared. For example, as reviewed earlier, increases in decentering are one route by which social anxiety may decrease, whether manipulated by cognitive restructuring, mindfulness, or assessment techniques. Similarly, changes in maladaptive beliefs may mediate a reduction in social anxiety, and this may happen equally with mindfulness and assessment as it does with cognitive restructuring. These findings suggest possible shared final pathways to improvement in social anxiety, as well as highlight the need for further investigation of areas of overlap between cognitive approaches.

Interestingly, changes in mindfulness were observed for the FFMQ but not for the MAAS. It is worth noting that the MAAS focuses on the attention component of mindfulness, measured as a single factor. All 15 items on the MAAS are negatively worded, leading some to conclude that it is better conceptualized as a measure of “mindlessness” or attentional lapses in daily life (e.g., Carriere, Cheyne, & Smilek, 2008). The FFMQ, on the other hand, comprises five factors derived from an exploratory factor analysis of a pool of items collected from existing mindfulness scales, including the MAAS (Baer et al., 2006). Thus the FFMQ appears to provide the most comprehensive assessment of mindfulness (Bergomi, Tschacher, & Kupper, 2012), which may explain why this measure, and not the MAAS, was sensitive to self-reported change. Decentering has been conceptualized as a particular aspect of mindfulness, as it relates to metacognitive awareness but does not capture attentional aspects (Fresco et al., 2007); thus change in decentering may be necessary, but not sufficient, for change in mindfulness. A potential concern is the validity of participants’ self-reports of complex constructs such as

mindfulness and decentering. For example, the construct validity of the FFMQ is supported by evidence that most of its facets have been shown to be significantly related to meditation experience (Baer et al., 2008). However, it has been noted that this may not be a fair test of as respondents' interpretations of items on mindfulness questionnaires may vary with exposure to meditative practice (Grossman, 2008). Furthermore, their responses may bear no relation to the depth and breadth of the experience of mindfulness, their behaviour, or which qualities they value (Grossman, 2011).

Importantly, strict mediation tests require evidence of temporal precedence such that change in the mechanisms precede change in the outcome in order for mediation to be claimed. The design of the current study did not allow for such demonstration of temporal precedence due to the single session training and the short-term follow-up. In addition, change in the proposed mediators was observed to have occurred concurrently with change in social anxiety, which must be considered when interpreting the predictive effect of the mediators in the analyses employed. One cannot rule out the possibility that symptom change predated change in the proposed mediators. Furthermore, the relationship between the proposed mediators and symptom change may well be bidirectional, such that each has an effect on the other and these changes proceed in a reciprocal manner. Thus, the mediation findings in the current study await confirmation with larger studies employing more fine-grained temporal analysis and testing more complex models of change.

Moderator Analyses

Level of thought suppression at baseline was inversely associated with outcome only for participants in the cognitive restructuring condition. This finding appears to stand in contrast to previous evidence that higher levels of thought suppression are related to higher levels of social

anxiety (Glick & Orsillo, 2011). Additionally, one might assume that high levels of thought suppression would hamper a participant's ability to work through the content of distressing thoughts in the manner required by cognitive restructuring. However, one interpretation of the current finding is that low suppressors may have a greater ability to challenge and evaluate their own thoughts, whereas high suppressors stand to benefit more from an approach that requires reporting on thoughts systematically. Cognitive restructuring requires participants to engage with the specific content of their thoughts; in contrast, mindfulness does not require systematic reporting of thoughts and asks instead that participants be aware of and open to whatever cognitions are in existence. This may explain why level of thought suppression did not moderate outcome for participants in the mindfulness condition relative to those in the control condition. These interpretations presume that level of thought suppression would remain stable as participants carried out the study. Interestingly, most studies of thought suppression have focused on its effectiveness as an emotion regulation strategy (e.g., as compared to acceptance) rather than its stability over time (Magee, Harden, & Teachman, 2012). However, reductions of thought suppression have been reported following CBT for generalized anxiety disorder (Reinecke, Hoyer, Rinck, & Becker, 2013) and MBCT for depression (Hepburn et al., 2009). Future studies might investigate whether thought suppression is also malleable in response to cognitive training in SAD.

Participants' level of experiential avoidance at baseline did not predict their outcome with respect to social anxiety. The measures of experiential avoidance used in this study assess difficulty with painful emotions and taking valued action in the face of these, yet perhaps other dimensions of avoidance, such as behavioral avoidance, are particularly important in social anxiety. Accordingly, experiential avoidance as assessed by these measures may have more of a

moderating effect for behavioral relative to cognitive components of treatment. Therefore, a multidimensional assessment of avoidance (e.g., Multidimensional Experiential Avoidance Questionnaire; Gámez, Chmielewski, Kotov, Ruggero, & Watson, 2011), might provide more information about how avoidance interacts with outcome, if at all.

Rodebaugh and Heimberg (2008) have developed the Ambivalent and Purposeful Engagement-Trait Measure (APE-TM) as a more specific assessment of experiential avoidance as it pertains to SAD, in particular. The APE-TM assesses two styles of processing social situations: ambivalent engagement, defined as a tendency to avoid or dismiss thoughts about stressful social situations rather than take action to reappraise or repair them, and purposeful engagement, defined as a willingness to explore reactions and attempts to assimilate these in order to guide future behavior. Although this scale has not been used in many social anxiety studies to date (see Rodebaugh, Jakatdar, Rosenberg, & Heimberg, 2009 for an exception), it is possible that purposeful engagement is more likely than experiential avoidance to moderate SAD outcomes because of its specificity to social anxiety content. Finally, as with thought suppression, the presumption that experiential avoidance would remain stable over the course of the study must be confirmed with studies collecting repeated assessments of this construct.

Clinical Implications

This analogue study required participants to participate for a full week and engage with the study on a daily basis. It is remarkable that completion rates ranged from 81-96%, as compared with 60-70% for full CBT or mindfulness treatment packages (e.g., Kocovski, Fleming, & Antony, 2011). It is possible that the low dropout in this study relates to its short time frame relative to full treatment packages; alternatively, study participants may have felt that they were getting some benefit from their participation. Indeed, results of the Exit Questionnaire

show that participants in the active conditions found the strategies they learned helpful, indicating that they would be likely to use them again. Control condition participants, who had a briefer daily requirement, seemed aware that they had not learned new or useful strategies. This suggests that there is merit in developing and refining brief interventions for social anxiety.

During the week of practice and/or monitoring, participants' involvement with the study was via the Internet. A growing body of evidence supports the efficacy of Internet-delivered CBT packages for SAD. Typically these interventions have included therapist contact by telephone or e-mail (e.g., Berger, Hohl, & Caspar, 2009; Carlbring et al., 2007), although positive outcomes have also been found without therapist guidance (e.g., Berger et al., 2011; Titov, Andrews, Choi, Schwencke, & Mahoney, 2008). Some trials of Internet-based CBT for SAD have included additional group exposure sessions (Andersson et al., 2006). Hedman and colleagues (2011) directly compared Internet-based CBT for SAD to CBGT in a randomized controlled non-inferiority trial and found both treatments to be similarly effective, with similar dropout rates in each condition; however these authors caution that Internet-based CBT be viewed as a complement, rather than an alternative, to traditional treatment delivery as patients who do not respond to Internet-based methods may require intensified, face-to-face treatment.

Possible reasons for the finding that assessment alone was not differentiated from the training in cognitive strategies suggests are reviewed above. One implication of this result for clinical practice is that assessment may play a key role in the treatment process. For instance, if assessment alone is responsible for symptom benefit in early stages of treatment, it may be helpful to assess patients on waiting lists for treatment.

In clinical practice, patients who appear to avoid or suppress anxiety-provoking thoughts may be deemed to be poor candidates for CBT. In the current study, high thought suppressors

actually benefited more from cognitive restructuring, even though there were no explicit efforts to elicit suppressed thoughts beyond asking participants to complete one thought record daily. This suggests that clinicians should keep an open mind about suitability of such patients for cognitive therapy. Moreover, there may not be a need to target thought suppression per se when working with social anxiety.

Limitations and Future Directions

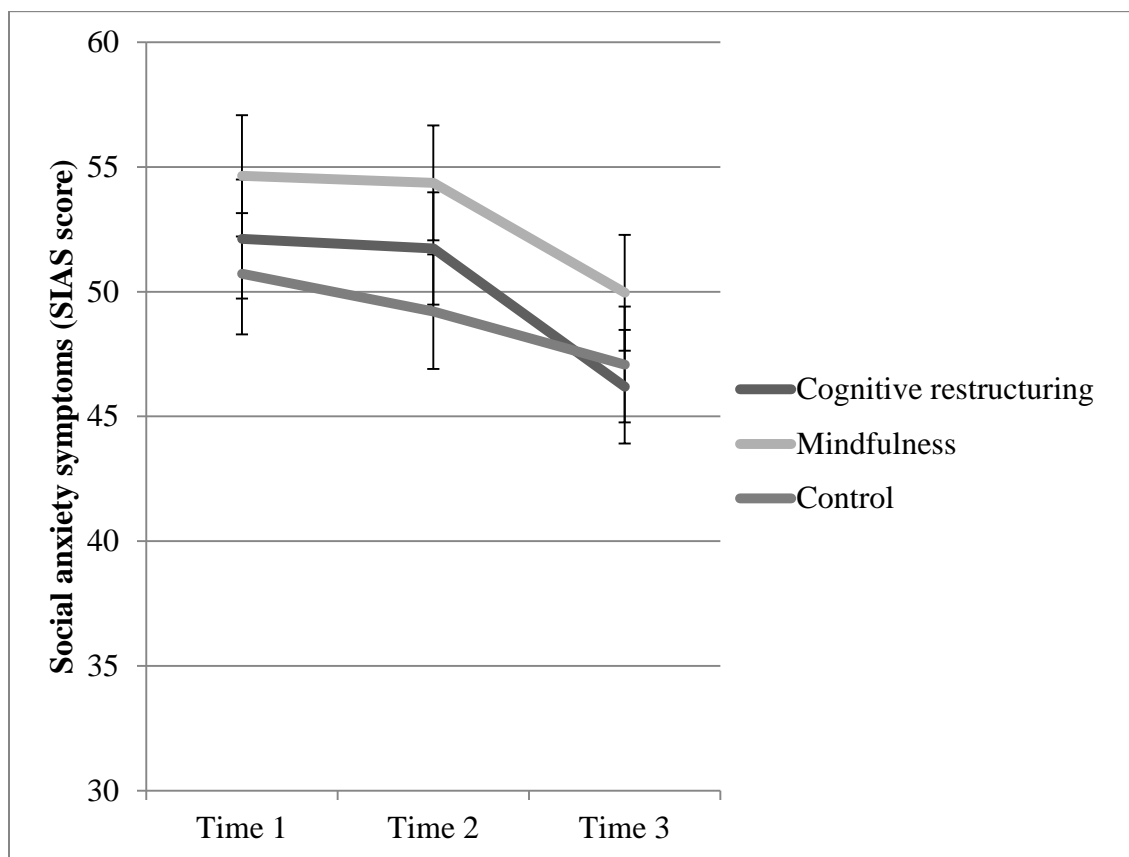
Figure 2 illustrates social anxiety symptoms at each time point, for each condition. Importantly, although there were no significant differences in symptoms between conditions at baseline, the fact that the difference between them at Time 1 approached an effect size of $d = .5$ suggests that randomization could be improved. In addition, this study was limited by its small sample size. In head-to-head comparisons between interventions, small effects are expected, which require greater power to detect significant differences, especially for interactions. This limitation is even greater in the case of the current study that provided participants with a very low dose of cognitive training. A greater dose of skills training and homework assignments would increase the external validity of the study, and likely increase the effect sizes. In addition, a longer follow-up period might provide clinically relevant information; no conclusions can be drawn about the durability of effects that were found after 1 week's participation in the current study.

The Exit Questionnaire asked participants to rate their ability to challenge the contents of their anxious thoughts and to observe their anxious thoughts nonjudgmentally. There were no differences between conditions on these items. However, the fact that participants in the active

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Figure 2

Social Anxiety at Each Time Point for Each Condition



Note. Error bars represent standard error above and below group mean.

conditions, but not the control condition, indicated that they found the strategies they learned helpful hints at overlap in processes in the cognitive strategies. It stands to reason that observation of one's anxious thinking would not be the exclusive domain of mindfulness; similarly challenging one's thinking may not be the exclusive domain of cognitive restructuring. In short, these processes are likely not as dichotomous as theories underlying CBT (Clark & Wells, 1995; Rapee & Heimberg, 1997) and mindfulness and acceptance-based (Herbert & Cardaciotto, 2005) approaches to treatment of SAD might suggest. However, it is possible that change occurred via other processes that were not measured but occurred prior to (or concurrently with) changes in the proposed mediators (e.g., motivation or attentional changes). In addition, the Exit Questionnaire was designed specifically for this study, and was not validated in advance, so conclusions based on these results are limited. This study used a nonclinical sample of self-referred individuals. However, participants were only included in the study if their score on the SIAS was above a clinical cutoff at pre-screen. In fact, the mean SIAS score of participants entering the study approximated that of participants in clinical studies, and nearly two-thirds of participants met criteria for full SAD diagnosis. Although conditions did not differ on depression status at the beginning of treatment, and depression did not change during the study, this study did not assess for other comorbidities such as additional anxiety disorders or alcohol or substance use disorders. Furthermore, medication status was also not assessed.

Assessments in this study were all self-report, with the exception of the experimenter-administered SCID interview at baseline. Multiple methods of assessing symptom severity (e.g., psychophysiology, behavioral approach tasks) would have allowed for more direct and objective measurement, increasing the validity of the study and reducing its reliance on shared method

variance. Asking participants to engage in an anxiety provoking interaction with a confederate at follow-up or at key points during the practice/monitoring period may also have provided useful information about how and when change occurs, which could help support interpretation of mediation effects.

Participants in the active conditions in this study were required to complete daily homework (i.e., completion of a thought record or a mindfulness meditation). Extent of homework practice has been shown to be related to degree of improvement in both CBT (Edelman & Chambless, 1995; Leung & Heimberg, 1996) and mindfulness-based (Carmody & Baer, 2007) interventions. Although participants were excluded from the analyses if they did not complete homework on the majority of days, quality of homework was not assessed. Specifically, the thoroughness of thought records or time spent on meditations may have had an impact on results that is not revealed in the current analyses. Although this is similar to psychotherapy settings where homework compliance is monitored in a more general way, future studies might examine how quality and quantity of homework relates to intervention or training outcome.

Finally, this study examined cognitive strategies in the treatment of social anxiety. Importantly, theoretical frameworks underlying both CBT and mindfulness approaches emphasize the role of behavioral avoidance in development and maintenance of social anxiety. Accordingly, behavioral strategies, such as exposure, are a key component of treatment packages for SAD in both approaches. Both CBGT and MAGT begin with their respective cognitive strategies, phasing in exposure over later sessions. Importantly, behavioural strategies can have powerful effects on cognition in and of themselves; for example, behavioural experiments have

been shown to be at least as powerful as thought records in effecting belief change (McManus, Van Doorn, & Yiend, 2012).

Conclusions

Both CBT and mindfulness- and acceptance-based treatments have been demonstrated to be effective in treatment of SAD. Although these approaches share certain elements, notably behavioural components such as exposure, they differ in the strategies that they employ for working with distressing or maladaptive cognitions. Specifically, CBT emphasizes cognitive restructuring, based on the theoretical notion that the content of maladaptive beliefs fuel avoidance and safety behaviours, keeping sufferers locked in a cycle of cognitive distortion and behavioural disruption. Mindfulness- and acceptance-based approaches emphasize developing a metacognitive distance, based on the theoretical notion that behavioural disruption will diminish if sufferers can learn to accept their cognitions and see them as mental events without attempting to change them. This psychotherapy analogue study sought to compare the cognitive strategies that are essential elements of each approach. Both belief change and decentering mediated improvements in social anxiety, whether participants practiced cognitive restructuring, mindfulness meditation, or assessment alone. These results suggest that the processes leading to change may not be as distinct as the theories underlying CBT and mindfulness- and acceptance-based treatments might presume. Although this study employed a non-clinical sample, participants reported elevated social anxiety and a majority met diagnostic criteria for SAD; however, the generalizability of the study is limited by its short time frame. The clinical validity of these conclusions should be assessed with a trial comparing full treatment packages, to further the examination of mediators and moderators of symptom reduction in psychotherapy for SAD.

Appendix A: Exit Questionnaire

Please answer the following questions, keeping in mind the practice that you engaged in during the first session (if any) and during your daily assignments. Please circle the number that best corresponds to how much you agree with each item; be careful to circle only one number for each item and please answer all items.

	Not at all	A little	Some	Much	Very much
1. I felt aware of the contents of my thinking	0	1	2	3	4
2. I was aware of socially anxious thoughts	0	1	2	3	4
3. I was able to challenge the contents of my anxious thoughts	0	1	2	3	4
4. I was able to observe my anxious thoughts nonjudgmentally	0	1	2	3	4
5. My anxiety increased during the session(s)	0	1	2	3	4
6. My anxiety decreased during the sessions(s)	0	1	2	3	4
7. I am interested in continuing to use the techniques that I learned	0	1	2	3	4
8. Other comments:					

Appendix B: Informed Consent Agreement



Title of Study: Cognitive strategies for management of social anxiety: A comparison of brief cognitive restructuring and mindfulness interventions

You are being asked to participate in a research study. Before you give your consent to be a volunteer, it is important that you read the following information and ask as many questions as necessary to be sure you understand what you will be asked to do.

Investigators: Leorra Newman, BSc, Graduate Student, Department of Psychology, Ryerson University

Martin M. Antony, PhD, Professor, Department of Psychology, Ryerson University

Purpose of the Study: The purpose of this study is to investigate the effects of different cognitive strategies for coping with social anxiety.

Description of the Study: The experiment will involve two visits to the Psychology Research and Training Centre at Ryerson University, located at 105 Bond Street, on the second floor, as well as a daily assignment that can be completed at home. The total time commitment will be approximately 2 hours, however some participants may take longer to complete the study. If you agree to participate, the first visit will take approximately 1 hour and will involve answering questionnaires as well as potentially learning a strategy for management of social anxiety. Following this, you will be asked to complete approximately 7 minutes of daily questionnaires and exercises at home for 7 days. At the end of the 7 days, you will return to the Psychology Research and Training Centre for a follow-up visit that is expected to last 20 minutes. At this time, you will be told about the study in more depth, and will be given an opportunity to ask questions.

This informed consent agreement and all information that you provide will be stored in locked file cabinets at the Psychology Research and Training Centre at Ryerson University. An ID number, as opposed to your name, will be used on all forms you complete, and in all computer files that contain the data you provide during the study. The data you generate while participating in this study will be kept in a locked file cabinet, separate from this consent agreement and any data that identify you. Your confidentiality will be protected to the full extent allowed by law. Only group findings will be reported in publications and presentations

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

arising from this research. All of the data will be destroyed 7 years after publication of the results.

Potential Risks or Discomforts: There is minimal risk involved if you agree to take part in this study. By signing this form, you understand that you may experience some negative emotions when completing the tasks. You have the right to refuse or discontinue participation at any time. If you decide to stop participating, you will still be entitled to compensation for your time. However, we ask that you try to complete the study in its entirety, for the benefit of psychological research.

Potential Benefits of the Study to You or Others: The results of this study will help inform clinical practice and treatment planning for people coping with social anxiety. There are no guaranteed direct benefits to individuals participating in the study, however you may personally derive benefit from the self-assessment as it may increase your awareness of your own emotions and behaviours. You may also learn cognitive strategies that could prove helpful to you in managing your social anxiety. You may also develop a better understanding of research methodology and will be providing researchers with valuable insights.

Voluntary Nature of Participation: Participation in this study is completely voluntary. Your choice of whether to participate will not influence your future relations with Ryerson University. If you decide to participate, you are free to withdraw your consent and to stop your participation at any time during your participation in the study, without penalty or loss of benefits to which you are allowed. Your right to withdraw your consent also applies to our use of your data. If you withdraw from the study before you have completed your participation in it, any data that you have provided will be destroyed. If you decide that you do not want us to keep or analyze data that you have provided during the course of your participation in this study, please feel free to notify us. At any particular point in the study, you may refuse to answer any particular question or stop participation altogether. If you would like to participate but do not wish to contribute data to this study, you have the option to complete a “walk through” of the study, without penalty or loss of benefits to which you are allowed.

[alt form for community participants: Walk-through option to be deleted]

Compensation for Participation in the Study: Compensation for Ryerson students enrolled in the Introduction to Psychology course will be 2 course credits.

[alt form for community participants: Compensation for participation in the study will be \$30]

Questions about the Study: If you have any questions about the research now, please ask. If you have questions about the research later, you may contact Leorra Newman, BSc, Graduate Student, Department of Psychology, Ryerson University, 416-979-5000 ext. 2184, Leorra.newman@psych.ryerson.ca or Martin M. Antony, Ph.D., Professor, Department of Psychology, Ryerson University, 416-979-5000 ext. 2631, mantony@psych.ryerson.ca.

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

If you have questions regarding your rights as a human participant in this study, you may contact Toni Fletcher, Research Ethics Coordinator at the Ryerson University Research Ethics Board for information.

Research Ethics Board
c/o Office of the Vice President, Research and Innovation
Ryerson University
350 Victoria Street
Toronto, ON M5B 2K3
416-979-5042

Agreement: Your signature below means that you have read the information in this agreement and have had a chance to ask any questions you have about the Cognitive Strategies for Management of Social Anxiety study. Your signature also means that you agree to participate in the Cognitive Strategies for Management of Social Anxiety study and have been told that you can change your mind at any time. You have been given a copy of this agreement.

You have been told that by signing this consent agreement you are not giving up any of your legal rights.

Name of Participant (please print)

Signature of Participant

Date

Signature of Investigator

Date

Appendix C: Demographics Questionnaire

Sex:

☐ Female

☐ Male

Age: _____

Relationship Status (please check one):

☐ Single

☐ In a steady relationship

☐ Married

☐ Cohabiting

☐ Separated

☐ Divorced

☐ Widowed

Ethnicity/Cultural Background:

☐ Aboriginal (e.g., First Nations, Métis, Inuit)

☐ Black/Afro-Caribbean/African

☐ White/European

☐ Hispanic/Latin American

☐ Asian (e.g., South Asian, East Asian, Southeast Asian)

☐ Biracial/multiracial

☐ Other (specify _____)

Are you enrolled in an educational program? ☐ Yes ☐ No

If yes, please check one:

☐ Community College

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

- ☐ University
- ☐ Adult Education/Continuing Education

Field of Study: _____

Education Level (please check one):

- ☐ Did not attend High School
- ☐ Some High School
- ☐ Completed High School/High School Equivalency (GED)
- ☐ Some College/University
- ☐ Completed College/University
- ☐ Some Graduate School
- ☐ Completed Graduate School

Employment Status:

- ☐ Not Working
- ☐ Working Part-Time
- ☐ Working Full-Time

If working part-time or full-time, indicate occupation: _____

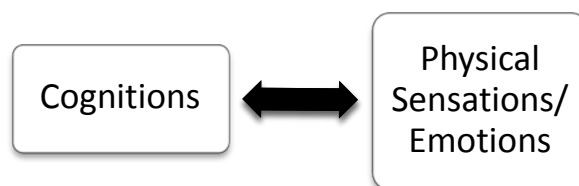
Annual Family Income (please check one):

- ☐ Less than \$19,000
- ☐ \$20,000 - \$39,999
- ☐ \$40,000 - \$59,999
- ☐ \$60,000 - \$79,999
- ☐ \$80,000 - \$99,999
- ☐ More than \$100,000
- ☐ Don't know

Number of people supported by the family income (including self):

Appendix D: Intervention script – Cognitive Restructuring Condition

Now I will be teaching you a strategy called cognitive restructuring that can be used when you find yourself having negative thoughts about an event that has happened in the past or one that is coming up in the future. For example, if you find yourself thinking about social situations that you have experienced or ones you are about to experience, you can try using this cognitive restructuring strategy.



This strategy is based on the idea that our thoughts lead us to feel different physical sensations and emotions. For example, if someone you knew was walking down the street and didn't acknowledge you, what is the very first thought you would have? How would that make you feel? What physical sensations would you feel, perhaps flushed cheeks or a queasy stomach? What if you learned that she didn't have her contacts in and couldn't see you? How would that make you feel? What if you learned that she just found out that her grandmother passed away? Or that she failed her big chemistry exam? Can you now see how different thoughts can lead to different emotions and physical sensations, even for the same situation? Therefore, examining the way that you think is a great way to potentially change some of the negative emotions or physical sensations you may have.

Can you think of a time when you recently felt anxious in a social situation, like speaking in class, a party, or meeting someone new? What physical sensations do you remember? Are there certain physical symptoms that are particularly bothersome to you in social situations? Do you recall what some of your thoughts, assumptions, or predictions were in the situation? If not, what types of thoughts do you typically experience when you feel anxious in social situations? Here is a list of thoughts that may accompany social anxiety (show list of examples to individual). Are any of these thoughts that have crossed your mind when feeling anxious?

Examples of Social Anxiety Thoughts:

- It is important that everybody likes me
- If my boss doesn't like me, I will get fired
- If I am not liked by a particular person, I am unlikable

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

- If someone rejects me, I deserve it
- People find me unattractive
- I will look incompetent if I speak to my boss
- People will become angry with me if I make a mistake
- People are untrustworthy and nasty
- People should always be interested in what I say
- People should not look at me the wrong way
- I should be able to hide my anxiety symptoms
- If my hands shake at work, it will be a disaster
- Anxiety is a sign of weakness
- I should not appear anxious
- It is awful to blush, shake, or sweat in front of others
- People can tell when I am anxious
- I will not be able to speak if I am too anxious

For today, I would like to focus on the role of negative thinking and how it can trigger social anxiety and help to keep it alive. Let's say you're talking to someone at a party and he/she looks down at his/her watch. What are some different thoughts that you might have in this situation? (Probe if participant doesn't come up with a range of both negative and neutral/positive thoughts: "Can you think of some other possible interpretations that someone might have in this situation?"). Let's say that you interpret the person's looking at the watch as a sign that he or she has to be somewhere at a specific time (or some other neutral thought that the participant has come up with). How might that influence your feelings in the situation? What emotions would you experience? Now let's consider an opposite interpretation. Let's say that you interpret the person's looking at his/her watch as a sign that you're boring and he or she isn't interested in what you're talking about (or some other negative thought that the participant has come up with)? How would that make you feel in the situation?

So you can see that the thoughts that you have in a situation can influence how you feel in that situation. When we are anxious, we are more likely to automatically have negative thoughts about the situation and to view our thoughts as being true. Many of the anxiety-provoking thoughts that we experience can be classified as being one of two main types: (1) probability overestimation and (2) catastrophic thinking.

Probability overestimation involves predicting that a specific negative event is much more likely to occur than it really is. For example, someone who is fearful of going to parties might predict that she/he will make a fool of him/herself at the next party and no one will want to talk to him/her, even though he/she usually does well at parties and talks to a number of different individuals. Or, someone who fears dating may assume that his or her partner is thinking all sorts of negative things (e.g., wow – is this person ever boring!), when they likely are not.

Can you think of any examples of probability overestimations in your own life? Are there times when you assumed that something bad was going to happen, that did not end up happening?

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Catastrophic thinking (or catastrophizing) involves assuming that if a negative event does occur, the consequences would be terrible and unmanageable. For example, someone who is fearful of talking with others at parties might think “it would be a disaster if I blushed while speaking with others” or “it would be awful if some people thought what I was saying was boring.”

When in reality, if the person was to have blushed or some people actually did think she was boring, the consequences would likely not be very bad, and the person likely would be able to cope.

Can you think of any examples of catastrophic thinking in your own life? Are there times when you assumed that a particular outcome would be extremely awful, or unmanageable, or that you would not be able to cope? Are there times when you have coped better with negative social events than you thought you would?

Now we are going to look at ways to challenge or change some of these anxious thoughts.

Often when we are anxious, we tend to automatically notice the negative or threatening aspects of a situation and fail to notice the neutral or positive aspects. For example, you might pay much more attention to the time your friend neglected to return your text message or phone call than all the times that he or she responded quickly, and assume that the lack of response is evidence that your friend is thinking bad things about you. Or, you might take the sleepy person in the front row as evidence that your presentation is boring, even though many others in the audience are alert and paying attention.

One way to challenge your anxious thinking is to examine the evidence. The first step to learning to challenge your anxious thoughts is to recognize that your beliefs are not facts. Instead of assuming that your negative thoughts are true, it is helpful to treat your anxious thoughts as guesses or hypotheses. In the same way that a scientist gathers evidence for his or her hypotheses, you want to examine the evidence to assess the extent to which your beliefs are true. In order to examine the evidence for your beliefs, you can ask the following questions:

1. How do I know for sure that my prediction will come true?
2. What does my past experience tell me about the likelihood of my thoughts coming true?
3. Have there been times when I have experienced anxious thoughts that didn't come true?
4. Are there facts or statistics that can help me to decide whether my prediction is likely to come true?
5. Are there other possible interpretations for this situation?
6. How might another person (who isn't anxious in social situations) interpret the situation?

One other strategy that you can use is to view yourself as close others would, such as a close friend, family member, or partner. Alternatively, what if the tables were turned and a close friend came to you for advice and support after a party? What would you say if your friend said to you “I made a complete fool of myself at the party I went to last night. I couldn't think of

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

anything to say and I'm sure I looked like a complete idiot." It is often much easier to challenge someone else's anxious thoughts than it is to challenge your own. Therefore, one way to cope with your anxious thoughts is by mentally "stepping out" of the situation for a moment. Here are some questions that you can use:

1. What might I say to a close friend or relative who was having the same thought as me?
2. What might a close friend or relative say to me if he or she knew what I was thinking?

A third way to challenge your anxious thinking is to challenge your catastrophic thinking. This involves shifting the focus of your thoughts from how terrible a particular outcome would be to how you might manage or cope with the situation if it were to occur. In many cases you will realize that even if your fear does come true, it won't be end of the world. You will cope with the situation, and your discomfort will pass. One of the most effective ways to overcome your catastrophic thinking is to ask yourself questions like the following:

1. So what?
2. What if my fears actually come true?
3. How can I cope with _____ if it were to occur?
4. Would _____ really be as terrible as I think?
5. Does this really matter in the big scheme of things?
6. Will I care about this a month from now? A year from now?

Looking at the list of strategies that can be used to challenge your anxious thinking, which ones do you think might apply most to your experiences in social situations? Do any of them stand out to you as potentially being helpful?

Generally, the process of challenging anxiety-provoking thoughts involves four steps:

1. Identifying your anxious thought
2. Generating alternative thought
3. Examining the evidence
4. Coming to a balanced conclusion

Here is an illustration of how to work through the four steps in the context of a fear of a group social situation.

1. Identifying the Anxious Thought

- When I talk in the group, people will notice my blushing and think that I am strange

2. Generating Alternative Thoughts

- Nobody will notice my blushing
- Only a small number of people will notice my blushing
- People who notice my blushing will think I am feeling hot
- People who notice my blushing will think I am feeling unwell

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

- People who notice my blushing will think I am feeling a bit anxious
- It is normal to blush sometimes, so people will think nothing of it if they notice me blush

3. Examining the Evidence

Evidence Supporting my Anxious Belief

- I believe that my blushing is very extreme
- In high school people teased me for blushing on a few occasions
- I tend to notice when other people blush

Evidence Supporting my Alternative Beliefs

- I know a lot of people who blush easily and people don't seem to think they are strange
- When I notice other people blushing, I don't think they are strange
- Often people do not seem to have noticed me blush when I ask them if it was noticeable
- When people have noticed my blushing, they haven't tended to treat me differently
- The people in the group know me well. I can't imagine that their opinions of me would change dramatically based on whether I blush during a single conversation

4. Coming to a Balanced Conclusion

- Some people may notice my blushing, but it's unlikely that they will think I'm strange

A Thought Record is a tool that can be used to help the process of challenging anxious thoughts. This form can be used whenever you experience anxiety in a social situation. Here is a summary of how to complete a thought record.

How to Complete the *Anxiety Thought Record*

<i>Column</i>	<i>How to Complete</i>
1. Day and Time	▪ Record the date and time when your anxiety episode occurred
2. Situation	▪ Describe the situation that triggered your anxiety. This can be an object, activity, or experience (e.g., a thought, memory, image, or physical feeling)
3. Anxiety-Provoking Thoughts and Predictions	▪ Record any anxiety-provoking thoughts or predictions that were on your mind. What were you afraid might happen?
4. Anxiety Before (0 – 100)	▪ Using a scale ranging from 0 (completely calms) to 100 (completely terrified), rate your anxiety level before you started to challenge your anxious thoughts.

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

5. Alternative Thoughts and Predictions	▪ Record some alternative beliefs and predictions to counter the thoughts listed in column 3.
6. Evidence and Realistic Conclusions	▪ Using the strategies described in the remainder of this chapter, record any evidence you can think of to counter your anxiety provoking thoughts. Based on this evidence, write down a realistic conclusion or prediction.
7. Anxiety After (0 – 100)	▪ Using a scale ranging from 0 (completely calms) to 100 (completely terrified), rate your anxiety level after challenging your anxious thoughts.

Now let's go through an example of how you can use a Thought Record to challenge your own anxiety in social situations. **COMPLETE THOUGHT RECORD WITH CLIENTS.** Work with clients to provide example. Challenge more than one thought about the situation if time allows.

Great work! We will now move on to the next part of the study.

I'm going to show you how to fill out similar worksheets online over the next week. What I'd like you to do is complete one worksheet every day using a new situation; you should start today. Each work sheet should take you between 5-7 minutes to complete. Before you go, I'd like us to come up with two situations that you can use. The situations that you come up with should evoke a similar feeling(s) to what you described on the worksheet that you just completed. You just can't use the EXACT same scenario twice. OK, so do you have any ideas for another situation? *If needed, work with the participant to help them come up with two more situations that produce strong emotions related to their initial worksheet. If no, ask them again what they have difficulty or trouble with, or give them a couple of minutes just to think about it. When they do, write each one down on a separate work sheet.* OK so now you're all set. You'll have to come up with the other 5 situations on your own. If you have trouble coming up with the other situations, just do your best. Even if the situation you choose isn't perfect, it's better to make an attempt than not do it at all. Do you have any questions for me?

**Give participants the example worked on during the session to take away with them.*

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

form 4.1

Anxiety Thought Record						
Day and time	Situation	Anxiety-provoking thoughts and predictions	Anxiety before (0–100)	Alternative thoughts and predictions	Evidence and realistic conclusions	Anxiety after (0–100)

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Part V: Risk assessment

- Administer the Risk Assessment Protocol to all participants
- Make sure to give participants the mental health referral numbers before they leave the lab

Cognitive restructuring script adapted from:

Belus, J. M., Brown-Bowers, A., & Monson, C. M. (2011). *Thinking about your thoughts: Investigating different cognitive change strategies*. Unpublished manuscript.

Nowakowski, M., & Antony, M. M. (2011). *Effects of interpretation training on experiential, behavioural, and physiological measures of anxiety during a self-presentation task in an analogue social anxiety sample*. Dissertation project in progress.

Anxiety thought record taken from:

Antony, M. M., & Norton, P. J. (2009). *The anti-anxiety workbook: Proven strategies to overcome worry, phobias, panic, and obsessions*. New York, NY: Guilford Press.

Additional references:

Antony, M. M., & Swinson, R. P. (2008). *The shyness and social anxiety workbook: Proven, step-by-step techniques for overcoming your fear* (2nd ed.). Oakland, CA: New Harbinger.

Appendix E: Intervention script – Mindfulness and Acceptance Condition

Now I will be teaching you a strategy called mindfulness that can be used when you find yourself having negative thoughts about a social situation that has happened in the past or one that is coming up in the future. Research has shown that mindfulness practice can help people cope with social anxiety, as well as with many other forms of anxiety and depression.

Introduction to mindfulness

Adapted from Elizabeth Roemer and Susan M. Orsillo (2009).

Mindfulness is paying attention in the present moment, with openness and curiosity, instead of judgment. We often focus on things other than what is happening in the moment – worrying about the future, thinking about the past, focusing on what is coming next, rather than what is right in front of us. And it is useful that we can do a number of things without paying attention to them. However, sometimes it is helpful to bring our attention, particularly a curious and kind attention, to what we are doing in the moment.

The best way to understand mindfulness is to practice it, so let's do that now. For the next few minutes, we will do a mindfulness exercise geared at bringing your awareness to the present moment, and to your own breath.

Exercise No. 1 (3.5 minutes) - Being Mindful of Breath

Begin by sitting upright but comfortably, either closing or lowering your eyes. Notice the way you're sitting on the chair. Notice where your body is touching the chair. And then gently shift your awareness to your breath, without attempting to change it in any way. Notice how the air enters your body, where it travels, and how it leaves your body. Notice the parts of your body that move as you are breathing. Notice where you feel the breath in your body. It may be in your nostrils, the back of your throat, your chest, or your belly. Just gently allow your awareness to rest in this place where you feel your breath. (long pause) Each time your mind wanders, notice that, and gently bring your awareness back to the place you feel your breath. Notice the in-breath and the out-breath. (pause) And just continue to bring your awareness back to your breath again... and again ... for the next several moments. (~1 min. pause) Now gently bring your focus back to the way you're sitting on your chair. And when you're ready, open your eyes.

Discussing the mindfulness of breath exercise

Congratulations – if you've never tried mindfulness before, you've just completed your first practice. The exercise you just completed involved being mindful of your breath. Your only task was to return your attention to your breath as many times as needed to maintain focus on the present moment. Did you find it easy? In one sense all you had to do was pay attention to your breath for a few minutes, but at the same time you may have found there were challenges with

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

this. How did you feel doing this exercise? (*Give participant a chance to provide his or her own challenges before supplying examples from the following list*)

- For instance, maybe you noticed that your mind was wandering quite a bit, or maybe you felt self-conscious about your breathing. Maybe you felt anxious or uncomfortable, or restless and impatient, or maybe you felt like you weren't doing the exercise properly.

So you see that even a short mindfulness exercise can show us how busy our minds are. It may even show us our tendency to worry, be anxious, or criticize ourselves. Mindfulness practice can be extended to working with your thoughts which can be especially helpful with anxiety or negative thinking. What this means is you practice observing your thoughts, in a similar manner to the breath awareness you just practiced.

Mindfulness of thoughts

Can you think of any examples from your own life when you find yourself doing things on “autopilot”? What sorts of things do you find yourself thinking about during these times? (If participant cannot think of an example, ask about tasks such as driving, walking, doing the dishes, etc.).

On the other hand, sometimes we do pay close attention to what we are thinking and feeling and we become very critical of our thoughts and feelings and we try to either change them or distract ourselves because this critical awareness can be very painful. For example, we might notice while we are talking to someone new that our voice is shaky, or we aren't speaking clearly, and think, “I'm such an idiot! What is wrong with me? If I don't calm down, this person will never like me!” Can you think of any examples for your own life when you find yourself being very critical of your thoughts or feelings? (If participant cannot think of an example, ask about situations such as job interviews, meeting someone for the first time, going on a date, etc.).

Being mindful falls between these two extremes – we pay attention to what is happening inside and around us, we see events and experiences as what they are, and we allow things we can't control to be as they are while we focus our attention on the task at hand. Mindfulness is accepting your thoughts as they are, and without judgment. For example, when talking to someone new we might notice those same changes in our voice and take a moment to reflect and notice, “My voice is shaking,” accept this, and gently bring our attention back to the person and our conversation. This second part of mindfulness, not being judgmental, but rather accepting, and not trying to change our thoughts can be especially hard. Oftentimes when people first start doing mindfulness exercises, they notice that they are having judgmental thoughts and become upset at themselves for having these thoughts. However, if this happens, simply notice these judgmental thoughts, and see them as just thoughts.

So, to summarize, being mindful of your thoughts involves:

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Being Aware – Be aware of your thoughts. Stay in the moment and observe the here and now, rather than focusing on the past or the future.

Being Nonjudgmental – Notice your thoughts, and try not to judge them. Instead, be compassionate and kind towards your thoughts.

Tips – If you find yourself judging your thoughts, notice these judgmental thoughts. Try to see your thoughts as just thoughts; and not as facts. If you find yourself becoming distracted, notice that you have become distracted, and bring your awareness back to your thoughts.

Give participant the handout (of this summary) and have them read it over for a few minutes. Ask them if they have any questions. Ask them to summarize back their understanding of mindfulness in their own words.

Again, the best way to understand mindfulness is to practice it, so let's do that now. Mindfulness takes lots of practice, and there's no such thing as doing it perfectly. What matters most is that you try to be aware of your thoughts in the moment, and try not to judge them. It's better to think of mindfulness as a process than as a goal; that is, your thoughts will come and go, and mindfulness is really about repeatedly returning your focus to the present.

Exercise No. 2 (7 minutes) - Being Mindful of Thoughts

For this exercise, I would like you to think about a social situation that would make you anxious. It can be something that happened in the past, or something that may be happening in the future. Take a moment to choose a situation now. I'd like you to spend a moment really imagining what it is like to be in this situation or to think about it.

Now you will use the mindfulness strategy to notice any negative *thoughts* that you may be having about it. Try to simply observe these thoughts, and accept them as they are. I will guide you through this exercise. During the silences, please continue to be mindful of your thoughts. Please get into a comfortable position, and close your eyes.

Adapted from Lizabeth Roemer and Susan M. Orsillo (2009).

Begin by noticing the way you are sitting. Noticing where your body touches the chair. Then gently bringing your awareness to your breath. Noticing where you feel it in your body. Noticing the sensations as you inhale and exhale.

As your awareness settles on this moment, noticing your thoughts and memories that arise that relate to your speech. Acknowledging the thoughts as they pass through your mind – as they arise and unfold over time.

Bringing your attention to any self-critical thoughts you are having. And as best you can, observing them for a moment either as words on leaves floating down a stream or as words projected on a movie screen. Although you may feel a pull to judge those thoughts, change their

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

content, or push them away, as best you can just acknowledging their presence and allowing them to be as they are.

Just noticing your experience and bringing a sense of curiousness and compassion to what you are experiencing. Staying with any thoughts and images that pull your attention and observing them just as they are. Bringing compassion to yourself for experiencing these thoughts and images.

When you are ready, bringing your awareness again to your breath and the present moment before you open your eyes.

How did you find that exercise? What thoughts did you notice you were having? Were you able to focus on the thoughts you were having in the moment? Were you able to accept these thoughts and not judge them? Were you able to notice when you became distracted, and bring your attention back to your thoughts?

Now that you have practiced being mindful of your thoughts, let's turn to your emotions.

Being Mindful of Emotions

Adapted from Erisman & Roemer (2010).

One of the hardest times to be mindful is when we are experiencing a strong emotion, like fear, or sadness, or joy. In those moments, we often want to either hold on to the emotion or get rid of it, rather than allowing it to rise and fall naturally. And sometimes it feels like we can make emotions stay or make them leave, but other times we may find that trying to make an emotion stay makes it leave even faster, while trying to get rid of it keeps it hanging around. Also, emotions can give us important information about our lives, a particular situation, or the way someone we care about is responding to us. So it can be useful for us to notice the emotions we are having, as they happen, rather than judging them or trying to change them. We can bring the same kind of awareness you just practiced to any emotional experience, noticing what we feel in our bodies, and just letting that experience happen without getting caught up in it. Our feelings will change on their own when we let them be, rather than seeing them as bad or good or something to be changed.

What do you normally do when you feel an emotion such as anxiety? What types of thoughts usually run through your head when you feel anxious? In order to be mindful of your emotions, I would like you to try to just notice and be aware of your emotions, as they are happening. Try not to judge these emotions as good or bad, and try not to change these emotions. Just notice what you are feeling in your body, and let that feeling happen naturally.

So, to summarize, being mindful of your emotions involves:

Being Aware – Notice the emotions you are having, as they happen.

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Being Nonjudgmental – Try not to judge your emotions as good or bad, and try not to change them. Just let the experience of your emotions happen.

Tips – If you find yourself judging your emotions, notice these judgmental thoughts. Gently turn your attention back to the emotions you are having. If you find yourself becoming distracted, notice that you have become distracted, and bring your awareness back to your emotions.

Give participant the handout (of this summary) and have them read it over for a few minutes. Ask them if they have any questions. Ask them to summarize back their understanding of mindfulness in their own words.

This is also something that is easier to experience than it is to describe. Let's do another exercise to give you a sense of what I'm describing.

Exercise No. 3 (7 minutes) - Being Mindful of Emotions

For this exercise, I would like you to think again about a social situation that tends to make you anxious. Take a moment to really imagine how it feels to be in this situation, and in this exercise you will use the mindfulness strategy to notice any *emotions* that you may be having about your speech performance. Try to simply observe these emotions, and accept them as they are. I will guide you through this exercise. During the silences, please continue to be mindful of your emotions. Please get into a comfortable position, and close your eyes.

Adapted from Lizabeth Roemer and Susan M. Orsillo (2009).

Begin by noticing the way you are sitting. Noticing where your body touches the chair. Then gently bringing your awareness to your breath. Noticing where you feel it in your body.

Noticing the sensations as you inhale and exhale.

As your awareness settles on this moment, allow your memory of the speech to arise. Picture yourself in the situation, noticing what you can see, the sounds you hear.

Then begin paying attention to feelings in your body, noticing any tightness in your body.

Becoming aware of the emotions going through your body. Observing what you are feeling.

You may notice more than one emotion or that emotions unfold over time.

Attending to any urges to respond to your experience, any desire to avoid your feelings.

Just noticing your experience, bringing curiousness and compassion to what you are experiencing. Observing what happens to you when you are feeling strong emotions, without altering it or judging your experience.

Paying attention to any efforts to push your emotions away or efforts to hold on to feelings.

Noticing anytime you are trying to alter or judge your experience and just letting go, refocusing on the experience.

Noticing how your emotions change or ways they don't change.

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Let the memory go and bring your awareness again to your breath and the present moment before you open your eyes.

How did that exercise go for you? What emotions did you notice you were experiencing? Were you able to notice the emotions you were having, rather than judging them or trying to change them? Do you have any questions before we move on?

Great work! We will now move on to the next part of the study.

I'm going to show you how to access a brief mindfulness exercise online. You will be doing this every day over the next week, and you should start today. What I'd like you to do before your daily mindfulness activity is to think of a social situation and really imagine it before you start. Each daily practice should take you between 5-7 minutes. As we talked about, mindfulness is really a skill, and it's the repeated practice that has beneficial effects on anxiety.

Do you have any questions for me?

Handout

Being Mindful of Thoughts

Be Aware – Be aware of your thoughts and emotions. Stay in the moment and observe the here and now, rather than focusing on the past or the future.

Be Nonjudgmental – Notice your thoughts and emotions, and try not to judge them. Instead, be compassionate and kind towards your thoughts and feelings.

Tips – If you find yourself judging your thoughts, notice these judgmental thoughts. Try to see your thoughts as just thoughts; and not as facts. If you find yourself becoming distracted, notice that you have become distracted, and bring your awareness back to your thoughts.

Being Mindful of Emotions

Be Aware – Notice the emotions you are having, as they happen.

Be Nonjudgmental – Try not to judge your emotions as good or bad, and try not to change them. Just let the experience of your emotions happen.

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Tips – If you find yourself judging your emotions, notice these judgmental thoughts. Gently turn your attention back to the emotions you are having. If you find yourself becoming distracted, notice that you have become distracted, and bring your awareness back to your emotions.

Risk assessment

- Administer the Risk Assessment Protocol to all participants
- Make sure to give participants the mental health referral numbers before they leave the lab

Mindfulness exercises adapted from Orsillo, S. M., & Roemer, L. (2011). *The mindful way through anxiety: Break free from chronic worry and reclaim your life*. New York, NY: Guilford Press.

Additional references:

Antony, M. M., & Swinson, R. P. (2008). *The shyness and social anxiety workbook: Proven, step-by-step techniques for overcoming your fear* (2nd ed.). Oakland, CA: New Harbinger.

Sarah A. Hayes, personal communication, July 30, 2011.

Appendix F: Risk assessment protocol

Section I: Baseline distress questions

The purpose of the following questions is to determine whether a full risk assessment is needed. Please ask the following questions to all participants at the end of *both* the first and second sessions.

1. Was there anything in particular that we talked about today that leaves you feeling upset?
2. On a scale of 1-10, with 10 representing as much distress as you can imagine, what is your level of distress right now?

If participants endorse a 6 or higher on the distress scale, probe further about particular feelings experienced.

3. On a scale of 1-10, with 10 representing extremely manageable, how manageable do you think your level of distress is right now?

If participants endorse a 4 or lower, ask them to explain why and what they anticipate happening, if they cannot manage.

Section II: Decision to act: When a full risk assessment needs to be done

1. If a participant endorses a distress level of 8 or higher, a follow-up risk assessment is required (irrespective of their response to manageability of distress).
2. If a participant endorses a distress level of at least 6, **and** a distress manageability score of 4 or lower, a follow-up risk assessment is required.
3. Regardless of distress scores reported by the participant, if a participant is visibly distressed (e.g., crying) and gives reason to suspect that they are at risk of serious distress (e.g., as a result of recent life events, or mental health history), a follow-up risk assessment is required.

Section III: Determining imminent danger and keeping participants safe

1. Based on participant responses to the Full Risk Assessment and consultation with Dr. Antony, if participants are likely to be in imminent danger, Ryerson Security and St. Michael's Hospital Psychiatric Emergency Services - Mobile Crisis Intervention Team (MCIT) will be contacted (see Full Risk Assessment protocol).
2. At this point, MCIT will determine the participant's level of distress and what the next steps are (e.g., hospitalization).

Appendix G: Debriefing Form

Title of study: Cognitive strategies for management of social anxiety: A comparison of brief cognitive restructuring and mindfulness interventions

Social anxiety disorder (SAD) is one of the more common anxiety disorders, with a lifetime prevalence rate of 12.1% (Kessler, Berglund, Demler, Jin, & Walters, 2005). The gold standard psychological treatment for social anxiety is cognitive-behavioural therapy (CBT; Heimberg & Becker, 2002). A strategy that is commonly associated with CBT is cognitive restructuring, a technique that involves learning to recognize maladaptive beliefs that may be maintaining the social anxiety, and generating more realistic alternative ones. Recent evidence suggests that mindfulness- and acceptance-based approaches to cognition are also effective in treatment of social anxiety (Dalrymple & Herbert, 2007; Kocovski, Fleming, & Rector, 2009). These strategies focus on learning to notice and observe thoughts as they occur, and practicing being nonjudgmental towards them rather than attempting to engage with them or change them in any way. In addition, repeated self-assessment has been found to have beneficial effects on mood as well as have an impact on behavior (Abrams & Wilson, 1979). The aim of this two-part study is to provide a direct comparison of cognitive restructuring and mindfulness- and acceptance-based strategies in management of social anxiety, to determine the effects of each intervention on anxiety symptoms, cognitive change, and acceptance, as well as to shed some light on whether certain personal traits determine the effectiveness of each intervention on the individual level. The results of this study will help inform clinical practice and treatment planning for socially anxious patients.

A cognitive restructuring approach to social anxiety involves learning to recognize socially anxious thoughts in order to examine them carefully. Often socially thoughts are rooted in beliefs that are inaccurate or biased. Nonetheless these thoughts may have become ingrained and automatic over time, and they affect the way we feel and in turn, the way we behave. An introduction and instructions for working through a cognitive restructuring approach to social anxiety can be found in *The Shyness and Social Anxiety Workbook* (Antony & Swinson, 2008). A mindfulness- and acceptance-based approach to social anxiety also entails noticing the automatic nature of socially anxious thoughts; however in this approach the emphasis is on noticing that thoughts come and go, and that we needn't let them define us. Rather we can return our attention to the present moment without engaging excessively with the contents of our thinking. A good introduction to this approach, including relevant mindfulness exercises, can be found in *The Mindful Way Through Anxiety* (Orsillo & Roemer, 2011). Full bibliographic information for both books is listed at the end of this form, along with other potentially helpful resources.

If you are currently experiencing psychological distress and would like to discuss your concerns in a safe and confidential environment, please be aware that the Ryerson Centre for Student

COGNITIVE STRATEGIES FOR SOCIAL ANXIETY

Development and Counselling (CSDC) is a free resource for students located on campus. Staff at the Counselling Centre provides support and guidance for a range of concerns including anxiety, low mood, and academic difficulties. The contact information for the CSDC is as follows:

Centre for Student Development and Counselling

Website: <http://www.ryerson.ca/counselling/index.html>

Email: csdc@ryerson.ca

Phone: 416-979-5195

Location: JOR-07C (Lower level of Jorgensen Hall, 380 Victoria Street)

Following is an additional list of providers of treatment for anxiety disorders in the Toronto area (for additional referrals, see www.martinantony.com, and click on anxiety referrals, followed by Canada, Ontario, and Toronto):

OHIP-Covered and Sliding Scale Referrals

Adult Mental Health Program

Humber River Regional Hospital, Toronto

Contact: Heather Wheeler, Ph.D.

Tel: 416-658-2003

Anxiety Disorders Clinic

Centre for Addiction and Mental Health

250 College St., Toronto, ON

Tel: 416-979-6819

Private Psychology Referrals

Diana Brecher, Ed.D., C.Psych

Ryerson University Centre for Student Development and Counseling

350 Victoria St., Suite 408, Toronto, ON

Tel: 416-979-5195

David Moscovitch, Ph.D., C.Psych

Randy Katz, Ph.D., C.Psych

The Clinic

101 Dupont St., Toronto, ON

Tel: 416-966-1692

CBT Associates of Toronto

100 Adelaide St. W., Suite 805, Toronto, ON

Tel: 416-363-4228

Web: <http://www.cbtassociates.net>

Co-Directors: Eilenna Denisoff, Ph.D., and

Peter Farvolden, Ph.D.

Email: eilenna.denisoff@cbtassociates.net or

peter.farvolden@cbtassociates.net

Heather Wheeler, Ph.D., C.Psych

1333 Sheppard Ave. E., Suite 225,

Toronto, ON

Tel: 416-788-3038

Email: hwheeler@rogers.com

Hank Frazer, Ph.D., C.Psych

3852 Finch Ave., Unit 309, Scarborough, ON

Tel: 416-298-9143 or 416-298-1102

Neil Pilkington, Ph.D., C.Psych

2 Carlton St., Suite 1718, Toronto, ON

Tel: 416-977-5666

Email: dr.neil.pilkington@rogers.com

Following is a list of self-help books that may be useful for people with social anxiety concerns:

Antony, M. M. (2004). *Ten simple solutions to shyness: How to overcome shyness, social anxiety, and fear of public speaking*. Oakland, CA: New Harbinger.

Antony, M. M., & Swinson, R. P. (2008). *The shyness and social anxiety workbook: Proven, step-by-step techniques for overcoming your fear* (2nd ed.). Oakland, CA: New Harbinger.

Antony, M. M., & Swinson, R. P. (2009). *When perfect isn't good enough: Strategies for coping with perfectionism* (2nd ed.). Oakland, CA: New Harbinger.

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