"IF ONLY I DIDN'T EMBARRASS MYSELF IN FRONT OF THE CLASS!": SOCIAL ANXIETY AND UPWARD COUNTERFACTUAL THINKING

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This study examined the relationship between social anxiety (SA) and upward counterfactual thinking (U-CFT; "if only…" thoughts imagining better outcomes to past events). Although generally considered adaptive, U-CFT has also been associated with negative affect and social anxiety (e.g., Kocovski, Endler, Rector, & Flett, 2005). Participants ($n = 88$) were randomly assigned to generate U-CFT after reading a scenario depicting either controllable social-evaluative failure (e.g., lack of preparation for a presentation) or uncontrollable social-evaluative failure (e.g., technological malfunction during a presentation for which one is well-prepared). When both scenarios were analyzed together, SA was not significantly related to U-CFT. Instead, scenario controllability emerged as a significant predictor of U-CFT, qualified by a significant interaction between SA and scenario controllability. Indeed, in the uncontrollable scenario, SA was not related to U-CFT generation; in contrast, in the controllable scenario, SA was significantly correlated with U-CFT, such that higher levels of SA predicted more U-CFT. The relationship between SA and U-CFT in the controllable condition could not be accounted for by self-reported depression, perfectionism, or rumination. These findings are discussed within the context of literature on post event processing in social anxiety.

Social Anxiety Disorder (SAD) is characterized by intense and persistent fears of being judged and consequently embarrassed in social situations, and results in marked avoidance of such social-eval-

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uative contexts. Cognitive models of SAD (e.g., Clark & Wells, 1995) hypothesize that social anxiety stems from beliefs that one is likely to behave incompetently in social situations, be negatively evaluated by others, and suffer dire social consequences as a result. While much previous research (e.g., Hartman, 1983) has investigated the effects of pre-event cognitions (i.e., anxious thoughts about upcoming social events), a newer area of inquiry has examined the potentially harmful effects of post event cognitions in those with social anxiety. Introduced by Clark and Wells (1995), the term *post event processing* (PEP) can be defined as "the period of reflection on actual or perceived inadequacies, mistakes, imperfections" (Kocovski, Endler, Rector, & Flett, 2005, p. 972).

Research by Rachman, Gruter-Andrew, and Shafran (2000) supports the occurrence of PEP in those with social anxiety, such that these individuals (1) spend a great deal of time thinking about social events perceived as unsatisfactory, (2) experience such cognitions as intrusive, and (3) often have difficulty concentrating due to these distressing thoughts. Further, it appears that for those high in social anxiety (SA), such thoughts tend to exacerbate anxiety exponentially, while PEP does not seem to have deleterious effects for those low in SA (Rachman et al., 2000). Additionally, other research has shown that participants high in SA engage in more PEP about a previous social event than participants low in SA (Mellings & Alden, 2000). Thus, it appears that socially anxious individuals may have a general tendency to repeatedly mull over the details of past social events.

One type of cognition that is frequently generated following events perceived to be negative or stressful is counterfactual thought. Counterfactual thoughts are simulated mental alternatives to past negative outcomes, and can be categorized into either downward counterfactual thoughts (D-CFT; "At least..." thoughts that imagine a worse possible outcome) or upward counterfactual thoughts (U-CFT; "If only..." thoughts that imagine a better possible outcome). While D-CFT is linked to positive affect and related mood repair following an aversive outcome, U-CFT is often linked to the experience of negative affect (Sanna, Turley-Ames, & Meier, 1999). Although U-CFT typically precedes the experience of negative mood (for exceptions, see Markman, Karadogan, Lindberg, & Zell, 2009), counterfactual research also suggests that such thoughts can be functional by enhancing motivation for self-improvement (e.g., Roese, 1994; Sanna, Chang, & Meier, 2001). For instance, if

someone is badly injured in an automobile accident, he or she may think: "If only I had been wearing my seatbelt, I would not be in such bad shape." Although this may initially induce negative feelings of regret, such thoughts may increase the likelihood that this individual will wear a seatbelt in the future (e.g., Roese, 1994).

Despite this functional aspect of upward counterfactual thinking, a growing body of research suggests that for individuals with various forms of psychopathology, U-CFT may produce negative affect in the absence of any beneficial, motivational consequences (Mandel & Dhami, 2005; Roese, 1997; for a review, see Markman et al., 2009). For example, U-CFT was associated with increased anxiety and distress in women who had miscarried but was not associated with any adaptive searching for meaning or future plans (Callander, Brown, Tata, & Regan, 2007). Similarly, in sexual assault survivors, upward counterfactuals predicted augmented self-blame, known to increase risk of future coping difficulties and revictimization (Miller, Handley, Markman, & Miller, 2010). Further, Ruiselova, Prokopcakova, and Kresanek (2009) found that for those high in anxiety, U-CFT was more frequent, led to feelings of sadness, and did not aid in generating solutions to future problems. Indeed, U-CFT was related to inhibition of developing these future solutions. In addition, Kocovski and colleagues (2005) determined that those high in SA generated more U-CFT than those low in social SA after imagining themselves in scenarios that involved making mistakes in public.

Accordingly, reasons exist to believe that U-CFT may characterize those suffering from psychological distress, such as individuals with notable levels of social anxiety (Kocovski et al., 2005). As such, the current study investigated four central research questions. First, we examined whether those with high, relative to low, SA would generate more U-CFT (as compared with D-CFT) in response to a vignette depicting a negative social-performance-related event, thereby replicating Kocovski et al. (2005). Second, this study examined the effect of a negative situation's controllability on U-CFT generation. Consistent with prior research, we predicted that all participants, regardless of social anxiety, would generate more U-CFT in response to the controllable scenario than to the uncontrollable scenario (e.g., Markman & Miller, 2006; Roese, 1997). Indeed, it makes sense that it is easier to consider alternative outcomes to situations in which one had a reasonable amount of personal control.

Third, this research investigated whether those high in SA (relative to low in SA) are especially likely to generate U-CFT that are

unlikely to lead to positive motivational outcomes (e.g., self-improvement). We considered U-CFT generated in response to the uncontrollable scenario to be particularly unlikely to lead to self-improvement, given that the failure depicted in the scenario resulted solely from technological malfunction. This prediction was based on the literature demonstrating that various clinical populations (e.g., Callender et al., 2007; Miller et al., 2010) tend to generate U-CFT after uncontrollable situations. Relatedly, severely depressed individuals produce more U-CFTs that are based on aspects that are out of one's direct control, relative to those without severe depression (Markman & Miller, 2006). While such patterns have been observed in participants with PTSD and depression, the current study is the first to examine this issue in those with social anxiety symptoms.

Fourth, this study sought to scrutinize the mechanisms through which SA influences U-CFT. Specifically, we asked whether any relationship observed between SA and U-CFT was mediated by participants' self-reported levels of other factors known to be associated with SA: depression, perfectionism, and rumination. Taking each factor in turn, social anxiety and depression tend to co-occur quite frequently (e.g., Trew & Alden, 2009), complicating determination of whether cognitive correlates (e.g., U-CFT) in those with SA symptoms can be accounted for by this anxiety, or are instead more directly linked to depressive symptoms. Indeed, Kocovski et al. (2005) noted their omission of a depression measure as a limitation. In the current study, we therefore examined whether a relationship between SA and U-CFT persists when self-reported depression is considered.

Like depression, high levels of perfectionism often occur in SA (Antony, Purdon, Huta, & Swinson, 1998). Further, SA treatment addressing maladaptive thinking patterns reduces perfectionistic tendencies related to concerns over mistakes and doubts about actions (Ashbaugh et al., 2007). Possibly, those with high standards for their social behavior might be better able to imagine ways that a social situation could have turned out better. We therefore examined whether perfectionism mediates the relationship between SA and U-CFT. Notably, only one study to date has examined the relationship between perfectionism and counterfactual thinking, finding that maladaptive perfectionism (defined as the perceived discrepancy between one's standards and actual performance) predicted more U-CFT after thinking about a negative event (Sirois, Monforton, & Simpson, 2010).

Rumination has also received extensive empirical attention in the social anxiety research (e.g., Kocovski & Rector, 2007) and indeed has been advanced as one of the central cognitive factors predicting SA (e.g., Field & Cartwright-Hatton, 2008). Moreover, Kocovski and colleagues (2005) determined that participants high in SA were more likely to engage in ruminative coping styles than those with low SA. However, the researchers did not address whether ruminative coping style mediated the relationship between SA and U-CFT, instead presenting findings on rumination separately from those on U-CFT generation. In the current study, we thus examined the effect of rumination on the relationship between SA and U-CFT. It should be noted that rumination and counterfactual thinking are largely distinct cognitive processes; rumination typically focuses on events that have actually transpired, while counterfactual thoughts reflect imagined alternative hypothetical outcomes to a past event. With this distinction in mind, it is also plausible that a general tendency to ruminate on past events may be related to a tendency to perseverate over how things could have turned out differently. Thus, the constructs of rumination and U-CFT may indeed overlap, though U-CFT differs in its specific focus.

Notably, this study builds upon previous research examining the relationship between SA and the tendency to engage in counterfactual thinking following stressful social situations. For instance, Kocovski and colleagues (2005) explored this topic via a similar design; however, the current study adds to this paper by assessing the potential impact of the controllability of an aversive social event on subsequent U-CFT generation and by explicitly measuring potential mediating variables (such as depression) in the association of SA and U-CFT.

METHOD

PARTICIPANTS

Participants ($n = 88$; 58 females and 30 males) were recruited from three sources. The first source included undergraduate students from Ryerson University's introductory psychology participant pool ($n = 25$). Each received partial course credit for their participation. The second source included students from the University of Toronto ($n = 30$). These students were recruited via flyers posted

around the University of Toronto campus and were compensated $10 cash for their participation. The third source included individuals recruited from the community ($n = 33$). These individuals were recruited via an advertisement on the website Craigslist.com and from an advertisement placed in the Metro newspaper (a free, Toronto based, daily commuter newspaper). These participants were compensated $10 for their participation.

MEASURES

Social Phobia Inventory (SPIN; Connor et al., 2000). The SPIN is a 17-item self-report measure that assesses multiple facets of SA such as avoidance of feared social situations and feelings of embarrassment. Internal consistency is strong among those with SA ($\alpha = 0.87–0.94$) and good for nonsocially anxious participants ($\alpha = 0.82–0.90$; Connor et al., 2000). Further, the SPIN has been shown to be an effective screening tool for SAD (Connor et al., 2000). The SPIN evidenced high internal consistency reliability within the current sample, with a Cronbach's value of .91.

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). This questionnaire assesses affect. Participants rate how strongly they are currently experiencing a variety of emotions related to either positive or negative affect. Watson and colleagues (1988) reported very good internal consistency for both of the scales, with Cronbach's scores on the Positive Affect scale ranging from 0.86–0.90 and on the Negative Affect Scale ranging from 0.84–0.87. In the current study, the PANAS was administered both at baseline and postscenario. The Positive and Negative Affect scales possessed excellent internal consistency in the current sample both at baseline ($\alpha = .88$, $\alpha = .82$, respectively) as well as postscenario ($\alpha = .91$, $\alpha = .93$, respectively).

Beck Depression Inventory-II (BDI-II; Beck, Steer, Ball, & Ranieri, 1996). The BDI-II is a 21-item multiple choice questionnaire assessing the presence and severity of a variety of depressive symptoms (e.g., sleep difficulties, feelings of guilt, anhedonia) within the previous two weeks. Internal consistency reliability for the BDI-II has been found to be excellent ($\alpha = 0.91$) among psychiatric outpatients. This scale demonstrated similarly strong internal consistency reliability in the current sample ($\alpha = .89$).

Frost Multidimensional Perfectionism Scale (FMPS; Frost, Marten, Lahart, & Rosenblate, 1990). The FMPS is a 35-item questionnaire comprised of six subscales that measure various domains of perfectionism. The total FMPS score has been shown to possess high internal consistency reliability (Cronbach's = .91, Frost et al., 1990) and was used in the current study as a measure of perfectionism. The FMPS demonstrated strong internal consistency in the current sample, with a Cronbach's value of .87.

Anxiety Rumination Scale (ARQ; Rector, Antony, Laposa, Kocovski, & Swinson, 2008). The ARQ is designed to measure one's general ruminative responses when feeling anxious and consists of 22 items rated along a 4-point Likert-type scale. Each of the three subscales have demonstrated adequate to good levels of internal consistency, with the Anxious Control-Focused Rumination, Anxious Coping Focused Rumination, and Cognitive Reframing subscales possessing Cronbach's values of 0.86, 0.83, and 0.75, respectively in a student sample (Rector et al., 2008). The total ARQ score was used as the measure of rumination in the current study. The total ARQ demonstrated good internal consistency in the current sample, with a Cronbach's value of 0.80.

PROCEDURE

Introductory psychology students from Ryerson University viewed a description of the current study through SONA, an online system for managing psychology participant pools. Students who were interested in completing the study signed up via SONA online. Participants who were recruited from other sources contacted the researcher by telephone or e-mail if they were interested in participating. Participants were then informed about further details of the study and if they remained interested, an appointment was scheduled.

Once in the lab, participants were first prompted to review and sign a statement of informed consent. The remainder of the study consisted of three general segments. In the first segment, participants completed questionnaires (outlined in the Measures section above) assessing for baseline mood, social anxiety, and other measures of individual differences.

During the second segment of the study, participants were randomly assigned to read one of two scenarios depicting a stressful and potentially embarrassing social situation in which a class presentation does not go well. They were instructed to read the scenario carefully, imagining that this situation was happening to them, and were given 2 minutes to read and re-read the scenario. One scenario depicted a public speaking event in which the negative outcome was largely under the participant's control (i.e., the individual arrives for the presentation without having prepared adequately), and the other scenario described a public speaking scenario in which the negative outcome was largely out of the participant's control (i.e., the classroom computer that was to be used to show slides is not working). After reading and imagining themselves in this scenario, participants again completed the PANAS (Watson et al., 1988) to gauge whether imagining themselves in this situation increased negative affect compared to baseline. Next, they re-read the scenario once more to refresh their memory about the content.

During the third segment of the study, participants were prompted to generate as many "if only…" and "at least…" counterfactual thoughts that they could in response to the scenario they had read. The specific instructions given were adapted from Markman and Miller's (2006) study regarding counterfactual thinking, depression, and control. Participants were given 5 minutes to complete this task. If they finished earlier, they were encouraged to continue thinking.

RESULTS

Counterfactual Thinking Index

The central dependent variable pertaining to counterfactual thought generation was created by subtracting the number of downward counterfactuals from the number of upward counterfactuals that each participant generated. Thus, higher scores on this index (denoted by U-CFT) represent a greater number of U-CFT generated in comparison to D-CFT. This type of CFT index has been used in previous studies in the area of counterfactual thinking (e.g., Roese, 1994), and importantly takes into account that participants vary in how many statements they generally tend to mention. If only raw scores of U-CFT and D-CFT had been used, someone who recorded

10 upward and 10 downward statements, for example, would have the same U-CFT score as someone who recorded 10 upward and only 1 downward statement. Because these two hypothetical individuals represent different patterns of CFT response, we argue that an index score is a more valid measure of one's tendency to generate U-CFT.

Coding. All generated thoughts were initially coded by the first author of this paper, who has extensive experience, including published research (Sirois et al., 2010) in coding CFT. Statements were coded not solely based on the presence of "If only" or "At least" at the beginning of the statement, but also based on whether the participant was speaking to a better or worse outcome to the scenario. As such, statements were considered U-CFT if they imagined a better possible outcome (regardless of "if only" in the phrasing) and statements were considered D-CFT if they imagined a worse possible outcome (regardless of "at least" in the phrasing).

Interrater reliability for the coding was subsequently obtained by having a trained research assistant (RA) independently re-code all the counterfactual thoughts. The two raters displayed substantial agreement (kappa = .76), which is comparable to the level of agreement found in other research that has coded CFT along similar dimensions (e.g., Kocovski et al., 2005). The 18 disagreements were resolved through discussion between the first author and the RA.

DESCRIPTIVE STATISTICS FOR SOCIAL ANXIETY

The mean SPIN score for the entire sample was 22.66 (SD = 13.03, range = 54, n = 88), which is greater than the clinical cutoff score of 19 proposed by the authors of the measure to differentiate those with and without SAD (Connor et al., 2000). Because mean SPIN scores did not differ significantly across recruitment sources, all participants were analyzed as one group.

MANIPULATION CHECK: MOOD INDUCTION VIA THE SCENARIOS

Paired-samples t-tests were conducted to examine whether PANAS positive and negative affect scale scores changed significantly from

baseline to post-scenario. It was predicted that positive affect scores would be lower and negative affect scale scores higher after participants had read the scenario, as compared with baseline. Both of these hypotheses were supported, as there was a significant decrease in positive affect from baseline to post-scenario, $t(87) = -3.78, p < .01$, $d = -.40$, and a significant increase in negative affect from baseline to post-scenario, $t(87) = 6.65, p < .01, d = .79$. These significant changes in affect persisted when analyzing each of the scenarios separately as well (Positive Affect, Uncontrollable, $t(43) = -2.92, p < .01, d = -.32$; Negative Affect, Uncontrollable, $t(44) = 5.10, p < .01, d = .91$; Positive Affect, Controllable, $t(42) = -2.42, p = .02, d = -.32$; Negative Affect, Controllable, $t(42) = 4.19, p < .01, d = .67$). Thus, both scenarios induced negative affect (and decreased positive affect), which would have properly set the stage for counterfactual thought generation.

RELATIONSHIP BETWEEN SOCIAL ANXIETY, COUNTERFACTUAL THINKING, AND CONTROLLABILITY

SA scores consisted of participants' mean scores on the SPIN, while the outcome variable of interest was the aforementioned CFT index score (U-CFT). The correlation between SA Level and U-CFT showed a trend toward significance 2-tailed ($r = .19, p = 0.08$).

Because there were two experimental conditions, however, it is important that this source of variance be controlled. To address this issue, we ran a regression in which SA (measured continuously), scenario controllability (coded zero for uncontrollable and one for controllable), and the centered interaction between SA and controllability were all included as predictors of CFT Difference. Regression diagnostics for this model revealed an influential point (Cook's distance = .41) that poorly fit the model (standardized residual = 3.49). This case was removed and the regression re-run, resulting in satisfactory diagnostics. We calculated the effect size for each predictor (in models with more than one predictor) as the semipartial correlation (r_{sp}) between it and U-CFT (Aloe & Becker, in press) and as the Pearson correlation (r) between it and U-CFT (in models with only one predictor).

SA was not significant in this model, $t(1, 83) = 1.41, p = .16, r_{sp} = .14$, but the main effect for controllability was significant, $t(1, 83) = 3.65, p < .001, r_{sp} = .36$. Participants in the controllable, versus the

uncontrollable, condition reported more U-CFT (means of 2.12 and -.20, respectively), but this effect was qualified by a significant interaction between SA and Controllability, $t(1, 83) = 2.46$, $p = .02$, $r_{sp} = .24$. Examination of this interaction revealed that SA significantly predicted U-CFT in the Controllable condition, $t(1, 41) = 2.81$, $p = .008$, $r = .40$. However, SA was unrelated to U-CFT in the Uncontrollable condition, $t(1, 42) = -0.70$, $p = .49$, $r = -.11$. On account of this significant interaction, we analyzed only the controllable scenario in the meditational analyses described next.

CAN OTHER FACTORS ACCOUNT FOR THE RELATIONSHIP BETWEEN SOCIAL ANXIETY AND U-CFT IN THE CONTROLLABLE CONDITION?

The correlational matrix between variables that were considered in the meditational analyses is presented in Table 1.

As much research has demonstrated a link between social anxiety and depression, we asked whether SA would continue to significantly predict U-CFT in the controllable scenario using a model also including self-reported depression (BDI-II scores, denoted by BDI). Since depression scores were positively skewed overall (mean = 11.94, median = 10, $SD = 8.26$, range = 46) and within the Controllable condition (mean = 12.61, median = 11, $SD = 9.18$, range = 46), we log-transformed BDI scores. Depression (log-transformed) was not significantly correlated with U-CFT (see Table 1) in the controllable scenario, precluding the possibility of mediation (Baron & Kenny, 1986). We regressed U-CFT in the controllable condition on SA and BDI to determine if SA would remain significant. SA continued to be significant in this model, $t(1, 40) = 2.23$, $p = .03$, $r_{sp} = .32$, but depression was not significant, $t(1, 40) = 0.71$, $p = .48$, $r_{sp} = .10$. To reduce the possibility of Type II error in the mediation given the relatively small sample size used here ($n = 43$), we also performed a bias-corrected bootstrapping procedure to assess the indirect effect of BDI (e.g., Fritz & MacKinnon, 2007). The bootstrapping (1000 bootstrap resamples; macro available from Hayes, 2011) revealed that the indirect path from depression to U-CFT was not significant. Specifically, the bias-corrected 95% confidence interval (CI) for the indirect path involving BDI contained the value zero (lower limit (LL) = -.03, upper limit (UL) = .06).

TABLE 1. Correlations Among Main Study Variables in the Controllable Scenario

	Social Anxiety	CFT Difference	Mean Depression	Mean Perfectionism	Mean Anxious Rumination
Social Anxiety	—				
CFT Difference	.40**	—			
Mean Depression	.42**	.26	—		
Mean Perfectionism	.58**	.24	.36*	—	
Mean Anxious Rumination	.48**	.23	.43**	.43**	—

Note. CFT = Counterfactual thinking. *p < 0.05; **p < 0.01.

We performed a similar series of analyses on perfectionism and rumination. Perfectionism did not significantly correlate with U-CFT (Table 1). When U-CFT was regressed on SA and perfectionism, SA remained significant $t(1, 40) = 2.21$, $p = .03$, $r_{sp} = .32$, and perfectionism was not significant $t(1, 40) = 0.98$, $p = .92$, $r_{sp} = .01$. Bootstrapping as previously described confirmed the nonsignificance of the indirect path from perfectionism to U-CFT in this model, with a 95% CI from -.04 to .05. With respect to rumination, it too was in fact not correlated with U-CFT (Table 1). Regressing U-CFT on SA and rumination revealed that significance remained for SA $t(1, 40) = 2.31$, $p = .03$, $r_{sp} = .33$, but rumination was nonsignificant, $t(1, 40) = 0.40$, $p = .69$, $r_{sp} = .06$. Bootstrapping similarly indicated a nonsignificant indirect effect for rumination, 95% CI from -.03 to .06.

DISCUSSION

We examined four central issues in this research and found mixed support for our hypotheses. Contrary to prediction, those higher in SA did not generate more U-CFT than those lower in SA when both scenarios were analyzed together; indeed, the correlation between SA and U-CFT in the entire sample was nonsignificant. Participants overall did generate more U-CFT in response to a controllable, relative to an uncontrollable, scenario, as we had anticipated; this effect, however, was qualified by a significant interaction between SA and scenario controllability. Examination of this interaction revealed that SA was related to U-CFT generation only in response to the controllable scenario. We found no support for our prediction that those high in SA would generate an especially great number of U-CFT in response to the uncontrollable scenario, relative to those low

in SA; instead, SA and U-CFT were unrelated in the uncontrollable condition.

These results suggest that social anxiety is unrelated to U-CFT generation in response to an uncontrollable scenario. Our prediction stemmed from research suggesting that those with emotional distress tend to generate U-CFT based on uncontrollable aspects of past situations, thus precluding any adaptive, self-improvement function of these thoughts (e.g., Callander et al., 2007; Kocovski et al., 2005; Markman & Miller, 2006). One explanation for this null finding is that the current study used an analog community and student sample rather than a sample of those with symptoms meeting full criteria for SAD. Although the mean SA score for the sample as a whole was greater than the clinical cutoff score proposed by Connor et al. (2000), it is important to note that most patients who present clinically for SA treatment endorse SPIN scores much higher than this cutoff score. Indeed, typical SPIN scores for patients with Social Anxiety Disorder are higher than 40 (Antony, Coons, McCabe, Ashbaugh, & Swinson, 2006). Nevertheless, mean social anxiety scores in this sample may still be considered elevated for a group of student and community participants. This result may be attributable to self-selection factors, as the current study was advertised as pertaining to Social Anxiety. Possibly, those who have some difficulties in the area of social functioning chose to participate due to its personal relevance. Future research with a clinical sample will better elucidate whether counterfactual thinking in response to uncontrollable situations is a relevant construct in those with SAD.

Due to the interaction between SA and scenario controllability, we examined the controllable scenario by itself when we scrutinized potential mediators (depression, perfectionism, and rumination) of the relationship between SA and U-CFT. We found no evidence of mediation, either when using the methods of Baron and Kenny (1986) or the more powerful bias-corrected bootstrapping approach (Fritz & MacKinnon, 2007; Hayes, 2011) Indeed, U-CFT was not significantly related to depression, perfectionism, or rumination; furthermore, SA remained a significant predictor of U-CFT when depression, perfectionism, and rumination were each added to the model. The current study thus adds to the literature on SA and U-CFT by clarifying that the relationship occurring between SA and U-CFT is not a function of a third variable known to correlate with SA (e.g., depression, Kocovski et al., 2005); the relationship between

SA and U-CFT persists when depression, perfectionism, and rumination are considered.

The relationship shown in the current study between SA and U-CFT in the controllable scenario replicates the findings of Kocovski et al. (2005), who used only controllable scenarios. The consistency in these findings using controllable scenarios across investigations lends support to the idea that nonclinical levels of SA are associated with more upward counterfactual thoughts in response to a scenario featuring controllable social failure. That noted, the current study also adds to the extant findings (Kocovski et al., 2005) by indicating that the relationship between SA and U-CFT observed after controllable scenarios does not occur in response to uncontrollable scenarios.

One strength of this study was the inclusion of both student and community participants, whereas most studies on this topic have included student samples only. An additional strength was the use of a truly experimental design, in which participants were randomly assigned to one of two conditions. Thus, it can be concluded more confidently that the differential relationships between social anxiety and CFT between these groups can be attributed to the thematic content of the scenarios themselves. A further strength of this research was our attempt to ensure that the results found could not be better explained by related phenomena, such as depression, rather than the variables of interest.

Limitations also occurred in this research. As aforementioned, it will be important for these findings to be replicated using individuals who have a clinical diagnosis of SAD. In addition, despite our use of bias-corrected bootstrapping, the meditational analyses ($n = 43$) may have suffered from low statistical power. Another possible limitation was the use of hypothetical scenarios rather than real life situations to assess the use of counterfactual thinking. This method is typical of most studies on counterfactual thinking, but it is important that future studies begin to assess counterfactual thinking in the context of actual, rather than hypothetical, events (e.g., Laurenti, Bruch, & Haase, 2008). Furthermore, only the number of upward counterfactuals, relative to downward counterfactuals, was considered; other aspects of U-CFT such as their duration (e.g., Callander et al., 2007) or effect upon self-blame (e.g., Miller et al., 2010) may be more relevant to psychological disorders. Clearly, the intriguing area of counterfactual thinking warrants further study to

add welcome clarity to this "paradoxical" (Markman et al., 2009, p. 175) literature.

Overall, the current research suggests that individuals high in social anxiety symptoms respond to negative, controllable social-evaluative situations with a greater number of upward counterfactuals than those low in social anxiety (e.g., Kocovski et al., 2005). Notably, the relationship between one's level of social anxiety and upward counterfactual thinking cannot be accounted for by one's level of depression, perfectionism, or rumination. Although no evidence for a relationship between social anxiety and upward counterfactual thinking in response to an uncontrollable scenario was found, these results bear clinical implications in that upward counterfactual thinking is associated with the generation of negative affect (e.g., Roese, 1997), regardless of how adaptive the thoughts may be. Taking this perspective, our findings suggest that highly socially anxious individuals engage in a cognitive pattern that may frequently provoke negative affect. This negative affect, in turn, may work to exacerbate or maintain social anxiety symptoms for these individuals. Future research could examine this possibility. Finally, the current study importantly builds upon the relatively new area of postevent cognitions in social anxiety (Clark & Wells, 1995). Indeed, while much research has examined how pre-event, anticipatory cognitions lead to social avoidance, little has examined how negative thoughts following an event may similarly facilitate avoidance and increase distress (Rachman et al., 2000). As such, this study, along with those examining PEP specifically, represents a new research direction vital to the further conceptualization of cognitive vulnerability to social anxiety.

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