Social Anxiety and Rumination: Effect on Anticipatory Anxiety, Memory Bias, and Beliefs

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ABSTRACT. Contemporary theoretical models suggest that, after a social situation, socially anxious individuals focus on negative details of their performance and evaluate it more negatively than it actually was (i.e., ruminate). Individuals high (n = 12) and low (n = 16) in social anxiety gave a speech about a controversial topic. Following randomization, they either distracted themselves from the speech or ruminated about it. One week later, participants completed assessments for rumination about the speech, memory bias for speech quality, anticipatory anxiety for a second speech, and beliefs about the self. More rumination was associated with less positive perceptions of the first speech. Additionally, socially anxious individuals maintained a negative memory bias for their speech performance from Week 1 to Week 2. In contrast, individuals low in social anxiety developed a less negative perception of their performance over time.

In their cognitive model, Clark and Wells (1995) described important factors in the maintenance of social anxiety. One factor that has received a great deal of attention in the literature in recent years is rumination. Specifically, Clark and Wells proposed that, after a social situation has ended, socially anxious individuals conduct a postmortem of the event and focus on the negative elements while ignoring the positive elements. This ruminative process makes the event seem more negative than it was. This interaction is then added to the list of past failures that the socially anxious individual has accumulated in memory. The socially anxious individual thinks about this event when encountering similar social situations in the future. In this way, rumination feeds into anticipatory anxiety.

Consistent with Clark and Wells’s (1995) conceptualization of rumination, Rapee and Abbott (2007) found that the more socially anxious clients ruminated during the week after giving a speech, the more negatively they evaluated their performance. Furthermore, their evaluation of their performance relative to the ratings of an objective observer was more negative, suggesting a negative memory bias. The process of rumination seemed to produce a negative memory bias among socially anxious individuals. However, a limitation of Rapee and Abbott’s study is that they did not experimentally manipulate rumination.

Wong and Moulds (2009) experimentally manipulated rumination. They had 93 psychology undergraduates give a 3-min speech. They randomly assigned participants to a rumination or distraction task. Participants with a high fear of negative evaluation (FNE) score who engaged in the rumination task endorsed more negative beliefs about themselves immediately after the task. Participants with a high FNE score who engaged in the distraction task had lower negative beliefs about themselves. A limitation of this study was that Wong and Moulds did not examine whether these negative beliefs persisted over time.

These two studies served as the basis for the current study. We experimentally manipulated rumination and determined the effects of rumination...
a week later, thus addressing limitations of Rapee and Abott (2007) and Wong and Moulds (2009).

The current study examined the following hypotheses: (a) high FNE individuals who ruminated would have a more negative memory of their speech a week later than high FNE individuals who distracted themselves; (b) more rumination after a speech would be related to a more negative perception of performance one week later; (c) high FNE individuals who ruminated would have more negative beliefs about the self both immediately after the speech and one week later, relative to individuals with low FNE and individuals with high FNE who distracted; and (d) high FNE individuals who ruminated would be more anxious about their next performance relative to the other groups.

Method

Participants

Forty-four college students (24 women and 20 men) with an average age of 21.9 (SD = 6.0) participated for course credit. Regarding race, 77% identified as Caucasian (n = 34), 7% identified as Latino/Latina (n = 3), 5% identified as mixed heritage (n = 2), and 11% were other ethnicities (n = 5). Participants who scored greater than 19 on the Fear of Negative Evaluation (FNE; Watson & Friend, 1969) scale met the classification for having high social anxiety (n = 12), and participants who scored less than 11 met the classification for having low social anxiety (n = 16; Wong & Moulds, 2009). We excluded participants meeting neither cut-off score (n = 16). Within the high social anxiety group, 6 participants completed the distraction condition and 6 participants completed the rumination condition. Within the low social anxiety group, 9 completed the distraction condition and 7 completed the rumination condition. Randomization led to the unequal number of participants in each condition in the low social anxiety group.

Materials

We created a demographics survey the current study. Participants indicated their age, gender, and ethnicity.

The Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969) measures distress and concerns related to being judged by others (e.g., “I worry about what people will think of me even when I know it doesn’t make any difference.”). The FNE consists of 30 true/false items. Test-retest reliability over a one-month period for college students ranged from .78 to .94 (Watson & Friend, 1969). The Unconditional Beliefs Subscale (e.g., “People think I’m inferior.”) was of interest in the current study, given that this scale is the most sensitive to rumination (Wong & Moulds, 2009). The 4-item Unconditional Beliefs Subscale has a Cronbach’s α of .82 (Wong & Moulds, 2009). Wong and Moulds found that the SBSA subscales positively correlated with the FNE scale (rs = .56–.67; Watson & Friend, 1969).

The induction task consisted of a rumination task or a distraction task (Nolen-Hoeksema & Morrow, 1993). Each task consisted of 45 items starting with the words “think about.” A sample item for the rumination task was “trying to understand your feelings.” A sample item for the distraction task was “a lone cactus in the desert.” The Speech Performance Questionnaire (SPQ; Rapee & Lim, 1992) is a subjective measure of public speaking performance. The SPQ is rated on a 5-point scale ranging from 0 (never) to 4 (very often) and includes 12 specific performance items (e.g., fidgeted, kept eye contact with audience) and 5 global performance items (e.g., made a good impression, appeared nervous). There are two versions of the SPQ, one that the participant completes and the other that an observer completes. The SPQ has a total score range from 0 to 68, with lower scores indicating a more negative view of the participant’s performance. Internal consistency within the two forms of the SPQ for
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the specific performance items and global performance items ranged from .79 to .86 (Rapee & Lim, 1992). A research assistant viewed a videotape of each speech. Memory bias was calculated as the difference between the participant’s ratings and the experimenter’s ratings.

The Post-Event Rumination Questionnaire (PRQ; Abbott & Rapee, 2004) is a questionnaire that measures how frequently the participants thought about different aspects of their performance during the preceding week. Participants rate items on the PRQ using a 5-point rating scale ranging from 0 (never) to 4 (very often). The PRQ has two scales: Positive Rumination and Negative Rumination. We used only the 14-item Negative Rumination scale (e.g., “I looked stupid”). Higher scores indicate more negative rumination. Previous research indicated strong internal consistency with α of .94 for the Negative Rumination scale (Abbott & Rapee, 2004).

Procedure
Each participant took part in the study individually. Upon arrival at the first session, participants completed a consent form. Participants then completed the FNE, VAS, and SBSA. The experimenters told the participants that they would be talking about their opinions on a controversial topic (i.e., gun control) in front of a camera for 3 min. The experimenter reminded the participants that the quality of their performance would be evaluated. Participants then completed the VAS and SBSA. The experimenter asked the participants to complete the PRQ with regard to how much they thought about their first speech over the previous week. After completing the measures, participants did not actually talk about a controversial topic in front of the camera. Instead, the experimenter debriefed the participant. The experimenter explained the rationale for the study’s methodology, answered any questions, addressed any concerns, asked participants to not share their experiences in the study with other potential participants, and gave all participants information about local resources where they could obtain information about and treatment for social anxiety if they were interested.

Results
Reliability Analyses
The correlation between the version of the SPQ completed by the experimenter (who ran the study and rated the live performance) and the SPQ completed by the research assistant (who rated a videotape of the performance) revealed poor reliability, r(20) = .25, p > .05. The experimenter (M = 59.23, SD = 4.33) gave more positive ratings of performance than the research assistant (M = 51.32, SD = 8.89), t(21) = 4.19, p < .05, d = 1.83. By viewing the live performance, the experimenter may have been better able to pick up on some subtle aspects of the performance such as sweating or face twitching, which might be more difficult to detect on a recording. On the other hand, the experimenter may have formed some (positive) impressions about participants through interactions involved in conducting the study (e.g., administering informed consent) that may have unintentionally biased those ratings. The research assistant, however, had no information about any participant beyond viewing the recording of the performance. Unfortunately, due to an
equipment operation error, the recordings of 1 low social anxiety participant and 5 high social anxiety participants were lost. An argument could be made for either the experimenter or the research assistant providing the most valid data. In subsequent analyses, we used the experimenter’s data because they were the most complete.

**Manipulation Checks**
As expected, after the induction task, participants completing the rumination condition had greater self-focused attention ($M = 6.46, SD = 2.47$) than participants completing the distraction task ($M = 4.00; SD = 2.73$), $t(26) = 2.49, p < .05, d = .97$. Contrary to expectations, the rumination task did not produce significantly more abstract thinking ($M = 5.94, SD = 2.26$) than the distraction task ($M = 4.74; SD = 2.69$), $t(26) = .85, p > .05, d = .33$. Consistent with expectations, anxiety increased from baseline ($M = 3.79; SD = 2.66$) to post speech, ($M = 4.82; SD = 2.76$), $t(27) = 1.84, p < .05, d = .39$.

**Memory Bias**
We used the experimenter’s ratings to calculate the memory bias scores. The difference between the participant and experimenter’s ratings on the SPQ were calculated separately at Time 1 and Time 2. Negative scores indicated that the participants’ perception of the performance was negative in comparison to the experimenter’s perception. A 2 Group (high FNE, low FNE) x 2 Task (rumination, distraction) x 2 Time (Week 1 rating, Week 2 rating) mixed design ANOVA was conducted (see Table 1). Only the Time x Group interaction was significant, $F(1, 24) = 5.63, p < .05$ (see Figure 1).1 Follow-up analyses revealed that low fear of negative evaluation individuals did not differ from high fear of negative evaluation individuals in terms of memory bias at Week 1, $t(26) = .06, p > .05, d = .02$. There was a trend for low fear of negative evaluation individuals to exhibit less negative memory bias at Week 2 relative to high fear of negative evaluation individuals, $t(26) = 1.41, p = .09, d = .55$. Within the low fear of negative evaluation group, negative memory bias significantly decreased from Week 1 to Week 2, $t(15) = 2.67, p < .05, d = .30$. Within the high fear of negative evaluation group, negative memory bias did not significantly change from Week 1 to Week 2, $t(11) = -.96, p > .05, d = .24$.

**Post Event Ruminat**
As hypothesized, more rumination about the first

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**TABLE 1**
Means and Standard Deviations for Memory Bias and Unconditional Negative Beliefs About the Self According to Group, Task, and Time.

<table>
<thead>
<tr>
<th></th>
<th>High Social Anxiety</th>
<th>Low Social Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rumination</td>
<td>Distraction</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td>Time 1 M (SD)</td>
<td>Time 2 M (SD)</td>
</tr>
<tr>
<td>Memory Bias</td>
<td>-21.60 (7.86)</td>
<td>-25.20 (9.36)</td>
</tr>
<tr>
<td></td>
<td>-12.33 (5.54)</td>
<td>-16.50 (7.87)</td>
</tr>
<tr>
<td></td>
<td>-5.22 (2.26)</td>
<td>-9.36 (4.94)</td>
</tr>
<tr>
<td></td>
<td>-20.73 (3.63)</td>
<td>-25.20 (8.00)</td>
</tr>
<tr>
<td>SBSA</td>
<td>15.17 (5.93)</td>
<td>15.67 (5.93)</td>
</tr>
<tr>
<td>Negative Beliefs</td>
<td>4.36 (4.58)</td>
<td>4.53 (4.58)</td>
</tr>
</tbody>
</table>

*Note: SBSA = Self-Beliefs Related to Social Anxiety Scale.*

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**FIGURE 1**
Means for high and low Fear of Negative Evaluation (FNE) groups for memory bias at Weeks 1 and 2.

Footnote:1 We ran the memory bias analyses using the research assistant’s ratings to calculate the memory bias scores. This analysis also produced a significant Time x Group interaction, $F(1, 20) = 4.58, p < .05$. Follow-up analyses revealed that low fear of negative evaluation individuals ($M = -9.36, SD = 12.39$) showed significantly less memory bias at Week 1 relative to high fear of negative evaluation individuals ($M = -18.82, SD = 7.73$, $t(20) = 2.15, p < .05, d = .41$). Low fear of negative evaluation individuals ($M = -4.36, SD = 11.77$) continued to exhibit less negative memory bias at Week 2 relative to high fear of negative evaluation individuals ($M = -20.73, SD = 10.75$, $t(20) = 3.41, p < .05, d = .45$). Within the low fear of negative evaluation group, negative memory bias significantly decreased from Week 1 ($M = -9.36, SD = 12.39$) to Week 2 ($M = -4.36, SD = 11.77$, $t(10) = 2.55, p < .05, d = .78$). Within the high fear of negative evaluation group, negative memory bias did not significantly change from Week 1 ($M = -18.82, SD = 7.73$) to Week 2 ($M = -20.73, SD = 10.75$, $t(10) = .84, p > .05, d = .27$). Moreover, the pattern of differences among the groups was the same whether we used the experimenter’s or research assistant’s data. The experimenter’s data appear to provide a more conservative test of the hypotheses, as fewer of the differences among means were statistically significant according to follow-up tests.
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TABLE 2
Means and Standard Deviations for Post-Event Rumination and Anticipatory Anxiety Prior to the Second Speech According to Group and Task.

<table>
<thead>
<tr>
<th></th>
<th>High Social Anxiety Participants</th>
<th>Low Social Anxiety Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rumination</td>
<td>Distraction</td>
</tr>
<tr>
<td>Post-Event Rumination</td>
<td>25.17</td>
<td>23.50</td>
</tr>
<tr>
<td></td>
<td>(7.99)</td>
<td>(8.50)</td>
</tr>
<tr>
<td>VAS Anticipatory Anxiety prior to the second speech</td>
<td>3.00</td>
<td>4.00</td>
</tr>
<tr>
<td></td>
<td>(2.37)</td>
<td>(1.67)</td>
</tr>
</tbody>
</table>

Note. VAS = Visual Analogue Scale.

speech, as measured by the PRQ, was negatively correlated with mental representation of speech performance, as measured by the SPQ. \( r(26) = -.44, p < .05 \). Individuals high in fear of negative evaluation \( (M = 24.3, SD = 7.9) \) reported more rumination over the course of the week than individuals low in fear of negative evaluation \( (M = 16.1, SD = 11.4) \). \( r(26) = -2.16, p < .05 \) (one-tailed), \( d = 1.02 \) (see Table 2).

Unconditional Beliefs
A 2 (Group: high FNE, low FNE) x 2 (Task: Rumination, Distraction) x 4 (Time: baseline, post speech, post induction, one week follow-up) ANOVA (with repeated measures on the third factor) was conducted with regard to SBSA unconditional negative beliefs about the self. No significant main effects or interactions emerged (see Table 1).

Anticipatory Anxiety
A 2 (Group: high FNE, low FNE) x 2 (Task: Rumination, Distraction) ANOVA was conducted with regard to anxiety in anticipation of giving a second speech. No significant main effects or interactions emerged (see Table 2).

Discussion
Contrary to expectations, high fear of negative evaluation individuals who ruminated did not have a more negative memory of their speech a week later than fearful individuals who distracted themselves directly after their speech, relative to the judgments of an observer. Instead, the experimental manipulation did not have any apparent impact on memory bias. In contrast, anxiety status did impact memory bias. Consistent with Clark and Wells’s (1995) model, individuals high in fear of negative evaluation maintained a negative perception of their performance as measured by memory bias over a 1-week period. In contrast, individuals low in fear of negative evaluation became more positive about their performance over time. It is possible that the short-term task of ruminating or distracting immediately after the speech was not a powerful enough intervention to impact perception of performance over time. Instead, nonanxious individuals may naturally ruminate less, which would lead to a less negative perception of performance over time. In contrast, socially anxious individuals may naturally ruminate more, which leads to maintenance of an originally negative perception. The evidence gathered for the second hypothesis supports this interpretation. Specifically, individuals who ruminated the most during the week had the most negative perceptions of their speech one week later, and socially anxious individuals ruminated more over the course of the week than their nonanxious counterparts. Interestingly, rumination seems to keep a negative perception going, rather than making the perception even worse for socially anxious individuals, which is somewhat different than Clark and Wells’s (1995) proposal. However, consistent with our data, Rapee and Abbot (2007) also found that socially anxious individuals maintained their negative memory bias of their performance over time rather than finding that the bias became even more negative.

We also hypothesized that individuals with a high fear of negative evaluation who ruminated would have more negative beliefs about the self both immediately after the speech and one week later, relative to individuals with low FNE and individuals with high FNE who distracted. However, none of the relevant results were significant; thus, the data did not support the hypothesis. Additionally, more anxiety about the next social performance was expected for high FNE individuals who ruminated relative to the other groups. The expectation for more anxiety about the next social performance was not supported by the results.

The experimental manipulation did not impact the dependent variables in any analysis. The manipulation check revealed that experimental groups did differ in terms of self-focused attention but not abstract thinking (although the effect size for abstract thinking was in the small to medium range). In contrast, Wong and Moulds (2009) found differences on both of these variables as well as unconditional beliefs. It is unclear why the
An experimental manipulation appears to have been weaker in the current study than in the Wong and Moulds study. There were some procedural differences between the two studies, such as having the experimenter stay in the room, informing participants that another researcher would evaluate their speech later, and asking participants to rate the quality of their own speech prior to the experimental manipulation. These procedures were part of the current study and Rapee and Abbott’s (2007) study, but not Wong and Moulds’s study, and may have impacted the results. For example, perhaps focusing on performance quality prior to the manipulation had a powerful effect on self-perception of performance that decreased the effectiveness of the subsequent distraction induction. A stronger experimental manipulation might have yielded more differences between rumination and distraction conditions on the dependent variables. Consequently, the weaker than expected impact of our experimental manipulation is a limitation of the current study.

Another limitation to the current study is inadequate power due to small sample size (N = 28). Low power increases the risk of Type II error. The current study may have failed to detect some true differences between groups and not provided an adequate test of the study hypotheses. Therefore, additional tests of the hypotheses are warranted. Another important limitation was the lack of inter-rater reliability between the experimenter’s and the observer’s ratings of speech performance. One potential explanation for the lack of reliability is that the experimenter made ratings of a live performance and the observer viewed a recording. Additionally, the current study utilized a speech in front of a camera and the experimenter to induce anxiety, similar to the procedures used by Abbott and Rapee (2004). Future research may vary the nature of the social task used to induce anxiety, given that other social situations may prove to be more likely to elicit fear of negative evaluation and subsequent rumination (e.g., conversation, prepared speech to a larger audience).

Clinically, this study has some possible implications. Given that socially anxious individuals view their performance more negatively than others, therapists could help highly socially anxious individuals perceive their performance in those situations more realistically. Additionally, therapists can encourage socially anxious individuals to practice coping techniques such as cognitive restructuring after social situations rather than focusing on negative details (i.e., ruminating).

References

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Kurt Einsel graduated magna cum laude in psychology from the University of Washburn in 2010. This paper was completed as an honors thesis in order to fulfill requirements for the Washburn University psychology program and for Washburn’s Transformational Experience. This data was presented at the annual meeting of the Southwestern Psychological Association San Antonio, Texas, April, 2010 and at the Great Plains Psychology Convention, Missouri Western State University March, 2010. Mr. Einsel is currently a graduate student at the University of Washburn pursuing his Master of Arts Degree in psychology with an emphasis in clinical skills.