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Global and Local Evaluations of Public Speaking Performance in Social Anxiety

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Abstract

Differences in the relative use of global and local information (seeing the forest versus the trees) may explain why people with social anxiety often do not benefit from corrective feedback, even though they pay close attention to details in social situations. In the current study, participants high ($n = 43$) or low ($n = 47$) in social anxiety symptoms gave a series of brief speeches, and then self-rated their speaking performance on items reflecting global and local performance indicators (self assessment) and also received standardized performance feedback from an experimenter. Participants then completed a questionnaire asking how they thought the experimenter would rate their performance based on the feedback provided (experimenter assessment). Participants completed the self and experimenter assessments again after three days, in addition to a measure of post-event processing (repetitive negative thinking) about their speech performance. Results showed that, as hypothesized, the high social anxiety group rated their performance more negatively than the low social anxiety group did. Moreover, the high social anxiety group's ratings of global aspects of their performance became relatively more negative over time, compared to their ratings of local aspects and the low social anxiety group's ratings. As expected, post-event processing mediated the relationship between social anxiety group status and worsening global performance evaluations. These findings point to a pattern of progressively more negative global evaluations over time for persons high in social anxiety.

Keywords

social anxiety; global/local information; post-event processing

Social phobia is a common and debilitating disorder marked by intensively negative self-perceptions regarding social performance (Moscovitch & Hofmann, 2006). Furthermore, a striking aspect of social phobia is the persistence of self-doubt about social performance, despite repeated exposures to social situations that do not go badly (Wells et al., 1995). The current paper examines a cognitive style that may contribute to the maintenance of pathological social anxiety and negative self-perceptions – differences in memory for global versus local levels of information. Global processing focuses on a system as a whole, while local processing focuses on the individual components that make up the system (seeing the forest versus the trees; e.g., Gasper & Clore, 2002). In a social situation (e.g., making small talk with colleagues), global information might include an impression of oneself as socially skilled or a feeling of good “chemistry” within the group. Local information, on the other hand, might involve specific details of the conversation or noticing someone's smile. However, little is known about differences in the relative use of global and local information among people with social anxiety as compared to non-anxious individuals. Someone with

social anxiety may have more difficulty integrating local information into an accurate global impression of their own social performance, which may serve to maintain a (pre-existing) negative self-schema. In the present study, we will examine how individuals high and low in social anxiety symptoms differentially evaluate local and global aspects of their speaking performance, both immediately after giving a speech and after a delay.

Some evidence suggests that socially anxious individuals may be particularly vulnerable to negative distortion in making global evaluations of their performance, although they lack this bias in evaluating specific details. Rapee and Lim (1992) found that individuals with social phobia evaluated their performance more negatively than observers did regarding *global* indicators of good public speaking but generally agreed with observers for *specific* indicators. They asked participants with social phobia and control participants to give a speech and rate their performance on twelve specific items that “were felt to represent individual behaviors or reactions important to good public speaking performance (e.g., kept eye contact with audience, had a clear voice)” as well as five global items that “represented overall evaluations or conglomerates of behaviors and reactions related to public speaking (e.g., kept audience interested, generally spoke well)” (p. 729). Outside observers rated the performances as well. Rapee and Lim found that individuals in both the social phobia and control groups showed a discrepancy by rating themselves more negatively than observers did. However, participants with social phobia had a greater self-observer discrepancy than control participants did when rating the global items, but not the specific items. Even when social phobic individuals were relatively accurate in their perceptions of specific details of their own performance, they seemed to ignore this information when forming an overall impression. Understanding the differences between processing global and local information may be a first step to ultimately elucidating why socially anxious people pay close attention to social details when anxious but then fail to use that information to modify their maladaptive self-concept.

When social phobic participants evaluate their performance, perhaps the negative affect they experience prompts them to engage in relatively more bottom-up, item-specific processing, leading to a focus on social details. The affect-as-information framework suggests that affective cues that are perceived as task-relevant influence whether one engages in top-down or bottom-up styles of cognitive processing (see Clore & Huntsinger, 2007; Schwarz & Clore, 2003; Storbeck & Clore, 2005). According to this theory, negative moods are thought to signal a problematic or threatening situation and therefore lead to systematic bottom-up or local processing in an attempt to identify and correct the source of the threat. In contrast, positive moods act as a signal to proceed with the default processing style, which is more top-down or global and driven by the use of heuristics. The affect-as-information model would lead to the prediction that when social phobic participants are faced with a social stressor (eliciting negative affect), they will have a relatively local focus. This item-specific processing style should in turn increase their accuracy at rating specific public speaking evaluations because they are attending closely to these specific items. Indeed, studies have found that anxious arousal narrows attentional scope (Derryberry & Reed, 1998; Derryberry & Tucker, 1994).

The affect-as-information account is also consistent with results we obtained in an earlier study of memory bias in socially anxious participants (Cody & Teachman, 2010). In this study, we found that participants high in trait levels of social anxiety had more accurate memory for standardized performance feedback (most of which was specific in nature), relative to participants low in social anxiety. These low social anxiety participants were positively biased in their memory for the feedback ratings, suggesting that they relied on a generally positive self-schema in completing the feedback memory task. In contrast, the

high social anxiety group appeared to engage in local, item-specific processing that allowed them to pay more attention to the feedback that was actually presented.

The question remains, though, what causes the distorted global evaluations and maintains the socially anxious schema? Some studies have indicated that local processing may actually impair relational encoding, leading to difficulty seeing “the big picture” (Hege & Dodson, 2004; Hunt & McDaniel, 1993; Yovel, Revelle, & Mineka, 2005). For example, Gasper and Clore (2002) found that negative affect inhibited global focus in studies involving serial reproductions of a schematic drawing and classification of complex geometric figures. Perhaps when socially anxious individuals are in an anxietyprovoking situation, they focus on local information at the expense of engaging in global, relational processing that could potentially modify their negative schemas. If they are later asked to evaluate global aspects of their social performance, they would then rely on a top-down, theory-driven approach that leads them to make judgments in line with their previously established negative schema (also, see accessibility model of emotional self-report, which makes a similar prediction; Robinson & Clore, 2002). We tested this proposition in the current study by asking individuals high and low in social anxiety symptoms to evaluate both local and global aspects of their speaking performance, immediately after giving a speech and again after a three-day delay.

This delay was included because global impressions of socially anxious individuals’ performance may become further distorted when they engage in biased processing *after* the social event. According to Clark and Wells (1995), post-event processing is a ruminative analysis of one’s perceived failures following a social interaction or performance. Post-event processing involves rehearsal and elaboration of feelings of social failure (Rachman, Grüter-Andrew, & Shafran, 2000) and seems likely to maintain and strengthen negative global impressions. In fact, some studies have shown that post-event processing is associated with worsening self-appraisals of performance in participants with social anxiety or phobia (Abbott & Rapee, 2004; Dannahy & Stopa, 2007; see also Perini, Abbott, & Rapee, 2006).

Further, there is growing evidence suggesting that the relationship between social anxiety and negative self-perceptions might also be related to and possibly mediated by post-event processing. For example, socially anxious individuals are more likely to retrieve negative memories of their social performance following naturally occurring post-event processing (see Edwards, Rapee, & Franklin, 2003; Mellings & Alden, 2000), which could contribute to the production and maintenance of negatively biased global evaluations. Supporting this idea, Field and Morgan (2004) found that experimentally induced post-event processing was associated with the retrieval of negative and shameful autobiographical memories for participants high in social anxiety. Additionally, Cody and Teachman (2010) found that self-reported post-event processing predicted memory biases for negative performance feedback after a delay of two days. Importantly, it also mediated the relationship between social anxiety symptoms and negatively biased recognition memory for the performance feedback. The repeated activation of negative memories through post-event processing may help explain how negative information is retained and reinforced over time, even while more positive information is forgotten, in socially anxious individuals.

Specifically, we expect post-event processing to be especially detrimental for some types of performance evaluations, but not others. Post-event processing may be especially harmful for memories of global evaluations, since post-event processing is thought to involve repeated activation of the overall social anxiety schema and has been shown to maintain general maladaptive beliefs about the self (Wong & Moulds, 2009). Local evaluations, in contrast, may be encoded more accurately due to attentional focusing and be less subject to distortion over time. To test these hypotheses, post-event processing will be examined as a

predictor of change over time in performance evaluations in separate regressions for global versus local evaluations. Social anxiety will also be tested as a predictor of change in these performance evaluations over time. If significant prediction exists, post-event processing will then be tested as a mediator of the relationship, because it may be a mechanism by which social anxiety leads to lasting negative global evaluations.

To investigate the hypothesized differences between processing local and global levels of information in social anxiety, we tested evaluations of different types of information about one's social performance. We aimed to extend prior research by systematically examining a number of features that may influence the relative use of global and local levels of information. First, to examine the role of valence, ratings of an equal number of positive and negative, specific and global performance indicators were included. Second, to examine the impact of different evaluators (self versus others), we assessed how participants formed impressions based on standardized performance feedback provided by the experimenter, in addition to how the participants thought they actually performed. Third, to test the role of time, both immediate and delayed memories for these evaluations were evaluated in order to examine the effects of post-event processing. Participants high or low in social anxiety symptoms gave a series of brief impromptu speeches and rated specific behaviors and global impressions of their performance. In addition, they received standardized performance feedback consisting of specific details (local information) from an experimenter and were asked to rate how they thought they appeared to the experimenter (for both specific and global items), based on the feedback they received. Participants completed both self and experimenter ratings immediately after the speeches and after three days.

We expected that individuals high in social anxiety would rate themselves as having performed worse than those low in social anxiety. Furthermore, we expected individuals high in social anxiety to rate themselves as having performed worse in global aspects of their speaking performance than in local aspects. When making ratings based on the experimenter's feedback, we expected that participants high in social anxiety would remember local items more accurately at the initial visit, compared to those low in social anxiety, who were expected to show a positive bias (i.e., remember the specific performance feedback as being more positive than it actually was), similar to the results of our earlier study (Cody & Teachman, 2010). At the same time, participants high in social anxiety were expected to rate global items more negatively than local items when rating how they appeared to the experimenter. Finally, we predicted that for participants high in social anxiety, global ratings would worsen when measured after a three-day delay, and that this decrement would be mediated by levels of post-event processing.

Method

Participants

A total of 48 high social anxiety (High SA) participants and 49 low social anxiety (Low SA) participants completed the study in exchange for course credit or payment. All participants completed a set of pre-selection measures, including the *Social Interaction Anxiety Scale* and the public speaking item from the *Social Phobia Scale*, which reads, "I get tense when I speak in front of other people" (SIAS and SPS; Mattick & Clarke, 1998). Those who scored less than or equal to three-quarters of a standard deviation below the community mean on the SIAS (9 or under) and who rated the public speaking item as 0 (*not at all*), 1 (*slightly*), or 2 (*moderately*) were eligible for the Low SA group. Those who scored greater than or equal to three-quarters of a standard deviation above the community mean on the SIAS (29 or over) and rated the public speaking item as 3 (*very*) or 4 (*extremely*) were eligible for the High SA group. The mean SIAS score for the High SA group (42.73) was close to the mean

reported for a social phobic sample (49.0; Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992), suggesting that this recruitment strategy provided a suitable analogue sample.

Two participants in the High SA group were excluded from analyses because they declined to have their data used after they were informed that the study used deception. Another High SA participant was excluded due to prior knowledge of the study's intent, including its use of false feedback. During the funnel debriefing, four participants (two in the High SA group and two in the Low SA group) reported suspicion of the feedback without being prompted and were also excluded from the analyses. A total of 43 High SA participants (28 female) and 47 Low SA participants (28 female) were used in the final sample. The mean age of participants was 18.46 years ($SD = 1.00$, range = 17 to 22), and the number of participants identifying with each racial or ethnic group was as follows: 58 White, 10 Asian, 8 Black, 4 Hispanic, 1 Middle Eastern, 1 Native Hawaiian, 7 multiple ethnicities, and 1 declined to respond.

Speech Task

Participants were told that the study was being conducted in collaboration with the university's marketing department and that the purpose of the study was to find out what qualities of four university programs appealed to "typical" students. Participants gave a series of brief impromptu speeches in which they were told to promote each of the programs. During two of the speeches, the experimenter stood in front of the participant and pretended to rate their performance on a checklist. All speeches were videotaped in order to further heighten anxiety (see Dickerson & Kemeny, 2004).

Materials

After each speech, participants rated their perception of their performance on a form consisting of six global and six local items. This *Modified Perception of Speech Performance* (MPSP) questionnaire was adapted from the measure used in the Rapee and Lim study (1992). We modified the form so that it consisted of an equal number of global and local items, with an equal number of positive and negative items in each category. Positive and negative items were matched on degree of valence (*not at all* to *very much*) and specificity (*very global* to *very specific*) based on pilot testing ($N = 14$), as well as on Kučera-Francis (1967) word frequency ratings for the key word within each item (using the norms reported in the MRC Psycholinguistic Database; http://www.psy.uwa.edu.au/MRCDatabase/uwa_mrc.htm; Wilson, 1988). Similarly, global and local items were matched on valence (*very positive* to *very negative*) and degree of specificity (*not at all* to *very much*) based on piloting, as well as Kučera-Francis word frequency. A random number generator was used to create the order the 12 items would appear in on the final form. (See Appendix for the rating form.)

Following completion of all four speeches (and all four MPSP forms), the experimenter presented participants with feedback on their speaking performance for the speeches that had supposedly been evaluated¹. In reality, the feedback was standardized. The feedback was presented orally and contained only specific details (consisting of equal numbers of positive and negative details). These specific details were designed to match the local items on the MPSP and to correspond with a particular rating on the scale (e.g., "You had a moderate number of long pauses" would mean that the item "had long pauses" should

¹These speeches were initially designed for another study manipulating level of self-focus (the participant spoke in front of a mirror or in front of a poster depicting the program being promoted) and evaluation (the participant was either told that the experimenter would be evaluating their performance or would be preparing for the next task and not be paying attention to the speech). For the study presented here, we collapsed MPSP ratings across all four conditions for each participant because they did not differ on the variables of interest and because a manipulation check indicated that the self-focus manipulation was unsuccessful.

receive a rating of 2 or *moderately*). The order of these items was determined using a random number generator, and the ratings assigned were the equivalent of a neutral to positive evaluation of speaking performance. In addition, the feedback script contained two places for the experimenter to insert a non-valenced detail from the participant's speech (e.g., "I thought it was notable when you said that the program allowed students to spend more time with professors"), in order to increase the believability of the deception. Participants were not given any direct feedback on the MPSP global items. The following is a portion of the feedback provided: "You kept eye contact with me much of the time. You fidgeted slightly, but your voice didn't quiver at all. Your choice to talk about (*insert detail from speech*) was an important one." After receiving the feedback, participants were asked to complete the *Experimenter's Perception of Speech Performance* (EPSP) questionnaire, which was the MPSP modified to ask how participants thought the *experimenter* would rate their performance based on the oral feedback the experimenter had provided.

Finally, participants completed the *Brief Fear of Negative Evaluation* scale (BFNE; Leary, 1983) and the *Social Phobia Scale* (SPS; Mattick & Clarke, 1998) to validate the classification into high and low social anxiety groups. The BFNE is a 12-item measure that assesses concerns about being evaluated negatively by others, and the SPS is a 20-item scale that assesses social anxiety in a variety of performance situations.

For the three-day follow-up ratings, participants were e-mailed a link to an online version of the EPSP and the MPSP. To determine how much they engaged in post-event processing related to their speech performance, participants were also asked to complete an online version of the *Post-Event Processing Questionnaire* (PEPQ; Rachman, Grüter-Andrew, & Shafran, 2000). The PEPQ is a 13-item scale measuring post-event processing following a specific social situation. Specifically, the PEPQ measures the frequency and intrusiveness of repetitive negative thoughts (rumination) and images related to one's social performance. In the current study, the scale was modified to instruct participants to think back to the speeches that they gave. Modifications to scoring were made by eliminating the three items that Rachman et al. found did not load on the one factor that accounted for the largest amount of the variance. Following the recommendations of McEvoy and Kingsep (2006), the item assessing anxiety experienced during the social event was also removed as a potential confound with the state social anxiety construct. Thus, a 9-item version of the PEPQ was used in the following analyses.

Procedure

Experimenters were blind to participants' social anxiety group status based on the pre-selection SIAS scores. After the marketing cover story was described and participants signed informed consent, participants gave four 1-minute speeches. After each speech, participants evaluated their performance on the MPSP. Following all of the speeches, the experimenter recited the feedback script containing standardized information about the six specific details mentioned on the rating form. Next, participants were given a blank EPSP rating form and asked to complete it according to how they believed the experimenter would evaluate their speeches, based on the feedback that had been provided. Participants then left the lab and, after three days, were e-mailed a link to a website to complete the EPSP, MPSP, and PEPQ (in that order). Finally, participants were debriefed about the study over the telephone.

Results

Sample Characteristics

As determined by pre-selection, social anxiety groups differed on SIAS scores; High SA: $M = 42.73$, $SD = 11.08$; Low SA: $M = 6.82$, $SD = 2.27$; $t(88) = 21.73$, $p < .001$, $d = 4.63$. As

expected, the High SA group also reported more fear of negative evaluation on the BFNE ($M = 41.42$, $SD = 9.52$) than the Low SA group ($M = 30.05$, $SD = 8.64$), $t(88) = 5.94$, $p < .001$, $d = 1.27$. In addition, the High SA group reported more social performance anxiety on the SPS ($M = 26.35$, $SD = 12.58$) than the Low SA group ($M = 8.63$, $SD = 6.30$), $t(88) = 8.56$, $p < .001$, $d = 1.82$. There were no significant social anxiety group differences in age, $t(88) = 1.58$, $p = .117$, $d = 0.34$; gender, $\chi^2(1, N = 90) = .29$, $p = .588$; or race (comparing White to all other categories due to the small number of non-White participants), $\chi^2(1, N = 90) = .10$, $p = .754$.

Manipulation Check: Speech Task as a Social Stressor

A 2 (assessment: baseline, post-speech) $\times$ 2 (SA group: High SA, Low SA) repeated measures ANOVA was completed to assess whether the speech task was an effective social stressor. As expected, the speeches increased reported anxiety levels on a 0–100 scale (where 0 is *not at all anxious* and 100 is *extremely anxious*) relative to baseline, $F(1, 88) = 76.38$, $p < .001$, $\eta_p^2 = .47$. In addition, there was a main effect for group, such that the High SA group experienced greater state anxiety than the Low SA group did during this task, $F(1, 88) = 20.78$, $p < .001$, $\eta_p^2 = .19$. There was no assessment $\times$ SA group interaction, $F(1, 88) = 0.24$, $p = .626$, $\eta_p^2 = .003$, suggesting that the public speaking task increased state anxiety for both groups in a similar manner.

Perceptions of Speech Performance

Participants' perceptions of their own performance (as reported on the MPSP) and their perceptions of the experimenter's evaluations (as reported on the EPSP) were compared at Time 1 (in session) and Time 2 (via e-mail, three days later) using a 5-way 2 (evaluator: self, experimenter) $\times$ 2 (time: Time 1, Time 2) $\times$ 2 (level: global, local) $\times$ 2 (valence: positive, negative) $\times$ 2 (social anxiety group: High SA, Low SA) repeated measures ANOVA. For both the MPSP and EPSP, negative items were reverse-scored, so that higher scores indicated better public speaking performance. Due to the large number of factors and the primary interest in social anxiety group differences, only significant main effects and interactions involving social anxiety group are reported.

Note that interactions involving the evaluator variable (self versus experimenter) and level (global versus local) should be interpreted in light of the different contexts underlying their administration. On the EPSP, participants' perceptions of the experimenter's evaluations can be based on participants' memory for the local feedback that was provided by the experimenter, whereas no direct global feedback was provided. Therefore, EPSP local ratings likely reflect memory for the experimenter's actual feedback, at least in part, while EPSP global ratings reflect judgments that do not follow from actual global feedback. MPSP ratings, on the other hand, are not supposed to be based on direct feedback and instead reflect participants' judgments of how they actually performed, regarding both local and global levels of evaluation. Despite the different cognitive processes underlying these measures (i.e., relative balance of judgment and memory determining the ratings), we believe that examining perceptions of self and experimenter evaluations in the same analysis enhances external validity, because real feedback is often incomplete, and people form impressions of their social performance based on a conflation of memory and judgment. Also, analyzing the self (MPSP) and experimenter (EPSP) ratings in the same ANOVA allows for comparison of the two different sources of evaluation. Throughout the results and discussion, MPSP and EPSP ratings will be referred to as "self" and "experimenter" ratings, respectively; however, keep in mind that all ratings are participants' own perceptions of how their performance was seen (either by themselves or by the experimenter).

The 2 (evaluator: self, experimenter) $\times$ 2 (time: Time 1, Time 2) $\times$ 2 (level: global, local) $\times$ 2 (valence: positive, negative) $\times$ 2 (social anxiety group: High SA, Low SA) repeated measures ANOVA was conducted with mean item rating on the MPSP or EPSP as the dependent variable. As hypothesized, there was a main effect for social anxiety group, such that participants in the High SA group rated their performance more negatively than participants in the Low SA group did, $F(1, 86) = 44.46, p < .001, \eta_p^2 = .34$. There was also a main effect for time, such that the ratings were more negative at Time 2 than they had been at Time 1, $F(1, 86) = 320.65, p < .001, \eta_p^2 = .79$. More importantly, the hypothesized 3-way time $\times$ level $\times$ SA group interaction was obtained, $F(1, 86) = 11.01, p = .001, \eta_p^2 = .11$. Additionally, there was a 4-way evaluator $\times$ time $\times$ valence $\times$ SA group interaction, $F(1, 86) = 86.29, p < .001, \eta_p^2 = .50$. (Note that a 2-way evaluator $\times$ SA group interaction and a 3-way evaluator $\times$ valence $\times$ SA group interaction were also significant but were subsumed within the 3- and 4-way interactions.)

3-way time $\times$ level $\times$ SA group interaction—To more directly examine change in perceptions over time and better understand the source of the 3-way interaction, change scores were computed by subtracting global and local scores at Time 1 from global and local scores at Time 2, respectively. A level $\times$ SA group repeated measures ANOVA was conducted using these change scores as the dependent variable. Results revealed a main effect for level, $F(1, 87) = 9.88, p = .002, \eta_p^2 = .10$, indicating that global ratings showed a greater increase in negativity over time than local ratings. Additionally, there was a level $\times$ SA group interaction, $F(1, 87) = 11.70, p = .001, \eta_p^2 = .12$. Follow-up paired samples *t*-tests demonstrated that the difference between global and local change slopes was significant for the High SA group, such that the global slope showed a steeper increase in negativity than the local slope, $t(41) = 4.01, p < .001, d = 0.62$; but not for the Low SA group, $t(46) = 0.23, p = .818, d = 0.03$. Independent samples *t*-tests also showed that the difference between social anxiety groups was significant for global change scores, such that the change slope for the High SA group showed a steeper increase in negativity than the slope for the Low SA group, $t(87) = 3.03, p = .003, d = 0.65$; but not for local change scores, $t(87) = 1.25, p = .214, d = 0.27$. See Figure 1. Overall, these findings suggest that High SA participants' ratings of global information became negative more steeply over time, compared to Low SA participants' global ratings and compared to both groups' ratings of local information. Consistent with hypotheses, global information seems particularly vulnerable to negative distortion by individuals high in social anxiety.

4-way evaluator $\times$ time $\times$ valence $\times$ SA group interaction—Next, we investigated the 4-way evaluator $\times$ time $\times$ valence $\times$ SA group interaction by comparing ratings at Time 1 and Time 2 for each of the four different types of information (MPSP positive, MPSP negative, EPSP positive, and EPSP negative) in both social anxiety groups. For both High SA and Low SA participants and for both positive and negative items, participants' ratings of how they thought the experimenter perceived them (EPSP) became more negative over time (all $p < .001$). See Figure 2. In contrast, participants' ratings of how they thought they actually performed (MPSP) consistently became more positive over time ($p < .05$) for Low SA participants for their positive and negative items and for High SA participants for their positive items (but not their negative items). When rating how they actually performed on the MPSP, participants high in social anxiety did not show an improvement in their perceptions of negative performance indicators, $t(41) = 0.67, p = .508, d = 0.10$. See Figure 3. In general, regardless of social anxiety or valence of performance indicator, participants' ratings of experimenter perceptions become more negative over time. In contrast, participants' ratings of their actual performance become more positive over time, perhaps reflecting a protective positivity bias (in that it leads to more positive self-evaluations).

However, individuals high in social anxiety symptoms seem to lack this protective or self-enhancing bias when thinking about negative items that reflect poor social performance.

Mediation by Post-Event Processing

To examine whether post-event processing would be a mechanism by which global evaluations become more negative over time for participants high in social anxiety, we collapsed ratings within each level and conducted mediation analyses for global and local information separately (i.e., MPSP and EPSP ratings for positive and negative items were combined). In general, social anxiety (using a dummy-coded group variable) was expected to be related to worsening performance evaluations, such that for socially anxious participants, performance evaluations would become negative more steeply over time. Moreover, we expected that post-event processing (measured using self-report on the PEPQ) would be an independent predictor and mediator of change over time in global (but not local) performance evaluations.

As hypothesized, social anxiety group status significantly predicted negative change in global item ratings over time (using the Time 2 – Time 1 change scores), $\beta = -.31, p = .003$. Social anxiety group status also significantly predicted post-event processing ($\beta = .39, p < .001$), which in turn significantly predicted negative change in global item ratings when controlling for social anxiety group status ($\beta = -.32, p = .003$). When controlling for post-event processing, the standardized regression coefficient between social anxiety symptoms and global item change decreased substantially and was no longer significant at the $p = .05$ level ($\beta = -.18, p = .086$). Finally, Sobel's test statistic of 2.81 ($p = .005$) indicated that, as hypothesized, post-event processing was a full mediator of the relationship between social anxiety group status and negative change in global performance ratings.

The mediation analyses for local ratings revealed that social anxiety group status did not predict change in local item ratings over time ($\beta = .13, p = .214$). Post-event processing also did not predict change in local item ratings over time, either alone ($\beta = .03, p = .774$) or when controlling for social anxiety ($\beta = -.03, p = .830$). Thus, the mediation tests support the hypothesis that post-event processing would mediate the relationship between social anxiety and negative change in global, but not local, performance evaluations.

Discussion

This study was conducted to examine global and local evaluations of public speaking performance in socially anxious and non-anxious individuals and to investigate how these evaluations change over time. Consistent with much previous research and our hypotheses, socially anxious individuals generally rated themselves as having performed worse on a public speaking task than non-anxious individuals did. Further, although the high social anxiety group did not rate their global speaking performance as worse than their local performance initially, this pattern changed over time. Specifically, even though evaluations generally worsened over time, the high social anxiety group's ratings of their global performance were affected more than their ratings of local behaviors and more than the low social anxiety group's ratings of either global or local performance. Interestingly, the results showed opposite main effects of time for self versus perceived experimenter ratings. For all participants, experimenter evaluations (ratings of how participants thought they appeared to the experimenter) became more negative over time; however, self evaluations (ratings of how participants thought they actually appeared) generally became more positive. A notable exception was that for individuals high in social anxiety, their self evaluations of negative items did not improve over time. Finally, social anxiety group status generally predicted worsening of performance evaluations after the three-day delay, and as expected, post-event

processing fully mediated the relationship between social anxiety and worsening of global, but not local, evaluations.

Global Information More Vulnerable to Distortion over Time in High Social Anxiety Group

Based on prior research demonstrating negative self-evaluative biases in social anxiety (e.g., Norton & Hope, 2001; Rapee & Lim, 1992), we expected that individuals high in social anxiety would rate their performance on a public speaking task more negatively than individuals low in social anxiety. The findings from the current study supported this hypothesis, even for items which were based on standardized feedback. Importantly, the social anxiety groups differed in how they rated global compared to local items over time. Although the high social anxiety group did not rate global items more negatively than local items initially, their evaluations of these items became more negative than their evaluations of local items did over time. The low social anxiety group did not show this relative change in global versus local items over time and instead consistently rated global items more positively than local items. If global items are more likely than local items to tap into semantic knowledge or schema-consistent processing, perhaps this finding suggests that people low in social anxiety symptoms have a fairly positive self-schema, which is reflected in relatively positive global evaluations. In terms of the global-local difference for low anxiety participants, the local items may have been rated more negatively than global items because the local ratings were determined by accessing specific episodic memories that were less positive than their global self-schema.

Overall, the interaction found between social anxiety group, time, and local versus global level of evaluation demonstrated that the pattern of change for each type of item differed across social anxiety groups. While performance evaluations generally became more negative, global information was particularly vulnerable to negative distortion from the high social anxiety group. This suggests that not only do individuals high in social anxiety believe themselves to have performed more poorly than those low in social anxiety on a public speaking task, but also that their global impressions of themselves continue to worsen at a quicker rate than their evaluations of specific local behaviors. A dissociation between more neutral local evaluations and increasing negative distortion in global evaluations might contribute to the enduring nature of the negative schema for people with social anxiety. Despite receiving social feedback that would assure an individual without social anxiety that he or she had performed adequately, the socially anxious person leaves a performance or interaction with a lingering sense of global social failure. Over time, these global self-evaluations are reinforced through post-event processing and become even more negative, strengthen the social anxiety schema, and then may bias future information processing.

Beliefs about an Observer's Impressions Deteriorate; Self Evaluations Improve

An unanticipated but interesting finding from these results was that although self ratings of performance generally improved over time, ratings of how participants thought they appeared to the experimenter got worse. Beliefs about how one appeared to others may be particularly vulnerable to distortion over time, relative to beliefs about how one actually performed. This is because post-event processing, which was done to some degree by all participants, is thought to involve activation of negative images of the self as seen from an observer perspective (as one would appear to an audience; Coles, Turk, Heimberg, & Fresco, 2001; McEvoy & Kingsep, 2006). When specifically asked about how they thought the experimenter was evaluating them, participants may have accessed this negative observer perspective representation more readily than when they were asked how they actually performed. It may have also become more negative over time due to forgetting the verbatim details of the generally positive feedback that the experimenter had provided during the session. Conversely, the few negative details in the experimenter's feedback may

have been especially distinctive and memorable because people rarely receive explicit negative social feedback in everyday life. These details may have been retained due to their novelty, while the positive details were forgotten over time.

Self-evaluations, on the other hand, seemed to improve after the anxiety of the moment (experienced during the speeches in this study by both social anxiety groups) had subsided. An important exception to this finding is that self-ratings of negatively valenced items did not change for participants in the high social anxiety group. Socially anxious participants may have focused on the mere presence of negative content in these items as triggers for their negative schema. The finding in psychometrics that participants often do not treat negation of a negative statement in the same way as endorsement of a positive statement (Rodebaugh, Woods, & Heimberg, 2007; Spector, Van Katwyk, Brannick, & Chen, 1997) suggests that valence of information is an important, albeit often neglected, characteristic of stimuli to consider. In the current experiment, a seemingly protective tendency to evaluate oneself more positively over time was absent when socially anxious participants were asked to consider negative stimuli, perhaps leading social anxiety to interact with item valence and time in a detrimental way for these participants.

These group differences in ratings based on the self versus the experimenter as the evaluator may result in a “double whammy” for individuals with social anxiety when they consider negative aspects of their performance. Not only do they lack the positive bias that occurs when non-anxious people evaluate negative aspects of their own performance over time, but they experience more post-event processing that exaggerates memories of poor performance when focusing on how they appeared to observers.

Social Anxiety Status and Post-Event Processing as Predictors of Change in Evaluations over Time

Regression analyses revealed that, as hypothesized, being in the high social anxiety group predicted more negative change in global evaluations over time. Furthermore, post-event processing fully mediated the relationship between social anxiety status and change in global ratings over time. This finding suggests that post-event processing may be an important mechanism by which social anxiety leads to worsening self-perceptions. Such negative impressions may be particularly harmful to socially anxious individuals because they discourage them from engaging in future social interactions that have the potential to challenge beliefs about negative evaluation from others.

Notably, post-event processing mediated changes in global but not local evaluations over time. Perhaps global evaluations are more vulnerable than local to the self-critical nature of the post-event processing done by socially anxious individuals. Recent research in depression indicates that self-focused rumination can occur within two modes of processing, analytical (focused on evaluation) versus experiential (focused on observation), and that analytical processing in particular leads to the maintenance of negative global self-judgments (Vassilopoulos & Watkins, 2009; Watkins & Teasdale, 2004). We speculate that processing of negative global information during post-event processing is analogous to analytical self-focus in that it, too, can lead to negative over-generalizations about one's social performance (see also Vassilopoulos & Watkins). In contrast, processing of local information may be more detail-oriented and objective, analogous to the experiential mode of self-focus, and less likely to maintain negative over-generalizations. An intriguing possibility is that mindfulness interventions designed to increase experiential self-focus may be effective in halting the negative change in global evaluations that our high social anxiety participants showed over time.

Limitations and Future Directions

The current research should be interpreted in light of some important limitations. Specifically, comparison of the different types of public speaking evaluations was difficult because of the disparate sources of information that participants may have been using. For example, self evaluations were presumably based on how the participant thought he or she actually performed and were measured after each of the four speeches. Perceived experimenter evaluations, in contrast, were supposed to be based on the standardized feedback that the experimenter had provided after all speeches had been completed. This feedback was composed of local items only, because we wanted to see whether social anxiety groups differed in generalizing from local to global evaluations. However, this design limited our ability to draw direct comparisons between local perceived experimenter evaluations, global perceived experimenter evaluations, and both local and global self evaluations.

Also, our ability to detect differences in rates of change over time was limited. Future research should investigate rates of change by measuring at multiple assessment points over a longer period of time. This strategy would allow for detection of more subtle social anxiety group differences in the slope of the change trajectory. Similarly, although our focus was on post-event processing as a mediator, other potential mediators of the relationship between social anxiety and negative performance evaluations should be investigated. For example, use of negative imagery, both immediately and during post-event processing, may play more of a causal role in diminishing performance evaluations than relatively verbal post-event rumination. Furthermore, post-event processing is a multifaceted process composed of analytic self-focus, negative imagery from an observer perspective, depressive rumination, and negative affect. Studies to dismantle this process and identify the components that are particularly harmful to global evaluations will be important in the future.

Finally, the current study used an analogue sample, which raises the question of whether the same effects would be found in a sample diagnosed with social phobia. We predict that the effect of social anxiety on negative change in global evaluations, perceived experimenter evaluations, and negatively valenced items would be even stronger in a diagnosed social phobic group due to more habitual and intense post-event processing. It should also be noted that the high social anxiety group's mean score on the Social Interaction Anxiety Scale was substantially higher than the recommended clinical cut-off score for diagnosing social phobia (Brown et al., 1997), suggesting that some participants may have had the disorder, even though a formal diagnosis was not made.

This study indicates that high (versus low) socially anxious people show disproportionate negative distortion in global evaluations of their social performance. Furthermore, the negative global self-perception of socially anxious individuals may be strengthened by post-event processing over the passage of time. Together, distorted global processing, negative assumptions about an evaluative audience, and high levels of post-event processing after a social event may contribute to the failure of people with social anxiety to correct longstanding negative self-perception biases.

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Appendix

MPSP / EPSP Items and Rating Scale

	Not at all	Slightly	Moderately	Much	Very much
Kept eye contact	0	1	2	3	4
Had long pauses	0	1	2	3	4

	Not at all	Slightly	Moderately	Much	Very much
Voice quivered	0	1	2	3	4
Was a good public speaker	0	1	2	3	4
Used sophisticated vocabulary	0	1	2	3	4
Smiled appropriately	0	1	2	3	4
Generally spoke well	0	1	2	3	4
Made a bad impression	0	1	2	3	4
Was understandable	0	1	2	3	4
Was not convincing	0	1	2	3	4
Fidgeted excessively	0	1	2	3	4
Bored audience	0	1	2	3	4

EPSP Rating Instructions

We would like you to rate yourself **as you appeared to the experimenter** during the speeches for which you were evaluated. For each feature, please circle the appropriate number to indicate how you felt **the experimenter** thought you performed based on the feedback you were given.

Figure 1.
Time×Level×Social Anxiety Group Interaction for Self (MPSP) and Experimenter (EPSP)
Ratings Combined

Note. Scale ranges from 0 (worst possible) to 4 (best possible), so higher numbers indicate better perceived speaking performance. MPSP = Modified Perception of Speech Performance Questionnaire; EPSP = Experimenter's Perception of Speech Performance Questionnaire.

Figure 2. Perceived Experimenter Evaluations (EPSP Scores) by Social Anxiety Group, Time, and Valence

Note. Scale ranges from 0 (worst possible performance) to 4 (best possible performance). Scores reflect the mean of global and local items combined. EPSP = Experimenter's Perception of Speech Performance Questionnaire.

Figure 3.

Self Evaluations (MPSP Scores) by Social Anxiety Group, Time, and Valence

Note. Scale ranges from 0 (worst possible performance) to 4 (best possible performance).

Scores reflect the mean of global and local items combined. MPSP = Modified Perception of Speech Performance Questionnaire.