

# Social anxiety, depressive symptoms, and post-event rumination: Affective consequences and social contextual influences

Todd B. Kashdan<sup>a,\*</sup>, John E. Roberts<sup>b</sup>

<sup>a</sup>Department of Psychology, MS 3F5, George Mason University, Fairfax, VA 22030, United States

<sup>b</sup>University at Buffalo, State University of New York, United States

Received 9 January 2006; received in revised form 17 May 2006; accepted 31 May 2006

---

## Abstract

Using a self-presentation perspective, we hypothesized that during social interactions in which social attractiveness could be easily appraised by others, more socially anxious individuals would be more prone to ruminate and rumination would have more adverse emotional consequences. After assessing social anxiety and depressive symptoms, unacquainted college students participated in 45-min structured social interactions manipulated to induce personal self-disclosure or mimic superficial, small-talk. Affective experiences were assessed immediately after and 24 h after social interactions. Results found that social anxiety was associated with negative post-event rumination more strongly among those with elevated depressive symptoms. Further, at higher levels of social anxiety, post-event rumination was associated with increases in NA following personal disclosure interactions and decreases in NA following small-talk interactions. Individuals with more depressive symptoms experienced increases in NA following small-talk interactions, but not personal disclosure interactions. Contrary to expectation, positive relations between social anxiety and rumination were not mediated by self-presentation concerns during interactions. Fitting with relevant theory, findings implicated symptom and social contextual variables that moderate the affective consequences of rumination. © 2006 Published by Elsevier Ltd.

*Keywords:* Social anxiety; Depressive symptoms; Rumination; Social interaction; Negative affect

---

To be accepted during the formative stages of relationship development, people need to present themselves as socially attractive. Deciding to invest in and accept someone tends to be contingent on whether they have attractive qualities (e.g., social desirability, competence, ability to follow social group norms; Baumeister & Tice, 1990) that outweigh social costs (e.g., devotion

---

\* Corresponding author. Tel.: +1 703 993 9486; fax: +1 703 993 1359.

E-mail address: [tkashdan@gmu.edu](mailto:tkashdan@gmu.edu) (T.B. Kashdan).

URL: <http://mason.gmu.edu/~tkashdan>

of time and energy, perceived value of alternatives). Arguably, situations that amplify concerns about making a desirable impression on others and being unable to achieve goals related to social acceptance increase the probability and intensity of social anxiety (Gilbert, 2001; Leary, 2000). Furthermore, self-presentation concerns and social anxiety can occur in situations without the potential for relationship development (Baumeister & Tice, 1990). For example, the quality of conversation with a stranger at a bus stop may not affect one's actual social status, but their reactions and responses can be a litmus test of one's general potential to be socially valued and accepted.

In this paper, we examined individual differences and social situational factors that may increase the likelihood and intensity of emotional distress and ruminative responses following social interactions. Consistent with our conceptual framework, socially anxious individuals tend to view themselves as socially undesirable, low in social status, and unable to make positive impressions on others (e.g., Alden, 1987; Arkin, 1981; Miller, 1995). They are also hypersensitive to social threat, leading to information-processing biases, including discounting positive social feedback and negatively interpreting ambiguous social feedback (e.g., Leary, Kowalski, & Campbell, 1988; Spurr & Stopa, 2003; Wallace & Alden, 1991, 1997). Thus, socially anxious individuals are *chronically* concerned about the existence of a critically low social status and the potential loss of beneficial relationships and resources, and consequently engage in risk-avoidant behaviors (e.g., such as tendencies to hide feelings and opinions at the expense of creating intimacy with a partner). Costs of this mentality include a preoccupation with impression management, negative subjective experiences, and interference with appetitive behaviors such as reward seeking and exploratory behavior. Moreover, individuals can be expected to ruminate about what might have went wrong in the aftermath of social interactions.

Rumination has been widely studied in the context of depression. According to Nolen-Hoeksema (1991) a ruminative response style is defined as “behaviors and thoughts that focus one's attention on one's depressive symptoms and on the implications of these symptoms” (p. 569), and this style is thought to put individuals at risk for more prolonged and severe periods of depression. Consistent with this model, studies have consistently found that rumination predicts the severity and duration of depressed mood and symptoms. For example, experimental studies have found that individuals assigned to conditions in which they are instructed to ruminate have more prolonged periods of dysphoria compared to conditions involving distraction (Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998; Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema & Morrow, 1993; Nolen-Hoeksema et al. (1993); Trask & Sigmon, 1999). Furthermore, initially nondepressed individuals who report that they typically ruminate in response to dysphoric mood are at risk for future episodes of depressive symptoms (Just & Alloy, 1997; Nolen-Hoeksema, 2000). Likewise among initially symptomatic individuals elevated rumination prospectively predicts the persistence of depressive symptoms (Nolan, Roberts, & Gotlib, 1998). In addition, previously depressed individuals report elevated rumination compared to never depressed individuals, consistent with the idea that rumination is a trait vulnerability to depression (Roberts, Gilboa, & Gotlib, 1998). Furthermore, when combined with negative cognitive style rumination has been found to predict poor treatment response in clinical depression (Ciesla & Roberts, 2002). With few exceptions, the specificity of rumination to depression has not been tested.

Empirical support for the relation between social anxiety and rumination has only recently begun to accumulate (Abott & Rapee, 2004; Edwards, Rapee, & Franklin, 2003; Field & Morgan, 2004; Mellings & Alden, 2000; Rachman, Gruter-Andrew, & Shafran, 2000). In this context, rumination has been defined as repetitive thoughts about subjective experiences during a recent

social interaction, including self-appraisals and external evaluations of partners and other details involving the event. This is different from Nolen-Hoeksema's definition which narrowly focuses on repetitive thoughts about internal (particularly depressive) symptoms. Rather than examining the effects of social anxiety on ruminative processes following actual social interactions, most of these studies used 3-min videotaped impromptu speech tasks, reactions to autobiographical memories, or narrative assessments of prior rumination. In contrast, Mellings and Alden (2000) used a 10-min "getting acquainted" interaction between participants and trained confederates. Results found social anxiety to be uniquely associated with negative rumination the day following interactions after statistically controlling for depressive symptoms.

Working in tandem with socially anxious states, post-event rumination is a self-regulatory mechanism during the course of social activity. In the aftermath of social events, the content of ruminative thoughts is believed to be predominantly based on the social information attended to and processed. Rumination is a potentially adaptive strategy of evaluating whether critical social blunders were made and to what degree acceptance by others was achieved. Focusing attention to threatening aspects of an interaction can disrupt the sequence of events leading from enacted behaviors to possible rejection/exclusion. Post-event rumination allows for a re-assessment of alternative actions and choices that could maximize acceptance in subsequent social interactions (with the same and new partners).

Although rumination may be adaptive in non-anxious individuals, for socially anxious individuals, rumination is proposed to have detrimental intra- and interpersonal consequences. Socially anxious individuals are expected to brood and experience extreme distress following social events, leading to disengagement from other activities, devaluation of the self, and an increased likelihood of avoiding future social encounters (Clark & Wells, 1995; Rapee & Heimberg, 1997). Socially anxious individuals tend to dwell on negative appraisals of their social performance, the experience and visibility of their anxiety, and fears of being rejected. The negatively biased post-event processing of high socially anxious individuals has the potential adverse effects of (1) reinforcing and strengthening negative beliefs about the self (e.g., "I'm inadequate") and others (e.g., "They're unattainable"), (2) interfering with potential disconfirming evidence of perceived social failures and threats, (3) cuing memories of prior negatively valenced social experiences, and (4) increasing anticipatory anxiety for future social interactions and the likelihood of avoidance behaviors.

Based on a self-presentation approach, we proposed that different social contexts would affect the degree to which socially anxious individuals ruminate, and the impact of rumination on negative mood in the aftermath of social interactions. In contrast to brief, unrevealing conversations (i.e., small-talk), revealing information about one's core interests, values, and behavioral tendencies (e.g., intelligence, sense of humor, competence) leads to better opportunities for others to evaluate social attractiveness and make informed decisions about accepting another person. Consequently, socially anxious people were expected to ruminate more and have more adverse affective consequences following personal disclosure compared to superficial interactions.

We sought to replicate and extend work on social anxiety and rumination in several ways. With only one published study (Mellings & Alden, 2000), we were interested in examining social anxiety and rumination in the context of social interactions (and not information-processing laboratory tasks). To increase ecological validity, we had unacquainted strangers interact with one another for 45 min. In the current study, we examined relations between social anxiety and post-interaction rumination, and in turn, the effect of rumination on affective experiences during the 24-h period following interactions. We also examined the influence of different social

contexts on relations between social anxiety, rumination, and post-interaction affect. Using a social interaction task, we manipulated the degree to which participants' were asked to disclose personal information (personal disclosure or small-talk condition). The personal disclosure condition was expected to provide ample opportunity for social attractiveness and status, and potential acceptance to be presented to others and evaluated by them. Prior research has found these two social contexts to lead to different interpersonal (Aron, Melinat, Aron, Vallone, & Bator, 1997; Kashdan & Wenzel, 2005) and affective (Kashdan & Roberts, 2006) outcomes.<sup>1</sup> Finally, based on our conceptual framework, we sought to examine a theoretically relevant causal mechanism for any relations between social anxiety and post-event rumination—self-presentation concerns.

Our primary goal was to understand associations between dispositional social anxiety, post-event rumination, and affective experiences in the aftermath of social interactions. We hypothesized that individuals with greater social anxiety would be more likely to ruminate during the 24-h period following social interactions and that rumination in turn would amplify negative affect during this temporal unfolding (changes from post-interaction to the next day). We hypothesized that social anxiety would be related to more post-event rumination and post-event rumination would be related to greater negative affect in the aftermath of self-disclosure compared to small-talk interactions. We also expected the relation between social anxiety and post-event rumination to be mediated by self-presentation concerns triggered during the interaction.

Finally, the co-occurrence between social anxiety and depressive symptoms on post-event rumination and the affective consequences has been largely ignored. Both social anxiety and depressive symptoms have been linked to ruminative processes (Clark & Wells, 1995; Nolen-Hoeksema, 1991) as well as concerns about social attractiveness and acceptance (Allen & Badcock, 2003; Leary, 2000). Prior work has found that their co-occurrence may account for the most intense and impairing levels of distress and social impairment (Erwin, Heimberg, Juster, & Mindlin, 2002; Ingram, Ramel, Chavira, & Scher, 2001). In an examination of these comorbid conditions on rumination (Nolen-Hoeksema, 2000), the highest levels of rumination were found for individuals with mixed anxiety/depression (at least one standard deviation above the mean on both anxiety and depression measures) compared to depression-only and anxiety-only groups (at least one standard deviation above the mean on one construct but below one on the other). Thus, we not only examined the specificity of rumination effects to social anxiety versus depressive symptoms but the synergistic working of social anxiety and depressive symptoms. Based on prior work, it seemed plausible that individuals with elevated levels of both social anxiety and depressive symptoms would be most prone to repetitively thinking about social interactions.

## 1. Method

### 1.1. Participants

The final sample included 83 college students (42 females; 41 males). Of this sample, 60 (72.3%) described themselves as European American, 9 (10.8%) as Asian American, 7 (8.4%) as

---

<sup>1</sup> The current manuscript focuses on non-overlapping hypotheses with prior work using this dataset (Kashdan & Roberts, 2006; Kashdan & Wenzel, 2005). Prior work focused on trait predictors of changes in affect from pre- to post-interaction (without any attention to depressive symptoms; Kashdan & Roberts, 2006) and interpersonal closeness generated during the interaction (Kashdan & Wenzel, 2005).

African American, 2 (2.4%) as Hispanic American, 3 (3.6%) endorsing other categories, and 2 (2.4%) failed to respond. Participants were randomly selected students from undergraduate psychology classes. Seven participants were excluded because they did not attend the next-day assessment.

## 1.2. Procedure

We received a list of all students required to obtain research credit for their psychology courses. All students completed a screening battery that included the question, “are you currently in a monogamous romantic relationship?” Using a random number generator, we randomly contacted and recruited participants who answered “yes” to reduce the potential confound of romantic interest in interaction partners. This strategy was designed to minimize the likelihood that participants would be motivated primarily to regulate their behavior with romantic/sexual outcomes in mind.

On arrival, participants completed pre-interaction questionnaires and were randomly paired with opposite-sex partners. After completing questionnaires, participants were led into another room with each dyad member sitting across from each other. Participants learned that they were going to take part in a social interaction to try to get to know their partner. To help them get to know each other, a game was arranged for them to share information for 45 min. Each dyad was randomly assigned to a structured personal disclosure and relationship-building condition or a comparison small-talk condition. In the personal disclosure condition, the questions gradually became more personal, providing increasing opportunity for partners to form impressions about the social rank and status of their partner (via observable and verbalized information). In the small-talk condition, the questions were somewhat superficial and never progressed in the amount of personal information necessary to answer them (see Aron et al., 1997 for details).

Both tasks involved three lists of questions. Participants were instructed to begin with the first question of the first list and for each question they took turns answering questions first or second. Every 15 min the experimenter asked dyads to move on to the next list of questions (i.e., to ensure that everyone engaged in each level of intensity in the personal disclosure condition). The task was designed so that no one could finish all of the questions in a given time period, and, the third and final list of task questions in the personal disclosure condition was the most intense. We made sure that each pair of participants completed each question in the final list of questions for two reasons. First, we wanted to ensure everyone received an adequate dose of our experimental manipulation. Second, affective and cognitive appraisals are strongly affected by what occurs in the final moments of a remembered experience (Fredrickson, 2000) and thus, we wanted to reduce the likelihood of awkward gaps of silence at the end of the task. Instead of having everyone complete the task at the same time, when it was apparent that a pair completed the final list, participants were separated and administered the post-interaction assessment (see below).

Examples from the self-disclosure condition were, “What would constitute a perfect day for you” (list 1), “What is your most treasured memory” (list 2) and “Tell your partner something that you like about them already” (list 3). Examples from the small-talk condition were, “If you could invent a new flavor of ice cream, what would it be” (list 1), “What is the best TV show you’ve seen in the last month that your partner hasn’t seen? Tell your partner about it” (list 2), and “What is the last concert you saw? How many of the band’s albums do you own? Had you seen them before? Where?” (list 3). There were 12 questions in each of the three lists.

### 1.2.1. *Post-interaction assessments*

Immediately following interactions partners were physically separated and completed questionnaires according to how they felt and what they did “during the interaction.” Questionnaires included state affect and experimental manipulation check questions. Subsequently, participants were scheduled for assessments 24 h after the interaction. During the next-day assessment, participants were reminded of the prior interaction and completed questionnaires according to how they felt and what they did “during the intervening time period.” Questionnaires included state affect and post-event rumination.

### 1.2.2. *Experimental manipulation check*

The validity of our experiment was addressed with three post-interaction questions. Using a 1–9 Likert scales, respondents assessed to what extent they disclosed information about their innermost self, personally important experiences and events, and feelings about their partner. Greater scores were expected in the personal disclosure compared to the small-talk condition.

## 1.3. *Measures*

### 1.3.1. *Social anxiety*

Using a 0–4 Likert scale, the 19-item social interaction anxiety scale (SIAS; [Mattick & Clarke, 1998](#)) assessed fear and avoidance of social interaction situations (e.g., difficulty initiating and maintaining conversations). The SIAS has excellent reliability (e.g., internal consistency, test–retest  $r = 0.92$  over 12 weeks) and validity (e.g., incremental validity in predicting anxiety during social interaction tasks; [Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992](#); [Mattick & Clarke, 1998](#)), is highly sensitive to clinical interventions, and reliably differentiates individuals with and without social anxiety disorder (e.g., [Brown et al., 1997](#)).

### 1.3.2. *Affect*

State positive and negative affect (PA; NA) were measured with the positive and negative affect schedule (PANAS; [Watson, Clark, & Tellegen, 1988](#)). Using a 5-point Likert scale, 10-item subscales of mood-related adjectives assessed activated-PA (e.g., joy) and NA (e.g., jittery), respectively. These dimensions of affect have been consistently shown to form two independent factors and each subscale has excellent reliability and validity (see [Watson, 2000](#) for review of literature).

### 1.3.3. *Post-event rumination*

The next day after the interaction participants were given a five-item rumination questionnaire (used in [Mellings & Alden, 2000](#)). They were asked to remember the social interaction and report on their thoughts since that time. Using a five-point Likert scale, questions asked how much they thought about the interaction, how negative their thoughts were, how much they criticized themselves for handling the interaction, how much they thought about their anxiety during the interaction, and how much they thought about other past conversations and interactions. This scale has shown acceptable internal consistency ( $\alpha = 0.70$ ) and validity (e.g., stronger correlations with negative self-evaluative biases compared to measures of self-focused attention; [Mellings & Alden, 2000](#)).

### 1.3.4. *Depressive symptoms*

The Beck depression inventory-II (BDI-II; [Beck, Steer, & Brown, 1996](#)) was used to assess the severity of depressive symptoms. It consists of 21 items rated on 0–3-point scales. The BDI-II has

excellent psychometric properties and can reliability distinguish people with and without depression as evaluated by semi-structured psychiatric interviews (Beck et al., 1996).

### 1.3.5. Self-presentation concerns

Self-presentation concerns were assessed after the interaction with three face-valid items using a seven-point Likert scale (“How concerned were you with how your partner was evaluating you?”; “How much did you think about how your partner was evaluating you?”; “To what extent did you feel that you that your partner was evaluating you?”;  $\alpha = 0.86$ ).

## 2. Results

### 2.1. Preliminary analyses

We first examined the validity of our experimental manipulation. As noted in other independent reports from this dataset (Kashdan & Roberts, 2006; Kashdan & Wenzel, 2005), compared to the small-talk condition, participants in the personal disclosure condition were more likely to disclose information about their innermost self,  $t(81) = 3.81$ ,  $p < 0.001$ ,  $d = 0.85$ , disclose personally important experiences and events,  $t(81) = 2.32$ ,  $p < 0.05$ ,  $d = 0.52$ , and openly express feelings about their partner,  $t(81) = 1.87$ ,  $p = 0.06$ ,  $d = 0.42$ . Thus, as designed, the personal disclosure task facilitated greater intimate disclosure than the small-talk condition.

In terms of bivariate relations (see Table 1), social anxiety was significantly positively related to depressive symptoms,  $r = 0.47$ ,  $p < 0.001$ , rumination,  $r = 0.35$ ,  $p < 0.005$ , next-day NA,  $r = 0.24$ ,  $p < 0.05$ , and self-presentation concerns during the interaction,  $r = 0.42$ ,  $p < 0.001$ .<sup>2</sup> Depressive symptoms were only significantly related to post-interaction and next-day NA,  $r$ 's = 0.32 and 0.41,  $p$ 's < 0.005. There was a small negative relation between post-interaction NA and PA,  $r = -0.15$ , and no relation between next-day NA and PA,  $r = -0.07$ . Next-day NA was positively related to social anxiety and depressive symptoms,  $r$ 's = 0.24 and 0.41,  $p$ 's < 0.05, respectively; next-day PA was not significantly related to social anxiety or depressive symptoms. As for gender differences, men reported significantly greater social anxiety than women,  $t(81) = 2.38$ ,  $p < 0.05$ . No other gender main or interaction effects were found in any of our models and analyses.

There were several rationales for using a series of hierarchical regression models to test our primary hypotheses. First, there was no support for using multilevel modeling. Because data from individuals were nested within the experimental dyads (i.e., two participants interacting with one another), we tested the contribution of dyad level effects on our primary dependent variables

<sup>2</sup> Comparisons of scores on the social anxiety (SIAS) and depressive symptom (BDI-II) scales in our sample with studies of clinical populations suggest that our findings have some generalizability to socially anxious and mild/moderately depressed populations. Data indicate that SIAS scores  $>34$  provide excellent sensitivity and specificity in categorizing individuals with and without social anxiety disorder (SAD; Brown et al., 1997; Heimberg et al., 1992). For our sample, the mean and standard deviation on the SIAS was 22.7 (12.1). In examining the form of interaction effects involving the SIAS, we conditioned effects at 1 standard deviation above the mean (i.e., 34.8) to define high socially anxious individuals. As for the BDI-II, for our sample, the mean and standard deviation was 10.4 (7.4). In examining the form of interactions involving the BDI-II, we conditioned effects at 1 standard deviation above the mean (i.e., 17.8) to define individuals with high levels of depressive symptoms. This score represents a mild to moderate severity of depression (Beck, Steer, & Garbin, 1988). Using normative cut-off scores to examine pathology in our sample, approximately 15.7% met criteria for pathological social anxiety, 12% met criteria for moderate or above range of depression, and 1.2% met criteria for both.

Table 1  
Means, standard deviations, ranges, and bivariate correlations of study measures

	1	2	3	4	5	6	7	8	Mean (S.D.)	Range
1. Social anxiety	–								22.66 (12.09)	5–56
2. Depressive symptoms	0.47 <sup>***</sup>	–							10.39 (7.39)	0–38
3. Rumination	0.35 <sup>**</sup>	0.14	–						15.46 (4.32)	7–30
4. NA-activated (POST)	0.18	0.32 <sup>**</sup>	0.18	–					3.74 (4.42)	10–34
5. PA-activated (POST)	0.14	–0.05	–0.11	–0.15	–				35.25 (8.44)	14–50
6. NA-activated (NEXT)	24 <sup>*</sup>	0.41 <sup>***</sup>	0.23 <sup>*</sup>	0.49 <sup>***</sup>	–0.01	–			13.86 (4.87)	10–32
7. PA-activated (NEXT)	0.16	0.07	0.16	0.08	0.58 <sup>***</sup>	0.07	–		28.07 (8.86)	11–48
8. Self-presentation concerns	0.42 <sup>***</sup>	0.14	0.26 <sup>*</sup>	0.05	–0.03	0.12	–0.15	–	12.08 (6.03)	3–27

Notes: <sup>\*</sup>  $p < 0.05$ ; <sup>\*\*</sup>  $p < 0.01$ ; <sup>\*\*\*</sup>  $p < 0.001$ . All  $p$ -values were two-tailed. PA: positive affect; NA: negative affect; POST: post-interaction; NEXT: next-day assessment.

(post-interaction rumination and next-day affect). Multilevel modeling analyses with the HLM 5.04 program (Raudenbush, Bryk, Cheong, & Congdon, 2000) found dyad level effects to account for less than 1% of the variance in next-day rumination, PA, and NA, respectively (similar to findings for post-interaction affect; Kashdan & Roberts, 2006). Based on these results, multilevel modeling was not required. Second, we were interested in separate outcome variables that could not be streamlined into a single model. In the first model, post-event rumination was the outcome of interest, and in the second set of models, post-event rumination was one of several variables included as a predictor of changes in affect from one day to the next. Third, hierarchical regression models allowed us to examine the degree of shared and non-shared variance attributable to social anxiety and depressive symptoms in predicting post-event rumination before the inclusion of two- and three-way (with condition) interaction effects.

## 2.2. Prediction of post-event rumination

Hierarchical regression analyses were conducted to test the roles of social anxiety, depressive symptoms, social context, and their interactions in the prediction of post-event rumination. In Step 1, we entered the main effects of SIAS, BDI and condition (binary dummy variable of experimental conditions with  $-1$  = personal disclosure and  $1$  = small-talk). In Step 2, we entered the three two-way interactions between these variables, and in Step 3, we entered the SIAS  $\times$  BDI  $\times$  condition triple interaction. The form of significant interactions was explored graphically with the Effects Package (Fox, 2004) run in the statistical programming language R 2.0 (R Development Core Team, 2005). Rug plots have been provided on the  $x$ -axis, reflecting the distribution of data points among our participants. Each slash on these plots represents a data point. Interactions were also explored with simple slope analyses (Aiken & West, 1991).

As can be seen in Table 2, there were significant main effects of Condition and SIAS. Individuals in the personal disclosure condition and those with higher levels of social anxiety reported greater post-event rumination. The main effect of SIAS, however, was qualified by a



Table 2

Summary of hierarchical regression model of social anxiety, depressive symptoms, and experimental condition in predicting post-event rumination

	$R^2 \Delta$	$\beta$	$t$	$p$
Step 1	0.184			<0.005
SIAS		0.332	2.77	<0.01
BDI		0.087	0.64	ns
COND		-0.257	2.38	<0.05
Step 2	0.075			$p = 0.08$
SIAS $\times$ BDI		0.319	2.58	<0.05
SIAS $\times$ COND		-0.059	0.49	ns
BDI $\times$ COND		0.023	0.17	ns
Step 3	0.022			ns
SIAS $\times$ BDI $\times$ COND		-0.182	1.43	ns

Notes: SIAS: social interaction anxiety scale; BDI: Beck depression inventory-II, COND: condition. Predictor and criterion variables were transformed into  $z$ -scores prior to analyses (except for condition which was a dichotomous variable). Across Steps 1, 2, and 3, degrees of freedom were 72, 69, and 68, respectively.

significant SIAS  $\times$  BDI interaction, which is displayed in Fig. 1. Simple slopes analyses (Aiken & West, 1991) found that social anxiety was associated with greater post-event rumination when its effect was conditioned at 1S.D. above the mean on depression,  $\beta = 0.596$ ,  $t(69) = 3.76$ ,  $p < 0.001$ , effect size (ES)  $r = 0.42$ , but was not significant when conditioned at 1S.D. below the

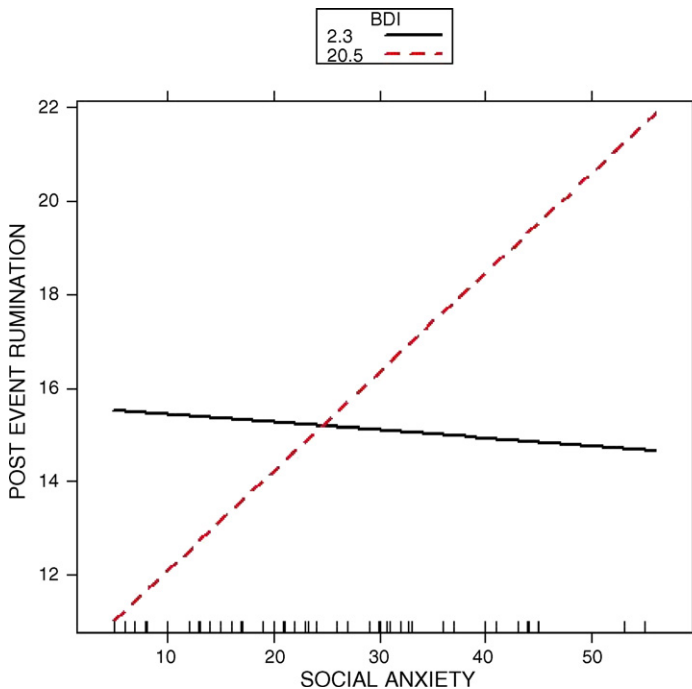


Fig. 1. Social anxiety  $\times$  depressive symptoms interaction in predicting post-event rumination. The legend above the figure refers to the BDI scores of our sample at +1 and -1 standard deviations from the mean. To decompose the interaction, we plotted estimated rumination scores as a function of social anxiety conditioned at greater and less than one standard deviation from the mean on the BDI.

mean,  $\beta = -0.043$ ,  $t(69) = 0.24$ ,  $p = 0.82$ , ES  $r = 0.03$ . None of the other two-way interactions or the triple interaction were statistically significant.

### 2.3. Do self-presentation concerns mediate the interactive relationship between social anxiety and depressive symptoms in predicting rumination?

Meeting preliminary criteria for mediation (Baron & Kenny, 1986), prior results showed that the SIAS  $\times$  BDI interaction was significantly associated with greater post-event rumination, and self-presentation concerns were significantly associated with greater rumination (see Table 1). In the next step to test mediation, we examined whether the bivariate relation between social anxiety and self-presentation concerns was moderated by depressive symptoms. A hierarchical regression model was conducted with self-presentation concerns as the dependent variable. In Step 1, we entered the main effects of SIAS, BDI, and condition. In Step 2, we entered the two-way SIAS  $\times$  BDI interaction. Inconsistent with mediation, the SIAS  $\times$  BDI interaction was not a significant predictor of self-presentation concerns ( $p = 0.70$ ). Thus, this theoretically plausible mediator failed to serve as a causal mechanism for the interactive relation between social anxiety and depressive symptoms on post-event rumination. In additional analyses, we tested whether self-presentation concerns mediated the bivariate relationship between social anxiety and post-event rumination or between depressive symptoms and post-event rumination. In terms of the former, the magnitude of the association between social anxiety and post-event rumination did not diminish after controlling for self-presentation concerns. In terms of the latter, we failed to find a significant relationship between depressive symptoms and self-presentation concerns (see Table 1). Overall, these results indicate that self-presentation concerns did not act as the mechanism by which social anxiety, depression or their interaction contributed to post-event rumination in our data.

### 2.4. Prediction of next-day affect

In predicting next-day affect, separate hierarchical regression models were conducted with next-day NA and PA as dependent variables. In order to investigate residual change in affect, we entered post-interaction affect at Step 1. At Step 2, we entered the main effects of rumination, social context and symptomatology (either social anxiety or depressive symptoms in separate analyses), while at Step 3 we entered the two-way interactions between rumination, social context and symptomatology. Finally, at Step 4 we entered the rumination  $\times$  condition  $\times$  symptomatology triple interaction. Because the four-way rumination  $\times$  condition  $\times$  social anxiety  $\times$  depression interaction failed to approach statistical significance ( $ps > 0.50$ ), analyses were conducted in separate models that included either social anxiety and depressive symptoms (see Footnote 3 for specificity analyses that include both simultaneously). The form of significant interactions was again explored both graphically and with simple slope analyses.

The left-hand side of Table 3 presents the results of regression analyses that included social anxiety as a predictor and NA as the dependent variable. As can be seen, there was a significant rumination  $\times$  condition interaction in the prediction of next-day NA. However, this two-way interaction was qualified by a significant rumination  $\times$  condition  $\times$  social anxiety triple interaction, which is graphically portrayed in Fig. 2. When conditioned at 1S.D. above the mean on social anxiety, the rumination  $\times$  condition interaction was significant,  $\beta = -0.439$ ,  $t(67) = 3.46$ ,  $p < 0.001$ , ES  $r = 0.40$ , whereas when conditioned at 1S.D. below the mean it was not significant,  $\beta = -0.036$ ,  $t(67) = 0.22$ ,  $p = 0.83$ , ES  $r = 0.03$ . At higher levels of social anxiety,

Table 3

Summary of separate hierarchical regression models with (1) social anxiety, rumination, and experimental condition and (2) depressive symptoms, rumination, and experimental condition predicting next-day negative affect

	Social anxiety				Depressive symptoms			
	$R^2\Delta$	$\beta$	$t$	$p$	$R^2\Delta$	$\beta$	$t$	$p$
Step 1	0.243			<0.001	0.243			<0.001
Post-event affect		0.486	4.87	<0.001		0.486	4.87	<0.001
Step 2	0.043			ns	0.073			0.06
SYMP		0.122	1.08	ns		0.265	2.08	<0.05
RUM		0.132	1.18	ns		0.144	1.38	ns
COND		0.104	1.00	ns		0.072	0.68	ns
Step 3	0.069			$p = 0.07$	0.087			<0.05
SYMP $\times$ RUM		-0.035	0.39	ns		0.054	0.53	ns
SYMP $\times$ COND		0.072	0.63	ns		0.240	1.88	0.06
RUM $\times$ COND		-0.303	2.68	<0.01		-0.285	2.74	<0.01
Step 4	0.042			<0.05	0.015			ns
SYMP $\times$ RUM $\times$ COND		-0.201	2.16	<0.05		-0.152	1.30	ns

Notes: SYMP: either symptoms of social anxiety or depression; RUM: post-event rumination; COND: condition. Predictor and criterion variables were transformed into z-scores prior to analyses (except for condition which was a dichotomous variable). Across Steps 1, 2, 3, and 4, degrees of freedom were 74, 71, 68, and 67, respectively.

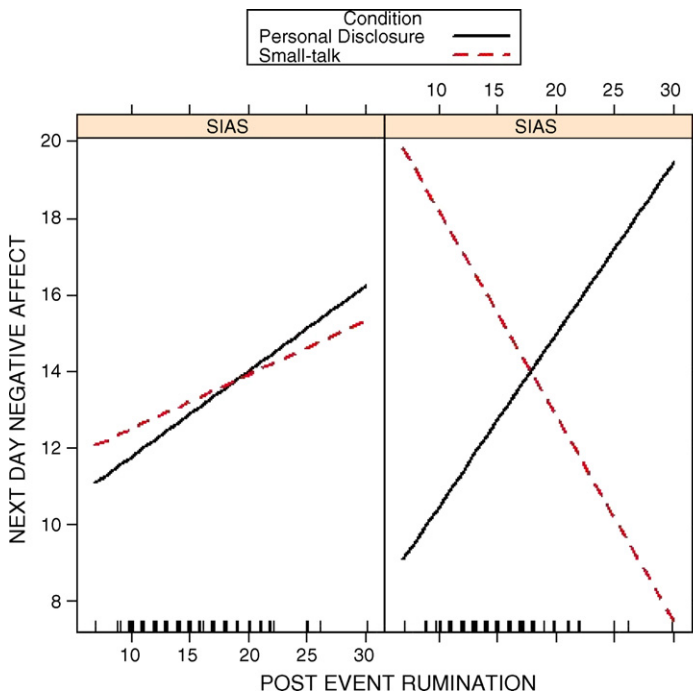


Fig. 2. Rumination  $\times$  condition  $\times$  social anxiety triple interaction in predicting negative affect. The left and right panels reflect the rumination  $\times$  condition effect conditioned at 1 S.D. below and above the mean on social anxiety, respectively.

post-event rumination was associated with increases in NA following the personal disclosure condition,  $\beta = 0.478$ ,  $t(67) = 4.84$ ,  $p < 0.01$ , ES  $r = 0.52$ , but decreases in NA following the small-talk condition,  $\beta = -0.461$ ,  $t(67) = 2.25$ ,  $p < 0.05$ , ES  $r = 0.27$ . Finally, in parallel analyses with next-day PA as the dependent variable, none of the interactions involving social anxiety were statistically significant ( $ps > 0.30$ ).

The right-hand side of Table 3 presents the results of regression analyses that included depressive symptoms as a predictor and NA as the dependent variable. As can be seen, the main effect of depressive symptomatology was a significant predictor of next-day NA. Individuals with greater depressive symptomatology tended to experience increases in NA. In addition there was a significant rumination  $\times$  condition interaction and a marginal depression  $\times$  condition interaction ( $p = 0.06$ , ES  $r = 0.23$ ). Given that the rumination  $\times$  condition interaction was embedded in the previously described rumination  $\times$  condition  $\times$  social anxiety triple interaction, it was not explored further. As can be seen in Fig. 3, the form of the marginal depression  $\times$  condition interaction suggests that depressive symptoms were associated with increases in next-day NA in the small-talk condition,  $\beta = 0.456$ ,  $t(68) = 2.59$ ,  $p < 0.05$ , ES  $r = 0.30$ , but not in the personal disclosure condition ( $p = 0.90$ ). The rumination  $\times$  depressive symptoms  $\times$  condition triple interaction was not significant. Finally, in parallel analyses with next-day PA as the dependent variable, none of the interactions involving depressive symptoms were statistically significant ( $ps > 0.30$ ).<sup>3</sup>

### 3. Discussion

Consistent with rich theoretical frameworks (Clark & Wells, 1995; Rapee & Heimberg, 1997), social anxiety was associated with greater negative post-event rumination following social interactions with strangers. However, this effect was largely limited to those individuals with elevated depressive symptoms, suggesting that the combination of both social anxiety and depressive symptomatology ignites and fuels post-event rumination. Interestingly, this effect was consistent across interactions that differed in the amount of self-disclosure evoked between interaction partners. As for changes in affect in the 24-h period following social interactions, we found support for several interactive effects. At higher levels of social anxiety, post-event rumination was associated with increases in NA following personal disclosure interactions and decreases in NA following small-talk interactions. Fitting with self-presentation models of social anxiety (Baumeister & Tice, 1990; Gilbert, 2001; Leary, 2000), the adverse mood disturbances associated with rumination were greater following interactions when more personal information was revealed. In these interactions, evaluations of social attractiveness could be based on extensive personal information and thus, could be perceived as a meaningful and anxiety-provoking index of one's potential to attain social acceptance with their current and future partners. On the other hand, post-event rumination was associated with decreases in NA among socially anxious individuals in the small-talk condition, which also provoked less social presentation concerns. Contrary to our conceptual framework, the positive relation between

<sup>3</sup> Additional analyses were conducted that simultaneously entered social anxiety and depression rather than examining them in separate analyses. After controlling for depressive symptoms, the significance level of the rumination  $\times$  context  $\times$  social anxiety three-way interaction in predicting NA was reduced from  $t(67) = 2.08$ ,  $p = 0.04$ , ES  $r = 0.25$  to  $t(66) = 1.60$ ,  $p = 0.11$ , ES  $r = 0.20$ . After controlling for social anxiety, both the significant rumination  $\times$  condition interaction and marginal depression  $\times$  condition interaction ( $p = 0.06$ ) were statistically significant ( $ps < 0.05$ ). None of the interactions were significant in predicting PA.

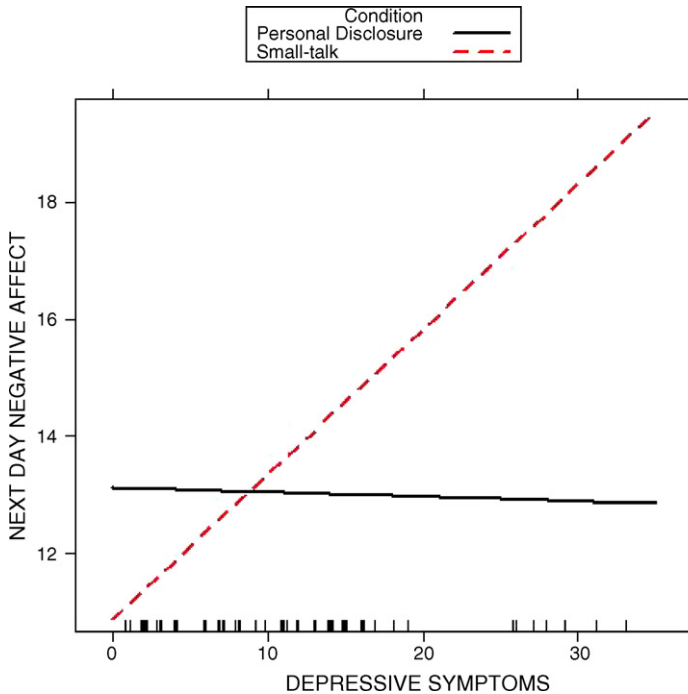


Fig. 3. Condition  $\times$  depressive symptoms interaction in predicting negative affect. To decompose the interaction, we plotted estimated negative affect scores in each of the experimental conditions.

social anxiety and rumination, and the interactive relation between social anxiety and depressive symptoms on rumination, were not mediated by self-presentation concerns during interactions.

Our study adds to a small body of research evaluating theories of post-event information processing in socially anxious individuals. Negatively biased post-event processing has been proposed to play a role in the generation and maintenance of social anxiety (Clark & Wells, 1995). After social events, socially anxious individuals tend to conduct “post-mortem” reviews. These post-mortem reviews are dominated by negative interpretation biases including (a) selective attention to anxious feelings (e.g., Woody, 1996), (b) inferring negative outcomes based on the experience and perceived visibility of anxiety (e.g., Gilboa-Schechtman, Franklin, Foa, 2000; Mellings & Alden, 2000), (c) interpreting ambiguous events as social failures and threatening responses from others (e.g., Alden & Mellings, 2004), and (d) selectively recalling negative information (e.g., Edwards et al., 2003; Veljaca & Rapee, 1998). These negative biases likely infiltrate post-event cognitive processing, apparently increasing the likelihood of negative as opposed to positive or neutral repetitive thoughts. For example, an open-ended narrative study found that for high socially anxious individuals, post-event rumination was intrusive, causing concentration difficulties, and increasing the likelihood of avoiding similar social interactions (Rachman et al., 2000). Other work using laboratory social interactions found the frequency of post-event rumination predicted greater memory for negative self-related information during the interaction (Mellings & Alden, 2000). Our data suggests that the impact of these post-mortem reviews varies depending on social context.

A unique feature of our study was a theoretically grounded examination of the potential moderating role of social context on the relation between social anxiety and rumination, and

between rumination and affective changes in the day following social interactions. Socially anxious individuals were expected to be more likely to ruminate, and rumination would have more adverse consequences when social attractiveness and status could be easily appraised by others. Lengthy dyadic interactions involving personal and emotional self-disclosure were expected to provide clear opportunities to appraise the potential of accepting another person and investing in a relationship with them. From a self-presentation perspective, this type of interaction is a risky endeavor because it can provide fundamental information relevant to social inclusion decisions.

We compared these self-disclosure interactions to those focused on superficial small-talk. Although these two contexts had no impact on the relation between social anxiety and post-event rumination, for more socially anxious individuals, rumination was associated with greater mood disturbances following self-disclosure compared to small-talk interactions. Despite the need for replication, these findings are consistent with our conceptual model and prior work on mixed anxiety/depression (e.g., Erwin et al., 2002; Ingram et al., 2001; Nolen-Hoeksema, 2000). Although more socially anxious individuals can be expected to exhibit social evaluative concerns following all interactions, the intensity of these concerns was expected to increase in proportion to how much information about one's social attraction was conveyed. Greater personal self-disclosure leads to more revealing information about one's social attractiveness. This includes observable qualities and behavioral tendencies such as intelligence, social skill, and sense of humor, which can affect how others form impressions about an individual's social rank and value. Although we failed to find evidence that self-presentation concerns mediated the effects of relations between social anxiety and rumination, there was minimal data on the validity and sensitivity of our measure. There is a need for better strategies to assess appraisals of social attractiveness potential.

For more socially anxious participants, post-event rumination was associated with less NA following the small-talk interaction. These findings can be interpreted in several ways. The process of rumination may be an effective short-term coping strategy. By thinking about the causes, meanings, and consequences of their interpersonal experiences, some socially anxious individuals may effectively modify default tendencies to negatively evaluate themselves and their performance (Clark & Wells, 1995). Elaborating on the role of external, situational factors (i.e., nature of experimental task) can lead to effective cognitive reappraisals, which in turn, can lead to less emotional distress. Alternatively, predominant cognitive processing and verbal thought activity (i.e., rumination, worry) serves as a method of cognitive avoidance, interfering with emotional experience (Salters-Pedneault, Tull, & Roemer, 2004), and thus, leading to less emotional distress (NA) following small-talk interactions. Finally, our data suggest that self-presentation concerns were less intense in the small-talk compared to the personal disclosure condition. Thus, perhaps small-talk conversations were easily dismissed as being minimally meaningful. Any acute distress after the interaction may have quickly dissipated and ruminative thoughts may have been less emotionally charged, thereby failing to trigger concerns about a person's general potential to win approval of members of their reference group. Despite the appeal of these post hoc interpretations, further data are needed to understand causal mechanisms linking social anxiety, small-talk interactions, and post-event rumination.

Although our primary focus was on social anxiety, our co-occurrence and specificity tests provided some novel findings. To expand on studies examining specificity by statistically controlling for other emotional disturbances, we examined the synergistic effect between social anxiety and depressive symptoms. Based on our data, it may be too simplistic to ask whether it is social anxiety or depression that contributes to post-event rumination. At least in the aftermath of

social interactions, we found that individuals with elevated levels of both social anxiety and depressive symptoms experienced substantial post-event rumination. Furthermore, in contrast to social anxiety, depressive symptoms did not moderate the effects of post-event rumination on next-day NA, either on its own or in combination with social context. Instead, depressive symptoms were associated with increases in NA the day following social interactions, and this effect was moderated by social context. Specifically, the personal disclosure condition appeared to buffer the effects of depressive symptoms on next-day negative affect. In contrast, depressive symptoms were strongly associated with increases in NA among those in the small-talk condition. It may be that either the personal disclosure condition provided needed support and intimacy to our mildly depressed participants or mildly depressed individuals found the small-talk condition aversive. Interestingly, whereas socially anxious individuals were most vulnerable to NA in the personal disclosure situation, mildly depressed individuals appeared to derive a salutary effect from this type of interpersonal interaction.

We were intrigued by the differential responses of more socially anxious compared to more depressed individuals as a function of social context. More socially anxious individuals are proposed to experience acute distress following personal disclosure interactions because of an intense approach-avoidance conflict. That is, there is a conflict between being authentic and pursuing an opportunity for intimacy and belonging versus the desire to hide during an interaction to evade possible failure and rejection. Data show that more socially anxious individuals tend to be inauthentic, conceal personal information and be less expressive about thoughts, feelings, and behaviors (Arkin, 1981; Kashdan & Steger, 2006; Leary, Knight, & Johnson, 1987; Miller, 1996; Schlenker & Leary, 1985). In stark contrast, more depressed individuals experienced *mood enhancements* from the same interactions that created distress among more socially anxious individuals. For depressed individuals, concerns about social status appear to have been less salient. They may have taken advantage of the rare opportunity to engender positive interpersonal and affective experiences, temporarily recovering from a low rate of reinforcing experiences (i.e., anhedonia) and common feelings of loneliness (e.g., Dill & Anderson, 1999; Joiner, 1997). Future studies are needed to further elaborate on how these related vulnerability factors affect interpersonal behavior and responses.

Several limitations of our study require attention. First, although our experimental conditions differed in shared self-disclosure and the generation of interpersonal closeness (as predicted), in a 45-min interaction both conditions could easily provide ample negative and ambiguous material for socially anxious individuals to brood over in post-mortem evaluations. In addition, there was some variation in how people responded to the experimental conditions, as a small percentage of people in the small-talk condition endorsed a significant level of intimate self-disclosure. This suggests that people differ in their sensitivity to situational demands, ability to regulate or generate self-disclosures in themselves and others, or other relevant factors. Alternatively, the 45-min time frame of the interaction may have affected the internal validity of maintaining a small-talk, non-intimate interaction. Unfortunately, our design did not enable us to discern the specific conversational content and behaviors of interaction partners over the course of time. Second, we used an unselected group of college students and measured levels of social anxiety and depressive symptoms. Theoretical models stressing the importance of post-event rumination to social anxiety focus on pathological social anxiety (Clark & Wells, 1995; Rapee & Heimberg, 1997). Thus, it seems prudent to replicate our findings with a clinical sample (however, see Footnote 2). Finally, our measure of rumination was selected to match the only other social interaction study of social anxiety and rumination (Mellings & Alden, 2000). To better understand the relation between rumination and social anxiety, greater attention is needed to measurement issues.

For example, prospective studies require measures that are sensitive to repeated measurement and intervention, and further evidence is needed on the incremental validity of post-event rumination relative to related constructs such as worry, self-focused attention, negative automatic thoughts, and Nolen-Hoeksema's (1991) construct of ruminative response style.

In summary, we found social anxiety and depressive symptoms to have a synergistic effect in predicting post-event rumination in the aftermath of social interactions. In turn, fitting with relevant theory, among more socially anxious individuals, post-event rumination led to increases in NA during the 24-h period following personal disclosure interactions, but decreases following superficial, small-talk interactions. In contrast to models with social anxiety, more depressed individuals had a trend to experience increases in NA following small-talk interactions, but not personal disclosure interactions. Overall our results suggest that the effects of post-event rumination among more socially anxious individuals are highly dependent on social context. We believe these findings converge with theoretical models suggesting that for more socially anxious individuals, self-presentation concerns, emotional distress, and the drain of self-regulatory resources (e.g., energy devoted to ruminative thought) are amplified when one's social attractiveness is exposed to scrutiny for possible rejection/exclusion. The understanding of socially anxious and depressive symptomatology, rumination, and the affective consequences of social interactions will be advanced by more complex models that take social situational variables and synergistic effects into account.

## References

- Abott, M. J., & Rapee, R. M. (2004). Post-event rumination and negative self-appraisal in social phobia before and after treatment. *Journal of Abnormal Psychology, 113*, 136–144.
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. London: Sage.
- Alden, L. E. (1987). Attributional responses of anxious individuals to different patterns of social feedback: Nothing succeeds like improvement. *Journal of Personality and Social Psychology, 52*, 100–106.
- Alden, L. E., & Mellings, T. M. B. (2004). Generalized social phobia and social judgments: The salience of self- and partner-information. *Journal of Anxiety Disorders, 18*, 143–157.
- Allen, N. B., & Badcock, P. B. T. (2003). The social risk hypothesis of depressed mood: Evolutionary, psychosocial, and neurobiological perspectives. *Psychological Bulletin, 129*, 887–913.
- Arkin, R. M. (1981). Self-presentational styles. In: J. T. Tedeschi (Ed.), *Impression management theory and social psychological research* (pp. 311–333). New York: Academic Press.
- Aron, A., Melinat, E., Aron, E. N., Vallone, R., & Bator, R. (1997). The experimental generation of interpersonal closeness: A procedure and some preliminary findings. *Personality and Social Psychology Bulletin, 23*, 363–377.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychology research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182.
- Baumeister, R. F., & Tice, D. M. (1990). Anxiety and social exclusion. *Journal of Social and Clinical Psychology, 9*, 165–196.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Beck depression inventory manual* (2nd ed.). San Antonio, TX: Psychological Corporation.
- Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck depression inventory: 25 years of evaluation. *Clinical Psychology Review, 8*, 77–100.
- Brown, E. J., Turovsky, J., Heimberg, R. G., Juster, H. R., Brown, T. A., & Barlow, D. H. (1997). Validation of the social interaction anxiety scale and the social phobia scale across the anxiety disorders. *Psychological Assessment, 9*, 21–27.
- Ciesla, J. A., & Roberts, J. E. (2002). Self-directed thought and response to treatment for depression: A preliminary investigation. *Journal of Cognitive Psychotherapy, 16*, 435–453.
- Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In: R. G. Heimberg, M. R. Liebowitz, D. A. Hope, & F. R. Schneier (Eds.), *Social phobia: Diagnosis, assessment, and treatment* (pp. 69–93). New York: Guilford Press.
- Dill, J. C., & Anderson, C. A. (1999). Loneliness, shyness, and depression: The etiology and interrelationships of everyday problems in living. In: T. Joiner, & J. C. Coyne (Eds.), *The interactional nature of depression: Advances in interpersonal approaches* (pp. 93–125). Washington, DC: American Psychological Association.



- Edwards, S. L., Rapee, R. M., & Franklin, J. (2003). Postevent rumination and recall bias for a social performance event in high and low socially anxious individuals. *Cognitive Therapy and Research*, *27*, 603–617.
- Erwin, B. A., Heimberg, R. G., Juster, H., & Mindlin, M. (2002). Comorbid anxiety and mood disorders among persons with social anxiety disorder. *Behaviour Research and Therapy*, *40*, 19–35.
- Field, A. P., & Morgan, J. (2004). Post-event processing and the retrieval of autobiographical memories in socially anxious individuals. *Journal of Anxiety Disorders*, *18*, 647–663.
- Fox J. (2004). Effects: Effect displays for linear and generalized linear models. Rpackage version 1.0-5. <http://www.r-project.org/>.
- Fredrickson, B. L. (2000). Extracting meaning from past affective experiences: The importance of peaks, ends, and specific emotions. *Cognition and Emotion*, *14*, 577–606.
- Gilbert, P. (2001). Evolution and social anxiety: The role of attraction, social competition, and social hierarchies. *Psychiatric Clinics of North America*, *24*, 723–751.
- Gilboa-Schechtman, E., Franklin, M. E., & Foa, E. B. (2000). Anticipated reactions to social events: differences among individuals with generalized social phobia, obsessive compulsive disorder, and nonanxious controls. *Cognitive Therapy and Research*, *24*, 731–746.
- Heimberg, R. G., Mueller, G. P., Holt, C. S., Hope, D. A., & Liebowitz, M. R. (1992). Assessment of anxiety in social interaction and being observed by others: The Social Interaction Anxiety Scale and the Social Phobia Scale. *Behavior Therapy*, *23*, 53–73.
- Ingram, R. E., Ramel, W., Chavira, D., & Scher, C. (2001). Social anxiety and depression. In: W. R. Crozier, & L. E. Alden (Eds.), *International handbook of social anxiety: Concepts, research and interventions relating to the self and shyness* (pp. 357–380). New York, NY: John Wiley & Sons.
- Joiner, T. E., Jr. (1997). Shyness and low social support as interactive diatheses, with loneliness as mediator: Testing and interpersonal-personality view of vulnerability to depressive symptoms. *Journal of Abnormal Psychology*, *106*, 386–394.
- Just, N., & Alloy, L. B. (1997). The response styles theory of depression: Tests and an extension of the theory. *Journal of Abnormal Psychology*, *106*, 221–229.
- Kashdan, T. B., & Roberts, J. E. (2006). Affective outcomes and cognitive processes in superficial and intimate interactions: Roles of social anxiety and curiosity. *Journal of Research in Personality*, *40*, 140–167.
- Kashdan, T. B., & Steger, M. F. (2006). Expanding the topography of social anxiety: An experience sampling assessment of positive emotions and events, and emotion suppression. *Psychological Science*, *17*, 120–128.
- Kashdan, T. B., & Wenzel, A. (2005). A transactional approach to social anxiety and the genesis of interpersonal closeness: Self, partner, and social context. *Behavior Therapy*, *36*, 335–346.
- Leary, M. R. (2000). Social anxiety as an early warning system: A refinement and extension of the self-presentational theory of social anxiety. In: S. G. Hofman, & P. M. DiBartolo (Eds.), *Social phobia and social anxiety: An integration* (pp. 321–334). New York: Allyn & Bacon.
- Leary, M. R., Knight, P. D., & Johnson, K. A. (1987). Social anxiety and dyadic conversation: A verbal response analysis. *Journal of Social and Clinical Psychology*, *5*, 34–50.
- Leary, M. R., Kowalski, R. M., & Campbell, C. (1988). Self-presentational concerns and social anxiety: The role of generalized impression expectancies. *Journal of Research in Personality*, *22*, 308–321.
- Lyubomirsky, S., Caldwell, N. D., & Nolen-Hoeksema, S. (1998). Effects of ruminative and distracting responses to depressed mood on retrieval of autobiographical memories. *Journal of Personality and Social Psychology*, *75*, 166–177.
- Mattick, R. P., & Clarke, J. C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy*, *36*, 455–470.
- Mellings, T. M. B., & Alden, L. E. (2000). Cognitive processes in social anxiety: The effects of self-focus, rumination and anticipatory processing. *Behaviour Research and Therapy*, *38*, 243–257.
- Miller, R. S. (1995). On the nature of embarrassment: Shyness, social evaluation, and social skill. *Journal of Personality*, *63*, 315–339.
- Miller, R. S. (1996). *Embarrassment: Poise and peril in everyday life*. New York: Guilford.
- Morrow, J., & Nolen-Hoeksema, S. (1990). Effects of responses to depression on the remediation of depressive affect. *Journal of Personality and Social Psychology*, *58*, 519–527.
- Nolan, S. A., Roberts, J. E., & Gotlib, I. H. (1998). Neuroticism and ruminative response style as predictors of change in depressive symptomatology. *Cognitive Therapy and Research*, *22*, 445–455.
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology*, *100*, 569–582.
- Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology*, *109*, 504–511.

- Nolen-Hoeksema, S., & Morrow, J. (1993). The effects of rumination and distraction on naturally-occurring depressed moods. *Cognition and Emotion*, *7*, 561–570.
- Nolen-Hoeksema, S., Morrow, J., & Fredrickson, B. L. (1993). Response style and the duration of episodes of depressed mood. *Journal of Abnormal Psychology*, *102*, 20–28.
- R Development Core Team (2005). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL <http://www.R-project.org>.
- Rachman, S., Gruter-Andrew, J., & Shafran, R. (2000). Post-event processing in social anxiety. *Behaviour Research and Therapy*, *38*, 611–617.
- Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia. *Behaviour Research and Therapy*, *35*, 741–756.
- Raudenbush, S., Bryk, A., Cheong, Y. F., & Congdon, R. (2000). *HLM 5: Hierarchical linear and nonlinear modeling*. Lincolnwood, IL: Scientific Software International Inc.
- Roberts, J. E., Gilboa, E., & Gotlib, I. H. (1998). Ruminative response style and vulnerability to episodes of dysphoria: Gender, neuroticism, and episode duration. *Cognitive Therapy and Research*, *22*, 401–423.
- Salters-Pedneault, K., Tull, M. T., & Roemer, L. (2004). The role of avoidance of emotional material in the anxiety disorders. *Applied and Preventive Psychology*, *11*, 95–114.
- Schlenker, B. R., & Leary, M. R. (1985). Social anxiety and communication about the self. *Journal of Language and Social Psychology*, *4*, 171–192.
- Spurr, J. M., & Stopa, L. (2003). The observer perspective: Effects on social anxiety and performance. *Behaviour Research and Therapy*, *41*, 1009–1028.
- Trask, P. C., & Sigmon, S. T. (1999). Ruminating and distracting: The effects of sequential tasks on depressed mood. *Cognitive Therapy and Research*, *23*, 231–246.
- Veljaca, K. A., & Rapee, R. M. (1998). Detection of negative and positive audience behaviours by socially anxious subjects. *Behaviour Research and Therapy*, *36*, 311–321.
- Wallace, S. T., & Alden, L. E. (1991). A comparison of social standards and perceived ability in anxious and nonanxious men. *Cognitive Therapy and Research*, *15*, 237–254.
- Wallace, S. T., & Alden, L. E. (1997). Social phobia and positive social events: The price of success. *Journal of Abnormal Psychology*, *106*, 416–424.
- Watson, D. (2000). *Mood and temperament*. New York: Guilford Press.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS. *Journal of Personality and Social Psychology*, *54*, 1063–1070.
- Woody, S. R. (1996). Effects of focus of attention on anxiety levels and social performance of individuals with social phobia. *Journal of Abnormal Psychology*, *105*, 61–69.