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**THE EFFECT OF NEGATIVE EXTERNAL CUES ON SELF-FOCUS AND
NEGATIVE RECOLLECTIONS OF AN INTERACTION**

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Abstract

Social anxiety is characterized by a fear of negative evaluation and avoidance of social situations. Clark and Wells (1995) suggest that socially anxious individuals tend to self-monitor, but Rapee and Heimberg (1997) posit that this may interact with another inclination to search for external threat cues, which could exacerbate social anxiety. In the current study, participants were randomly assigned to one of two conditions in a conversation task. Confederates gave critical and judgmental cues in the critical condition and neutral cues in the neutral condition. Results show a trend toward significance for an interaction such that socially anxious participants in the critical condition engaged in self-focused attention more than the low social anxiety group, while social anxiety groups had similar levels of self-focused attention in the neutral condition. In the critical condition, socially anxious individuals reported significantly fewer positive thoughts about themselves than those in the low social anxiety group.

Introduction

Social anxiety disorder is a relatively common disorder, with a 13% lifetime prevalence (Rapee & Heimberg, 1997). Social anxiety is characterized by intense and persistent fear of social situations (Brunello et al., 2000). Individuals with social anxiety disorder suffer from symptoms ranging from moderate to severe, also varying in the degree to which the disorder impedes the individual's ability to function normally. Social anxiety disorder is often comorbid with depression, other anxiety disorders, substance use and eating disorders (Brunello et al., 2000). Social anxiety disorder is a problem that affects a relatively large number of people, and it can have serious implications for the individual experiencing it. There are still many questions left unanswered about the mechanisms involved in the development and maintenance of social anxiety, and for this reason research concerning the disorder is ongoing.

Social anxiety disorder is characterized by the fear of negative evaluation, as well as the strong desire to make a favorable impression on others (Rapee & Heimberg, 1997). Because of this fear and desire, socially anxious individuals feel uncomfortable in social situations and often try to avoid them (Clark & Wells, 1995). Individuals with elevated levels of social anxiety commonly shift their focus of attention in order to determine the likelihood of negative evaluation by others. Cognitive models of social anxiety have pointed to these shifts in attentional focus as an important factor in maintaining the disorder.

These models, however, deviate in terms of where the focus is shifted. For example, Clark and Wells (1995) emphasize the tendency for socially anxious individuals to devote all of their attention to self-monitoring. This means that a socially anxious individual in a social situation is likely to use more attentional resources to focus on his or her own behaviors and physiology. The goal of this self-monitoring is to ensure that he or she is meeting social expectations, either real or imagined, so that he or she can avoid negative evaluation. Rapee and

Heimberg (1997), however, suggest that external threat monitoring also plays an important role in social anxiety disorder as the individual uses attentional resources to scan the social group or audience for signs of negative evaluation. Tendencies such as these may cause the individual to fail to allocate sufficient attentional resources to the actual social task, resulting in the negative evaluation that the individual feared in the first place. It is unknown which of these tendencies, or some interaction of the two, is responsible for the maintenance of social anxiety. More research is needed to examine these tendencies in order to create a clearer picture of the cognitive processes involved in the development and maintenance of social anxiety.

Self-focused Attention

Self-focused attention involves internally generated self-referent information; several researchers have suggested that it plays a role in maintaining disorders like social anxiety. For instance, Burgio, Merluzzi, and Pryor (1986) suggest that self-focused attention is associated with negative affect, while Schlenker and Leary (1982) posit that heightened self-focus may be a precursor for clinically significant social anxiety. They offer the explanation that self-focus makes an individual more aware of the image he or she wants to convey, which results in greater efforts toward managing that impression; this increases susceptibility to social anxiety as the individual finds that he or she may not be succeeding. Self-focused attention may further exacerbate social anxiety as it could detract from the individual's ability to focus on the task at hand, thereby decreasing the likelihood of a favorable impression being managed after all (Hartman, 1983). As attentional resources are limited, excessive internal focus may inhibit an individual's ability to focus on other things, such as relevant external information and the attention necessary for completing a task (Carver, 1979). For socially anxious individuals, this means that self-focused attention could exacerbate fears concerning their social performance and also maintain their social anxiety (Clark & Wells, 1995).

External Threat Cues

Rapee and Heimberg (1997) contend that while socially anxious individuals may increase self-focus in social situations, they are also likely to allocate attentional resources to the detection of external threats, particularly in relation to the perceived risk of negative evaluation. Since socially anxious individuals doubt their ability to create favorable impressions of themselves, they are quick to find aspects of the environment that could potentially indicate negative evaluation by others. Support for these claims has been found through methods such as the modified Stroop task, which requires participants to name the color of the text of a word while ignoring the semantic meaning of that word. Socially anxious individuals take significantly longer to color-name words pertaining to negative evaluation than neutral or physical threat words (Hope, Rapee, Heimberg, & Dombeck, 1990). In addition, Asmundson and Stein (1994) used an eye-tracking method to demonstrate that socially anxious individuals allocate more time looking at a negative evaluation word than a neutral word on a computer screen. These and other studies have informed the conclusion that socially anxious individuals allocate more attention to monitoring external threat cues than their non-anxious counterparts. This, like excessive internal focus, may use up attentional resources and inhibit the individual's ability to successfully engage in a social task (Rapee & Heimberg, 1997).

While there is independent evidence to support that each of these focus tendencies plays a role in social anxiety disorder, Rapee and Heimberg (1997) also suggest that they may work interactively to maintain the disorder. Other studies (Stopa & Clark, 1993; Mansell, Clark, & Ehlers, 2003) describe attention in social anxiety disorder in a way that makes such an interaction seem unlikely since one or the other seems to be dominant in each study; more

investigation is needed to understand how socially anxious individuals allocate their attentional resources in social situations.

Study Purpose

The purpose of the current study was to test the theory posed by Rapee and Heimberg (1997) concerning a possible interaction of internal focus and external threat cues to maintain social anxiety. Drawing from a pool of University of Arkansas undergraduates, participants were asked to engage in a conversation with a confederate in which they discuss one of several topics chosen for the task. Participants were randomly assigned to one of two conditions, one in which the confederate acted in a critical, negative manner (i.e., higher external threat cues) and one in which the confederate appeared neutral and noncritical. Following the conversation, participants completed questionnaires to determine the extent to which they engaged in self-focused attention. Participants also completed an exercise in which they recalled thoughts they had during the interaction. It was expected that individuals with higher levels of trait social anxiety would experience more state anxiety and more self-focused attention during the social interaction, in comparison to their non-socially anxious counterparts. Coinciding with the conjecture of Rapee and Heimberg (1997), it was also expected that for participants classified in the high social anxiety group, a critical interaction partner would result in reports of more self-focused attention and more negative thoughts about their performance during the interaction than would a neutral partner. That is, an increase in external threat cues was expected to increase the degree to which the participants engaged in self-monitoring (i.e., self-focused attention), which presumably would lead to more negative recollections of the event. Understanding the cognitive factors that exacerbate and maintain social anxiety is helpful in the development of treatments for social anxiety disorder.

Method

All procedures were approved by the University of Arkansas Institutional Review Board. Participants ages 18 and older were drawn from a pool of psychology students at a mid-Southern university. Participants were recruited for course credit in introductory psychology classes, and the entire procedure lasted one hour. After providing informed consent, participants completed a packet of questionnaires that included questions related to demographic information and the Social Interaction Anxiety Scale (SIAS). The experimenter then returned to the room, explained the Subjective Units of Distress Scale (SUDS), and collected the baseline SUDS rating. The experimenter then explained the conversation task to the participants and gave the participants a card explaining the discussion topic, which was chosen at random from a set of six topics. These topics were chosen from a book of conversation topics (Stock, 1987) that has been used for similar manipulations in previous research (Hofmann, 2000). Participants were then given five minutes to prepare for the conversation and to record a second SUDS rating.

Table 1. Demographic Summary

	Men (<i>n</i> = 34)	Women (<i>n</i> = 57)	Total (<i>n</i> = 91)
Ethnicity			
Caucasian	31 (91.2%)	46 (80.7%)	77 (84.6%)
African American	1 (2.9%)	6 (10.5%)	7 (7.7%)
Asian American	2 (5.9%)	3 (5.3%)	5 (5.5%)
Latino	0 (0.0%)	2 (3.5%)	2 (2.2%)
Age	<i>M</i> = 0.35 <i>S</i> = 3.13	<i>M</i> = 9.61 <i>SD</i> = 3.12	<i>M</i> = 19.89 <i>SD</i> = 3.13

Measures

Social anxiety. The 19-item SIAS scale (Mattick & Clark, 1998) was used to evaluate anxiety associated with social interaction situations. For analysis, participants were split into two groups based on a median split of SIAS scores (median = 18.00). The high SIAS group (*n* = 45) had a mean SIAS score of 27.15 (*SD* = 1.30) and the low SIAS group (*n* = 46) had a mean of 11.24 (*SD* = .57). The SIAS has demonstrated good reliability and validity for college and noncollege samples (Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992; Mattick & Clark, 1998).

State anxiety. The SUDS scale (Hope, Heimberg, Juster, & Turk, 2000) was used to assess participants' subjective anxiety levels throughout the study. Participants were asked to report SUDS ratings on a 0 (*no anxiety*) to 100 (*maximum anxiety*) scale at four specific times in the study. The first SUDS rating was collected at the beginning of the study, before the participants had met their conversation partner. The second rating was reported after the participants learned about the conversation task and were given the discussion topic. The third response was given in the middle of the four-minute conversation, and the fourth was provided after the conversation ended and the confederate had left the room. The current study focuses on the third SUDS rating obtained during the conversation. In order to avoid biased responses caused by the presence of the confederate, participants were given cards upon which to record their SUDS ratings.

Self-focused attention. The Focus of Attention Questionnaire-Self-Focus subscale (FAQ) (Woody, Chambless, & Glass, 1997) was used to assess the extent to which the participants engaged in self-focused attention. This subscale consists of five items, which are averaged to create a self-focus score. Responses are based on a five-item Likert-type scale (0 = Not at all, 10 = Totally). Cronbach's alpha for this subscale is 0.76, satisfying Nunnally's guideline for acceptable alpha coefficients used in research (Nunnally, 1978). Additionally, the FAQ-Self-Focus subscale demonstrated construct validity in response to manipulations of focus of attention in a study conducted by Woody, Chambless, and Glass (1997).

Thought listing. Participants were asked to recall up to six thoughts they had during the conversation task. These thoughts were rated on an ordinal scale with six possible designations (Hofmann, Moscovitch, Kim, & Taylor, 2004). Ratings from one to three on this scale denoted thoughts that focused on the confederate (e.g. "She has black hair."). Ratings from four to six denoted self-focused thoughts (e.g. "I was a little nervous talking to someone I just met").

Following the procedures recommended by Hofmann and colleagues, each of these groups was divided into three ratings denoting how negative, positive, or neutral their thoughts were in nature. In other words, each number from one to six signified the focus and the affective valence of the thought. The thoughts were rated by two individuals independently, one of whom had minimal knowledge of the study procedure. Both raters were blind to condition. The raters agreed on 95% of the items in their initial scoring, and consensus was reached for the remaining items.

Manipulation check. Participants answered three questions about their subjective experience during the conversation task. The participants rated themselves and their conversation partners (the confederates) in terms of how “judgmental or critical” they seemed, on a 10-item Likert-type scale (1 = *Not at all*, 10 = *Extremely*). They also rated the extent to which their “ideas were openly accepted” by the confederate. Finally, participants rated the extent to which they were “judgmental or critical” of their conversation partner. These items were used to show that there was a significant difference between the experiences of the conversation task between the two conditions.

Conversation Task. The anxiety inducing conversation task consisted of a four-minute conversation with a confederate. The participants were not told whether their conversation partners were participants or research assistants. The participants were asked to begin the conversation by talking for one minute about their opinion; they were also told that both conversation partners were responsible for continuing the conversation and for keeping it on topic. After the first minute, the confederate gave a response with positive or negative feedback, depending on condition. The experimenter then interrupted the conversation and asked the participants to record a third SUDS rating. The conversation then continued for another two minutes, including a follow-up argument by the participants and a second feedback response from the confederate. Finally, the confederate left the room and the participants recorded a final SUDS rating.

Two trained female research assistants served as confederates for the conversation task. In the neutral condition, the confederate politely agreed with the opinion of the confederate and provided positive conversational feedback. The confederate provided positive social cues such as smiling and nodding throughout the conversation. In the critical condition, the confederate adopted the opposite opinion of the participants and gave negative social cues such as crossing their arms and shaking their heads. If the participants stopped talking, the confederate prompted them to continue. In the neutral condition, the prompts were friendly (e.g., “That’s a good point. Would you mind explaining that a little more?”). In the critical condition, the confederate gave negative prompts (e.g., “I don’t understand your argument. Can you explain it better than that?”). Every effort was made to ensure that the behavior of the confederates was natural and consistent throughout the study.

There were six different topics used throughout the study to ensure that the task’s effect was not a result of the particular topic. The six topics were chosen from a book of conversational topic questions (Stock, 1987), and one of the six topics was randomly selected for each participant. All of the topics contained an element of moral decision-making, and each one forced an either/or opinion in order to create a situation in which the confederate could be friendly and agreeable or negative and critical, based on the condition. Highly emotional and inflammatory topics were avoided, as were overly personal questions. The confederates had prepared responses for each side of the topics, though they encouraged the participants to speak as much as possible using the prompts mentioned above. The six topics were as follows:

1. Would you be willing to murder an innocent person if it would end hunger in the world?
2. Should it be illegal to help a terminally ill person to die?
3. While parking late at night, you slightly scrape the side of a Porsche. You are certain no else is aware of what happened. The damage is minor and would not be covered by insurance. Would you leave a note?
4. At a nice restaurant, after getting the check for an excellent meal you notice that you were not charged for one of the items you ate. Would you tell the waitress?
5. If you were having difficulty on an important test and could safely cheat by looking at someone else's paper, would you do so?
6. If a new medicine were developed that would cure arthritis but cause a fatal reaction in one percent of those who took it, would you want it to be released to the public?

Final Questionnaires and Debriefing. Upon completing the conversation task, the participants completed the FAQ, manipulation check, and thought listing task. The experimenter then gave a brief verbal debriefing and also provided a hard copy explaining more about the study. All participants received one research credit as their compensation.

Results

As shown in Table 1, the sample included 91 college students, with a mean age of 19.89 ($SD = 3.13$; range = 18 - 37). The sample was comprised of 84.5% Caucasian ($n = 77$), 7.6% African American ($n = 7$), 5.5% Asian American ($n = 5$), and 2.2% Latino ($n = 2$) students. No special criteria were required to participate, and all participants completed the study. All participants completed informed consent and debriefing forms.

The data were examined for violations of statistical assumptions of normality. Univariate outliers were detected using Tukey's upper and lower hinges. For the FAQ-Internal Subscale, skewness and kurtosis were within normal parameters. Following Winsorizing techniques, data points outside the upper and lower bound values ($n = 6$) were adjusted within the upper and lower bounds. The thought listing data were non-normally distributed. Transformations of the data failed to improve the normality of the distribution, and therefore analyses concerning the thought listing data should be interpreted with caution.

Correlational analyses suggested that SUDS ratings during the conversation were positively correlated with self-focused attention, $r(91) = .32, p = .002$, negative self-focused thoughts, $r(91) = .24, p = .022$, and negative other-focused thoughts, $r(91) = .34, p = .001$. SUDS during the conversation was negatively correlated with neutral, self-focused thoughts, $r(91) = -.27, p = .011$, and there was a trend for neutral, other focused thoughts, $r(91) = -.20, p = .062$. SUDS ratings were not associated with positive, other-focused thoughts, $r(91) = -.03, p = .75$, or positive, self-focused thoughts, $r(91) = -.15, p = .16$. Self-focused attention was positively correlated with negative, self-focused thoughts, $r(91) = .34, p = .001$, but was unrelated to other types of thoughts, $r_s = -.13 - .02, p_s = .21 - .92$.

Preliminary Analyses

Participants were divided into two groups based on SIAS scores using a median split as described in the Method section. Differences in demographics across experiment condition and SIAS group were investigated (see Table 2). Chi-square analyses indicate that there were no significant differences in percentage of men and women based on condition, $\chi^2(1, N = 91) = 0.265, p = 0.61$, or SIAS group, $\chi^2(1, N = 91) = 0.89, p = 0.34$. A one-way analysis of variance (ANOVA) indicates that there were no significant differences in age based on condition, $F(1, 90) = 0.08, p = 0.78$, or SIAS group, $F(1, 90) = 1.51, p = 0.22$. Chi-square analyses indicate that

there were no significant differences in percentage of participants' ethnicities based on condition, $\chi^2(3, N = 91) = 0.35, p = 0.95$, or SIAS group, $\chi^2(3, N = 91) = 0.36, p = 0.31$. A one-way ANOVA was conducted to investigate differences across condition based on SIAS score. Results indicate that there was no significant difference in level of social anxiety across the two conditions, $F(1, 90) = .009, p = 0.92$.

Table 2. Demographics, SIAS Score by Condition and Group

	Critical Condition (<i>n</i> = 45)		Neutral Condition (<i>n</i> = 46)	
	High SIAS (<i>n</i> = 21)	Low SIAS (<i>n</i> = 24)	High SIAS (<i>n</i> =25)	Low SIAS (<i>n</i> = 21)
Gender				
Men	8 (38.1%)	10(41.6%)	7 (28%)	9 (42.9%)
Women	13 (61.9%)	14(58.3%)	18(72%)	12(57.1%)
Ethnicity				
Caucasian	18 (85.7%)	20 (83.3%)	22 (88%)	17 (80.9%)
African Am.	1 (4.8%)	3 (12.5%)	1 (4%)	2 (9.5%)
Asian Am.	1 (4.8%)	1 (4.2%)	1 (4%)	2 (9.5%)
Latino	1 (4.8%)	0 (0.0%)	1 (4%)	0 (0.0%)
Age	<i>M</i> = 20.63 <i>SD</i> = 4.12	<i>M</i> = 19.37 <i>SD</i> = 1.64	<i>M</i> = 20.0 <i>SD</i> = 3.95	<i>M</i> = 19.62 <i>SD</i> = 1.91
SIAS score	<i>M</i> = 8.57 <i>SD</i> =10.88	<i>M</i> =10.96 <i>SD</i> = 3.78	<i>M</i> =25.96 <i>SD</i> =6.68	<i>M</i> =11.57 <i>SD</i> = 3.98

One-way ANOVAs were conducted to assess the success of the experimental manipulation. As expected, participants in the critical condition reported that the confederate was significantly less accepting of their ideas ($M = 3.11; SD = 2.09$) than participants in the neutral condition ($M = 8.91; SD = 1.74$), $F(1, 90) = 207.74, p < 0.001$. In addition, participants in the critical condition reported that the confederate was significantly more critical or judgmental of them ($M = 7.29; SD = 2.52$) than participants in the neutral condition ($M = 1.76; SD = 1.23$), $F(1, 90) = 173.22, p < 0.001$. Overall, results also indicated that participants in the high SIAS group ($M = 6.07; SD = 3.49$) did not significantly differ from participants in the low SIAS group ($M = 6.02; SD = 3.52$) in terms of ratings of confederate acceptance, $F(1, 90) = 1.02, p = 0.32$, or criticism (high SIAS $M = 6.02; SD = 3.52$; low SIAS $M = 6.07; SD = 3.50$), $F(1, 90) = 0.39, p = 0.53$.

State Social Anxiety

A two-way between-groups ANOVA was conducted to explore the impact of social anxiety group (high SIAS versus low SIAS) and experiment condition (critical versus neutral conversation task) on state social anxiety as assessed by SUDS during the conversation task. There was a significant main effect for experiment condition, $F(1, 87) = 22.74, p < .001$, and for social anxiety group, $F(1, 87) = 6.63, p = .01$. As shown in Table 3, participants reported higher SUDS levels in the critical condition compared to the neutral condition. Further, the high SIAS group reported higher SUDS levels than did the low SIAS group during the conversation task. The effect sizes were large (partial eta squared = .20) and moderate (partial eta squared = .07), respectively. The interaction was not significant, $F(1, 87) = 1.68, p = .20$. For this interaction, the effect size was of small-to-medium magnitude (partial eta squared = .02). As shown in Figure 1, planned *t*-test comparisons show that individuals in the critical condition with higher social anxiety reported higher SUDS levels than individuals with lower social anxiety in the critical

condition, $t(43) = -2.40, p = .02$. Individuals in the neutral condition reported similar SUDS levels in the high SIAS group and in the low SIAS group, $t(44) = -1.08, p = .29$.

Table 3. SUDS by SIAS Group and Condition

	High SIAS group ($n = 45$)	Low SIAS group ($n = 46$)	Total ($n = 91$)
Condition	$M (SD)$	$M (SD)$	$M (SD)$
Critical	46.71 (18.85)	33.08 (19.19)	39.90 _a (2.50)
Neutral	25.36 (9.70)	20.86 (18.11)	23.11 _b (2.50)
Total	36.04 _a (2.50)	26.97 _b (2.50)	31.50 (1.77)

Note. SUDS = Subjective Units of Distress. Given means refer to the third SUDS rating given by the participant. SIAS = Social Interaction Anxiety Scale. Values with differing subscripts are significantly different at $p < .05$.

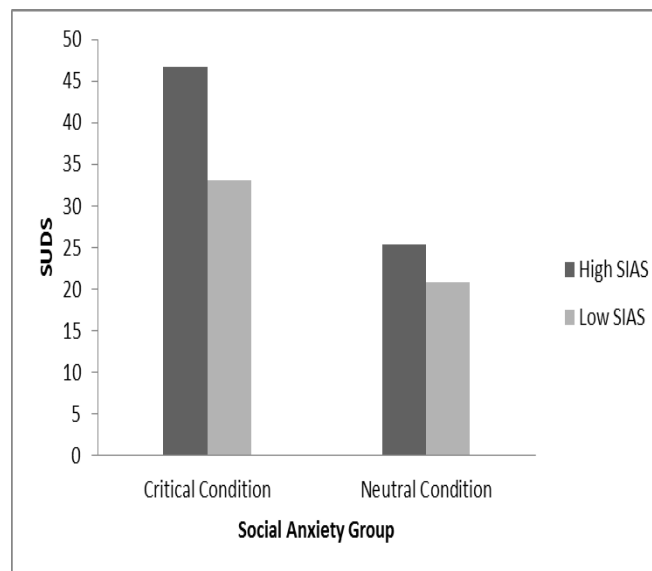


Figure 1. Planned t-tests Comparing SUDS Levels for each Social Anxiety Group (High versus Low) within each Experiment Condition (Critical versus Neutral). Note. * $p < .05$. SIAS = Social Interaction Anxiety Scale.

Focus of Attention

A two-way between-groups ANOVA was conducted to explore the impact of social anxiety group (high SIAS versus low SIAS) and experiment condition (critical versus neutral) on self-focused attention during the conversation task. There was a significant main effect for social anxiety group, $F(1, 87) = 7.31, p = .008$, but no main effect for experiment condition, $F(1, 87) = .22, p = .642$. As shown in Table 4, the high SIAS group reported higher levels of self-focus during the conversation task. A trend toward significance was found for the interaction effect between social anxiety and experiment condition, $F(1, 87) = 3.51, p = .064$. For this interaction,

the effect size was of small-to-medium magnitude (partial eta squared = .04). As shown in Figure 2, planned *t*-test comparisons show that individuals in the critical condition with higher social anxiety reported higher levels of self-focus than individuals with lower social anxiety, $t(43) = -3.27, p = .002$. Individuals in the neutral condition reported similar levels of self-focus in the high SIAS group and in the low SIAS group, $t(44) = -.58, p = .564$.

Table 4. Self-focused Attention by SIAS Group and Condition

Condition	High SIAS group ($n = 45$)	Low SIAS group ($n = 46$)	Total ($n = 91$)
	$M (SD)$	$M (SD)$	$M (SD)$
Critical	2.38 (0.73)	1.74 (0.58)	2.05 (0.71)
Neutral	2.19 (0.46)	2.08 (0.86)	2.14 (0.66)
Total	2.28 _a (0.60)	1.9 _b (0.71)	2.09 (0.68)

Note. SIAS = Social Interaction Anxiety Scale. Values with differing subscripts are significantly different at $p < .05$.

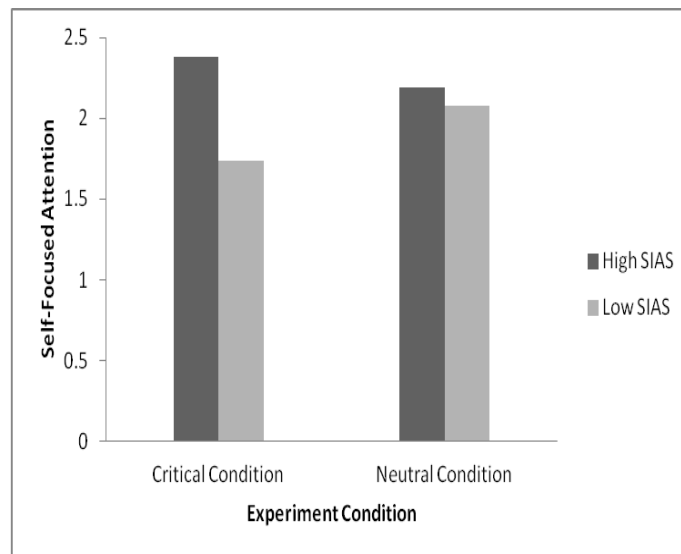


Figure 2. Planned *t*-tests Comparing Self-Focused Attention Scores for each Social Anxiety Group (High versus Low) within each Experiment Condition (Critical versus Neutral). Note. * $p < .05$. SIAS = Social Interaction Anxiety Scale.

Recollections of Event

Participants were asked directly after the conversation task to recall six thoughts they had during the interaction. These thoughts were then coded by two raters, whose inter-rater reliability was 95%. Consensus was reached for the remaining items. Each thought was assigned designations of one to six as follows as recommended by Hofmann et al. (2004): (1) positive, other-focused thoughts; (2) negative, other-focused thoughts; (3) neutral, other-focused thoughts; (4) positive, self-focused thoughts; (5) negative, self-focused thoughts; and (6) neutral, self-focused thoughts.

For each type of thought, a two-way between-subjects ANOVA was conducted to explore the impact of experiment condition and SIAS group on type of recollection of the conversation.

For positive, self-focused thoughts, there was a significant main effect for condition, $F(1, 87) = 4.61, p = .035$, but not for social anxiety group, $F(1, 87) = 1.54, p = .22$ (see Table 5). The main effect size for condition was of small-to-medium magnitude (partial eta squared = .05). There was also a significant interaction effect for SIAS group and condition for positive, self-focused thoughts, $F(1, 87) = 4.13, p = .045$. The effect size of the interaction was of small-to-medium magnitude (partial eta squared = .045). As shown in Table 5 and Figure 3, planned t -test comparisons showed that individuals in the high SIAS group in the critical condition reported no positive, self-focused thoughts, while socially anxious participants in the neutral condition reported significantly greater positive, self-focused thoughts, $t(44) = 2.31, p = .03$. Individuals in the low SIAS group reported similar levels of positive, self-focused thoughts in the critical condition and in the neutral condition, $t(43) = 0.14, p = .89$.

For negative, other-focused thoughts, there was a significant main effect for condition, $F(1, 87) = 0.33, p = 0.03$, but no main effect of SIAS group, $F(1, 87) = .034, p = .85$, nor an interaction, $F(1, 87) = 0.33, p = 0.09$. In the critical condition, participants reported more negative, other-focused thoughts ($M = 1.22, SD = 1.58$) than in the neutral condition ($M = 0.61, SD = 0.93$). The effect size for this main effect was of small-to-medium magnitude (partial eta squared = .055). For all other thought types (i.e., positive, other-focused; neutral, other-focused; negative, self-focused; and neutral, self-focused), there were no significant main effects or interaction effects ($ps = .10- .97$).

Table 5. Positive, Self-Focused Thoughts by Condition and SIAS group.

Note. SIAS = Social Interaction Anxiety Scale. Values with differing subscripts are significantly different at $p < .05$.

Condition	High SIAS group ($n=45$)	Low SIAS group ($n=46$)	Total ($n = 91$)
	$M (SD)$	$M (SD)$	$M (SD)$
Critical	0.00 _a (0.00)	0.08 (0.28)	0.04 _a (0.21)
Neutral	0.44 _b (0.87)	0.10 (0.30)	0.28 _b (0.69)
Total	0.24 (0.67)	0.09 (0.29)	0.16 (0.52)

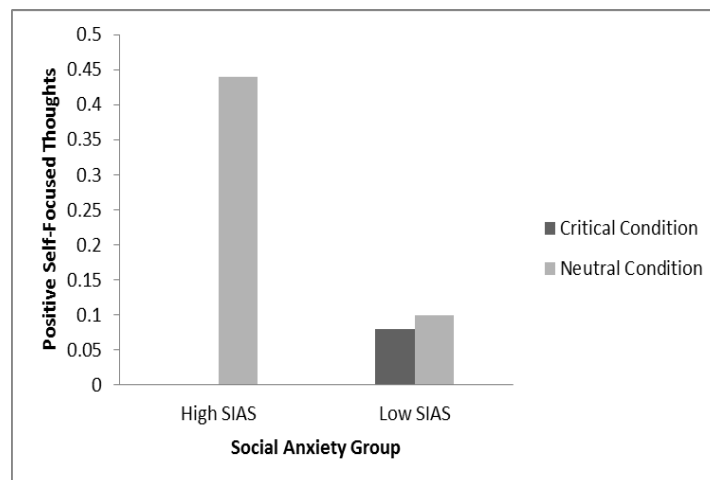


Figure 3. Interaction of Experiment Condition (Critical versus Neutral) and Social Anxiety Group (High versus Low) on Positive Self-Focused Thoughts. Note. * $p < .05$. SIAS = Social Interaction Anxiety Scale.

Discussion

The purpose of the study was to test the discrepancy between the models of Clark and Wells (1995) and Rapee and Heimberg (1997) in terms of focus of attention in socially anxious individuals. First, it was hypothesized that individuals with higher levels of social anxiety would report higher state anxiety and higher levels of self-focused attention during the anxiety-inducing conversation task. It was also hypothesized that a critical conversation partner would result in reports of higher self-focused attention and more negative thoughts about their performance during the conversation, and that the effect would be greater for individuals with higher levels of social anxiety. That is, consistent with the model proposed by Rapee and Heimberg (1997), it was hypothesized that an increase in external threat cues would increase the degree to which the participants—particularly socially anxious participants—engaged in self-focused attention and to which they reported negative thoughts about the conversation. Overall, the results of this study partially supported study hypotheses.

As predicted, participants in the high social anxiety group (as measured by the SIAS) reported greater state anxiety (as measured by SUDS) and self-focused attention during the conversation, compared to the low social anxiety group. Planned follow-up *t*-tests suggested that socially-anxious individuals engaged in higher levels of self-focused attention and reported higher state anxiety when presented with threatening stimuli in the critical condition compared to individuals with low levels of social anxiety in the critical condition. Further, socially anxious individuals reported fewer positive, self-focused thoughts in the critical condition than socially anxious participants in the neutral condition, while non-anxious participants reported similar levels of positive self-focused thoughts in both conversation conditions. In addition, participants in the critical condition reported more negative thoughts about others than participants in the neutral condition.

Though this pattern was not predicted, it is not inconsistent with current conceptualizations of social anxiety disorder. It is possible that increased external threat cues could reduce positive thoughts about oneself as thoughts shift to being more negative overall, particularly for socially anxious individuals. Contrary to expectations, there were no main effects of experiment condition for self-focused negative thoughts, and there were no social anxiety group by experiment condition interaction effects for any type of negative thoughts (self or other). As such, the results support aspects of both Clark and Wells (1995) and Rapee and Heimberg (1997) models.

Both of the models proposed by Clark and Wells (1995) and Rapee and Heimberg (1997) predicted the results found in this study in terms of state anxiety. As expected, individuals in the critical condition reported higher state anxiety, and individuals in the high social anxiety group reported higher state anxiety as well. Though no interaction was found, planned *t*-tests showed that the critical condition may have caused more state anxiety for individuals in the high anxiety group than for individuals in the low anxiety group. This finding provides further evidence of the effectiveness of the experimental manipulation used in this study, as well as providing support for both cognitive models of social anxiety.

Clark and Wells (1995)

Results of this study support the Clark and Wells (1995) model of social anxiety. For both the high and low SIAS groups, the critical condition resulted in higher SUDS scores than did the neutral condition. This effect was stronger for individuals in the high SIAS group than in the low SIAS group. The high SIAS group also reported higher levels of self-focused attention during the conversation, regardless of condition. In other words, individuals with higher trait

social anxiety reported more state anxiety during a conversation with another person. Individuals with higher social anxiety engaged in more self-focused attention than individuals with lower social anxiety. Just as Clark and Wells (1995) predict, socially anxious individuals reported a tendency to engage in self-monitoring behavior in a social situation.

Rapee and Heimberg (1997)

Like Clark and Wells (1995), the model proposed by Rapee and Heimberg (1997) also predicts self-monitoring behavior during social interactions among socially anxious individuals. The model also suggests, however, that individuals with social anxiety tend to scan the environment for threat cues, which in turn causes them to increase their self-monitoring behavior. In the current study, there was a trend toward an interaction such that individuals with social anxiety engaged in more self-focused attention in the critical condition. A significant interaction would be consistent with the prediction of Rapee and Heimberg (1997) that socially anxious individuals would scan the environment for threat cues, and that self-monitoring would increase when participants were exposed to threatening stimuli. The results of this study indicate that the conversation task alone was sufficient to trigger state anxiety and self-focused attention for socially-anxious individuals, but that the presence of threatening stimuli did not significantly increase self-focused attention. However, since this interaction effect approached significance and follow-up *t*-test comparisons suggest a potential interaction effect, it is possible that a larger sample size may indicate that the interaction proposed by Rapee and Heimberg (1997) is, in fact, an accurate explanation of the cognitive processes of socially anxious individuals.

In addition, participants in the critical condition reported more negative other-focused thoughts (regardless of anxiety group) and fewer positive self-focused thoughts (particularly for the high anxiety group). This is somewhat consistent with the model of Rapee and Heimberg (1997), except that instead of an increase in negative self-focused thoughts, the current findings show a decrease in positive self-focused thoughts as a response to the external threat cues. As mentioned before, it is possible that external threat cues during a social interaction result in self-focused thoughts becoming more negative overall, particularly for socially anxious individuals. While this decrease in affective valence for self-focused thoughts is consistent with the model proposed by Rapee and Heimberg (1997), more research is needed to explore this further.

Strengths

The present study has several strengths. First, the experimental design of this study makes it possible to examine causal relationships regarding the impact of external threat cues on state anxiety, self-focused attention, and thoughts about a social situation. Such conclusions can help to better understand the mechanisms underlying the development and exacerbation of social anxiety symptoms. Additionally, the study utilized measures and techniques with empirically established reliability and validity (e.g., SIAS, SUDS, FAQ, and thought listing technique). Manipulation checks show that the experimental manipulation was effective. This, coupled with the effectiveness of the random assignment of participants, allows for a good deal of confidence in drawing conclusions about the effect of external threat cues on self-focused attention, state anxiety and negative thoughts.

Limitations and Implications for Future Research

Though the study has several strengths, some limitations should be noted. With a larger sample size, it is possible that the interaction effect for trait anxiety and experiment condition for self-focused attention and state anxiety could reach significance. G*Power (Erdfeider, Faul, & Buckner, 1996) was used to determine the necessary sample size for this study. G*Power is a free program available on the Internet that can calculate the necessary sample size to detect an

effect if one exists given a specific alpha level and desired level of power. According to a priori power analysis assuming a medium-sized effect and with alpha set at .05 and power at .80, the necessary sample size was calculated to be 128 participants. Observed power in the current study was .65, below the threshold needed to detect the small- to-medium effect that was observed for most of the hypothesized effects. Additionally, the thought listing data were non-normal and therefore violated normality assumptions of the ANOVAs. It is recommended that these data be re-analyzed by dichotomizing the thought listing data into “no thoughts” and “any thoughts” and using it as an outcome variable using non-parametric statistical approaches.

Given the relatively small sample of college students and the base rate of social anxiety disorder, splitting the participants into high and low anxiety groups based on the median SIAS score provided a good distinction between socially anxious and non-socially anxious individuals. However, the high social anxiety group did not necessarily represent a sample of individuals with clinical levels of social anxiety. Instead, this method provided a relative picture of presence or non-presence of social anxiety symptoms within the available sample. Future studies should include individuals who qualify for a diagnosis of social anxiety disorder in comparison to individuals with little or no social anxiety. This would provide a clearer picture of the difference between the two groups on a cognitive level, and would be expected to result in stronger effects.

Additionally, the sample was disproportionately female and Caucasian, so results may not be generalizable to the entire population. Finally, the results of this study are based on self-report measures such as the FAQ and SUDS, which may raise concern about response bias. Future research should employ physiological measures such as skin conductance and heart rate to measure anxiety, and perhaps an eye-tracking task could be employed to measure focus of attention. Such implicit measures would provide the additional support needed to develop a more complete understanding of the cognitive processes involved in the maintenance of social anxiety. Additionally, a measure of focus of attention throughout the anxiety-inducing social situation, instead of only after the conversation had ended, would give a more precise idea of the participants' self-focus and how it changes in response to external cues throughout the conversation.

Conclusion

Despite its limitations, the current study supports the cognitive model proposed by Clark and Wells (1995) and provides partial support for the model proposed by Rapee and Heimberg (1997). The results of this study show that socially anxious individuals are more likely to engage in self-focused attention and to have fewer positive thoughts about themselves during social interactions, and these effects may be exacerbated when presented with heightened levels of external threat cues. These changes coincide with findings of higher state anxiety for socially anxious participants in the critical condition compared to the neutral condition.

These results provide insight into the cognitive processes involved in the maintenance of social anxiety, as they give a better idea of what causes socially anxious individuals to engage in the self-monitoring behavior (i.e., self-focused attention) that can lead to interference with social performance (Hartman, 1983). In combination with future studies exploring the effects of self-focused attention on social anxiety maintenance, this knowledge could be applied to the development of cognitive-behavioral treatment plans that focus on attention modification. For example, Amir, Taylor, and Donohue (2011) have been developing an attention modification program which aims to reduce anxiety symptoms. Overall, the current findings add to a growing empirical literature regarding attentional focus as it relates to social anxiety.

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