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## Effects of varying levels of anxiety within social situations: relationship to memory perspective and attributions in social phobia

Meredith E. Coles<sup>\*</sup>, Cynthia L. Turk, Richard G. Heimberg<sup>†</sup>, David M. Fresco

*Adult Anxiety Clinic of Temple University, Department of Psychology, Temple University, Weiss Hall,  
1701 North 13th Street, Philadelphia, PA 19122, USA*

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### Abstract

Cognitive-behavioral theorists (Clark & Wells, 1995; 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; Rapee & Heimberg, 1997; Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia. *Behaviour Research and Therapy*, 35, 741–756.) propose that individuals with social phobia form mental images of themselves as if from an external point of view. Research by Wells and colleagues has shown that, when recalling anxiety-provoking social situations, individuals with social phobia are more likely to take an observer perspective (seeing oneself as if from an external point of view) whereas control subjects are more likely to take a field perspective (as if looking out through one's own eyes). Furthermore, this pattern is specific to social events, as both groups recall non-social events from a field perspective (see Wells, Clark & Ahmad, 1998; Wells, A., Clark, D. M., & Ahmad, S. (1998). How do I look with my minds eye: perspective taking in social phobic imagery. *Behaviour Research and Therapy*, 36, 631–634; Wells & Papageorgiou, 1999; Wells, A. & Papageorgiou, C. (1999). The observer perspective: Biased imagery in social phobia, agoraphobia, and blood/injury phobia. *Behaviour Research and Therapy*, 37, 653–658). In the current study, individuals with social phobia took more of an observer perspective than non-anxious controls when recalling high anxiety social situations. However, both groups took a predominantly field perspective for memories of medium or low anxiety social situations. As memory perspective has also been shown to be related to causal attributions, we examined this relationship in our sample. Memories of low, medium, and high anxiety social situations were differentially related to attributions for each group. Patients' attributions for their performance became more internal, stable, and global as the

<sup>\*</sup> Corresponding author.

*E-mail address:* mcoles@astro.ocis.temple.edu (M.E. Coles) or rheimberg@nimbus.ocis.temple.edu (R. G. Heimberg).

<sup>†</sup> Also a corresponding author.

anxiety level of the situation increased, while the attributions of control subjects showed the opposite pattern. © 2001 Elsevier Science Ltd. All rights reserved.

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## 1. Introduction

A central proposal from recent accounts of social phobia is that affected individuals, upon encountering social situations that they perceive as holding the potential for negative evaluation, become increasingly self-focused (Clark & Wells, 1995; Rapee & Heimberg, 1997). In a general sense, self-focus may interfere with the person's ability to process information contrary to their negative beliefs about the self and others (Woody, 1996). Furthermore, excessive self-focus may also interfere with the individual's ability to attend to the social task at hand, disrupting performance and potentially eliciting negative responses from others (Rapee & Heimberg, 1997).

Several lines of research are suggestive of excessive self-focus among individuals with social phobia. During feared social situations, individuals with social phobia report more negative self-evaluative thoughts ("I'm boring") than negative other-focused thoughts ("They think I'm boring"; Stopa & Clark, 1993). They are also particularly aware of interoceptive stimuli, such as heart rate (Johansson & Öst, 1982). Excessive attention to internal sources of information may be a contributing factor in the findings that socially anxious individuals have poor memory for details of recent social situations (e.g., Daly, Vangelisti & Lawrence, 1989; Hope, Heimberg & Klein, 1990; but see Stopa & Clark, 1993).

Recently, cognitive-behavioral theorists have proposed that individuals with social phobia also attend to self-generated images of themselves and their behavior while in feared social situations (Clark & Wells, 1995; Rapee & Heimberg, 1997). Further, this representation of the self is formed as if the individual is viewing himself or herself from an external point of view. Clark and Wells (1995, p. 71) propose that the image is "from an observer's perspective" while Rapee and Heimberg (1997, p. 742) state that it is "as presumably seen by the audience". However, only a few studies have explored this aspect of these models.

Hackmann, Surawy and Clark (1998) asked individuals with social phobia and normal controls to recall a recent episode of social anxiety. Participants were then asked whether a spontaneous image had passed through their mind at the moment they were most anxious. Individuals with social phobia were more likely than non-anxious control participants to report spontaneous images or impressions (96.6 vs 75.0%, respectively). The images or impressions of individuals with social phobia were more likely to involve seeing themselves from an observer's perspective (watching themselves) than the spontaneously occurring images or impressions of normal controls.

Wells, Clark, and Ahmad (1998) examined memories for anxiety-evoking social and non-social situations. When asked to form an image of a recent social situation in which they felt really anxious and uncomfortable, individuals with social phobia were more likely than normal controls to rate the image as being from an observer's perspective. However, when asked to form an image of a recent non-social situation in which they felt really anxious and uncomfortable, both groups rated their images as from a field perspective (as if looking out through one's own eyes).

Wells and Papageorgiou (1999) found that only patients with social evaluative concerns

(individuals with social phobia or agoraphobia) reported an observer perspective for images when recalling anxiety-provoking social situations. Individuals with blood/injury phobia and normal controls reported a field perspective for memories of both social and non-social situations. Interestingly, only individuals with social phobia demonstrated a shift from a field perspective when recalling non-social situations to an observer perspective when recalling social situations; all other groups reported the same perspective for memories of both social and non-social situations. In summary, when asked to recall a recent anxiety-provoking social situation, or images experienced during these situations, individuals with social phobia reported taking an observer perspective.

Despite these initial findings, the nature and implications of memory perspective in social phobia have yet to be fully explored. While individuals with social phobia do not appear to take an observer perspective in anxiety-evoking non-social situations (Wells et al., 1998), no studies to date have examined memory perspective within the context of *social* situations of varying levels of anxiety (e.g., low anxiety social situations vs high anxiety social situations). However, recent models of social phobia suggest that an observer perspective is related to the heightened self-focus found in high anxiety social situations. Therefore, individuals with social phobia should be more likely to take an observer perspective in high anxiety social situations than in low anxiety social situations.

The implications of a finding of a memory perspective bias in social phobia are potentially important. Research in social psychology has shown that, in general, the perspective from which one views a situation is related to his or her causal attributions for the events in the situation. Actors have been found to make situational attributions for their own behavior (perhaps as their viewpoint focuses them on their surroundings), whereas observers have been shown to make more dispositional attributions for the same actor's behaviors (perhaps as their viewpoint focuses them on the actor in front of them; for a review, see Watson, 1982). The relationship of *memory* perspective and attributions has also been examined. For example, Frank and Gilovich (1989) found that participants' memories from an observer perspective for a get-acquainted conversation were related to more dispositional attributions for their own behavior, whereas memories from a field perspective were related to more situational attributions for their own behavior. These findings mimic the actor-observer attributional bias reported above. Furthermore, this pattern was evident whether the memory perspective occurred naturally or was elicited experimentally. On the basis of these findings, we would predict that the attributions of individuals with social phobia would be more dispositional in those situations in which they would be most likely to take an observer perspective (high anxiety social situations).

### 1.1. The current study

We asked participants to rate the perspective of their memories of social situations of three different anxiety levels (low/no anxiety, medium anxiety, and high anxiety). We also sought to extend previous research by examining memory perspective and attributions in social situations of varying anxiety levels. Finally, we examined the relationship between memory perspective and age of memory, as it has been found that older memories are more likely to be viewed from an observer perspective (e.g., Nigro & Neisser, 1983; Robinson & Swanson, 1993), and previous research examining memory perspective among individuals with social phobia has not controlled for this potentially confounding variable.

## 2. Method

### 2.1. Participants

The clinical sample consisted of 30 individuals who sought treatment for performance and/or interpersonal anxiety and who met DSM-IV (American Psychiatric Association [APA], 1994) criteria for social phobia. The comparison sample was comprised of 24 non-anxious controls (NACs) who were recruited through advertisements in local newspapers and flyers soliciting the paid participation of individuals who did not experience problems with anxiety or depression. All participants were screened using the Anxiety Disorders Interview Schedule for DSM-IV: Lifetime Version (DiNardo, Brown & Barlow, 1994). Preliminary evidence suggests that the ADIS-IV-L has moderate reliability ( $\kappa=0.64$ ) for the diagnosis of social phobia (DiNardo, Brown, Lawton & Barlow, 1995). NACs could not meet criteria for any current or past year Axis I diagnosis except specific phobia (1 NAC participant met criteria for a specific phobia of flying). Groups did not differ on gender ratio [ $\chi^2(1, N=54)=0.09$ , ns, effect size (ES)<sup>1</sup>=0.04], race [ $\chi^2(2, N=54)=0.18$ , ns, ES=0.06], marital status [Fisher's exact test (ns), ES=0.12], age [ $t(52)=-0.41$ , ns, ES=0.00], or years of education [ $t(52)=0.08$ , ns, ES=0.01]. Sample characteristics by group are presented in Table 1.

Table 1  
Characteristics of the study sample<sup>a</sup>

	Social phobics Mean (SD)	Non-anxious controls Mean (SD)
Age	30.7 (9.5)	31.9 (12.4)
Education (years)	15.1 (2.1)	15.1 (2.3)
SIAS total	51.79 (16.4)	12.38* (10.4)
SPS total	32.72 (16.4)	5.42* (6.8)
BDI total	11.90 (8.2)	1.63* (2.0)
	%	%
Gender		
Female	50	54
Male	50	46
Race		
Caucasian	73	71
African-American	17	21
Other	10	8
Marital status		
Single/divorced	90	92
Married	10	8

<sup>a</sup> SIAS=Social Interaction Anxiety Scale, scale range 0–80; SPS=Social Phobia Scale, scale range 0–80; BDI=Beck Depression Inventory, scale range 0–63. \*=groups differed at  $p<0.001$ .

<sup>1</sup> Effects Sizes (ES) for  $\chi^2$  tests represent estimates of Cohen's  $W$  (0.10=small, 0.30=medium, and 0.50=large), those for ANOVAs and simple main effects  $t$ -tests represent estimates of  $f$  (0.10=small, 0.25=medium, and 0.40=large; see Cohen, 1977).

## 2.2. Procedure

Each participant with social phobia was taught how to use the Subjective Units of Discomfort Scale (SUDS) and asked to provide examples of social situations in which they experience levels of anxiety corresponding to the various anchor points along this scale. Low, medium, and high anxiety situations were operationalized as follows: 0=“Not really experiencing anxiety, or only barely noticeable anxiety”, 50=“Uncomfortable anxiety level and your concentration is somewhat affected, but you continue on”, and 100=“The highest anxiety you’ve experienced in a social situation”. The interviewer verified that the patient had actually experienced the situation in the past. NACs did not generate social situations corresponding to low, medium, and high levels of anxiety. Instead, they were randomly yoked to participants with social phobia such that NACs responded to the social situations generated by the patients for the remaining procedures.

Next, all participants completed a memory interview in which they were asked to recall the most recent time they had experienced each of the three social situations representing low, medium, and high levels of anxiety. Situations were recalled in a counterbalanced order. To elicit images, participants were read the following instructions:

I’d like you to recall the last time you \_\_\_\_\_ (description of situation). You don’t have to describe it to me. Once you’ve got it in mind, close your eyes and get as clear an image as you can.

After a delay of approximately 15 s, participants were then asked to rate the perspective of their image. Instructions were read as follows and correspond to those used by Wells and Papageorgiou (1999).

Keeping your eyes closed, I want to ask you a question about the image. Thinking about the image you have just had, is your predominant impression one of viewing the situation as if looking out through your eyes, observing the details of what is going on around you, or is your predominant impression one in which you are observing yourself, that is, as if you were outside of yourself, looking at yourself from an external point of view? Please look at this scale and give me a rating of your perspective.

As in the Wells and Papageorgiou (1999) study, ratings of perspective were made on a scale from  $-3$ =“entirely looking out through my eyes” to  $+3$ =“entirely observing myself from an external point of view”.

In order to minimize participants’ focus on the centrality of perspective ratings in this study, and to serve as control variables, they were also asked to rate the clarity of their memory and the amount of movement in the remembered image. These two variables (clarity and movement) were not predicted to vary as a function of anxiety level or group membership (i.e., no interaction was predicted). Clarity ratings were made on a scale of  $-3$ =“the image was not very clear, it was fuzzy” to  $+3$ =“the image was very clear, it was crisp”. Movement ratings were made on

scale of  $-3$ ="it was like a movie, I could see things moving" to  $+3$ ="it was like a snapshot, very still".<sup>2</sup>

Participants were then asked to complete a self-report questionnaire regarding their memory and attributions. The memory-attributional questionnaire asked participants to rate how well they came across in the situation they recalled (performance) and how nervous they were in that situation (nervousness) on scales from 1 to 7, with lower scores indicating poorer performance and more nervousness. For each of these dimensions (performance and nervousness), participants then rated the internality, stability, and globality of the causes on scales from 1 to 7 in a manner similar to the Attributional Style Questionnaire (ASQ; Peterson et al., 1982; Seligman, Abramson, Semmel & von Baeyer, 1979). Higher scores indicated more internal, stable and global attributions. Finally, participants were asked when the situation occurred (month, day and year) and to provide a SUDS rating for how anxious they were in the specific situation that they had recalled.

Participants also completed questionnaires assessing social anxiety [Social Interaction Anxiety Scale (SIAS)<sup>3</sup>, and Social Phobia Scale (SPS); Mattick & Clarke, 1998; see also Heimberg, Mueller, Holt, Hope & Liebowitz, 1992], and depression [Beck Depression Inventory (BDI); Beck, Rush, Shaw & Emery, 1979, see also Beck, Steer & Garbin, 1988]. Means and standard deviations for these measures by group are presented in Table 1. The clinical group reported significantly higher symptom levels on all three measures (all  $ps < 0.001$ ).

### 3. Results

#### 3.1. Manipulation check

Before examining the relationship of anxiety levels to memory perspective, we examined the mean SUDS ratings for participants in each group for the low, medium, and high anxiety social situations recalled (see Table 2). We were primarily interested in examining the correspondence between the mean SUDS ratings for the social phobia patients for the specific social situation recalled and each of the three anxiety levels intended. Paired  $t$ -tests of patients' SUDS ratings for the three situations revealed significant increases in SUDS ratings from the low to medium situations [ $t(29) = -20.31$ ,  $p < 0.001$ ,  $ES = 2.10$ ] and the medium to high situations [ $t(29) = -8.70$ ,  $p < 0.001$ ,  $ES = 1.28$ ].

#### 3.2. Relationship of anxiety levels of situations to memory perspective

Mean ratings of memory perspective as a function of group and anxiety level of situations are shown in Fig. 1. We performed a 2 group (social phobia, NAC)  $\times$  3 anxiety level of situation (low,

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<sup>2</sup> Instructions for clarity ratings were as follows: "Thinking about the image you have just had, is your predominant impression of the image being very clear and crisp or was it not very clear, or it was fuzzy? Please look at this scale and give me a rating of the clarity". Instructions for the amount of movement in the images were as follows: "Thinking about the image you have just had, is your predominant impression of the image being like a movie, where you could see things moving, or was it like a snapshot, very still? Please look at this scale and give me a rating of the movement".

<sup>3</sup> The current study used the 20-item version of the SIAS.

Table 2

Ratings of anxiety, clarity, movement, performance/nervousness, and age of memories for low, medium and high anxiety memories reported by social phobic and non-anxious control participants

	Social phobics Mean (SD)	Non-anxious controls Mean (SD)
SUDS <sup>a</sup>		
Low anxiety	4.23 (5.5)	3.83 (8.8)
Medium anxiety	58.10 (16.3)	10.38 (13.5)
High anxiety	90.93 (14.6)	27.79 (27.4)
Movement		
Low anxiety	-0.47 (1.9)	-1.50 (1.9)
Medium anxiety	-0.40 (2.1)	-1.00 (2.3)
High anxiety	0.83 (1.9)	-0.17 (2.4)
Clarity		
Low anxiety	0.90 (1.7)	2.08 (1.6)
Medium anxiety	1.07 (1.9)	2.25 (1.2)
High anxiety	0.87 (1.8)	1.33 (2.1)
Performance/nervousness		
Low anxiety	5.93 (0.96)	6.60 (0.59)
Medium anxiety	3.18 (1.22)	6.10 (1.15)
High anxiety	2.02 (1.19)	5.00 (1.43)
Age of memory (days)		
Low anxiety	17.79 (31.4)	151.67 (430.9)
Medium anxiety	68.69 (103.8)	226.29 (613.6)
High anxiety	754.86 (1522.6)	405.79 (965.8)

<sup>a</sup> SUDS=Subjective Units of Discomfort Scale.

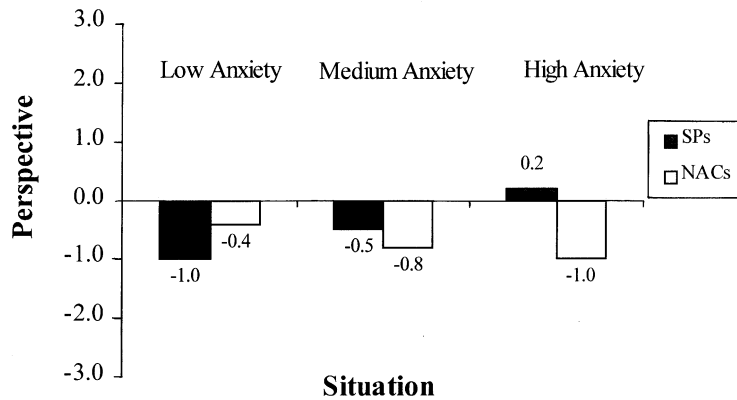


Fig. 1. Ratings of memory perspective as a function of group and anxiety level of situation remembered. Perspective ratings are from -3="entirely looking out through my eyes" to +3="entirely observing myself from an external point of view".



medium, high) ANOVA with repeated measures on the second factor for ratings of memory perspective. This analysis failed to reveal main effects of group [ $F(1, 52)=0.39$ , ns,  $ES=0.05$ ] or anxiety level of situation [ $F(2, 104)=0.47$ , ns,  $ES=0.08$ ]. However, the interaction of group and anxiety level of situation was significant [ $F(2, 104)=3.53$ ,  $p<0.04$ ,  $ES=0.21$ ].

To examine the nature of this interaction, we performed simple main effects analyses. Analyses of the simple main effect of anxiety level of situation indicated that individuals with social phobia were significantly more likely to rate their high anxiety memories as from an observer perspective than their low anxiety memories [ $t(29)=-2.51$ ,  $p<0.02$ ,  $ES=0.29$ ]. However, the perspective of individuals with social phobia did not differ significantly between low anxiety and medium anxiety memories [ $t(29)=-0.93$ , ns,  $ES=0.13$ ] or between medium anxiety and high anxiety memories [ $t(29)=-1.14$ , ns,  $ES=0.16$ ]. This pattern of differences and examination of Fig. 1 both suggest a gradual shift towards an observer perspective as anxiety level of situation increases. For NACs, examination of Fig. 1 suggests that, as anxiety level increased, memories shifted toward more of a field perspective. However, the differences in perspective for NACs were not shown to be significant in any comparison between situations of differing anxiety levels, [low vs medium:  $t(24)=1.12$ , ns,  $ES=0.08$ ], [medium vs high:  $t(24)=0.55$ , ns,  $ES=0.06$ ], and [low vs high:  $t(24)=1.35$ , ns,  $ES=0.14$ ].

Analyses of the simple main effect of group indicated that participants with social phobia recalled high anxiety memories from more of an observer perspective than NACs [ $t(52)=1.99$ ,  $p=0.05$ ,  $ES=0.27$ ], but the groups were not shown to differ on their ratings of perspective for the low [ $t(52)=-1.03$ , ns,  $ES=0.14$ ] or medium [ $t(52)=0.42$ , ns,  $ES=0.06$ ] anxiety memories. The main difference in perspective between patients and NACs was found for memories of high anxiety social situations.

### 3.3. Relationship of anxiety levels of situations to clarity and amount of movement

A 2 Group (social phobia, NAC)×3 anxiety level of situation (low, medium, high) ANOVA with repeated measures on the second factor was conducted on ratings of clarity. This analysis revealed a main effect of group [ $F(1, 52)=8.07$ ,  $p<0.01$ ,  $ES=0.23$ ] but failed to reveal a main effect of anxiety level of situation [ $F(2, 104)=1.82$ , ns,  $ES=0.15$ ] or an interaction of group and anxiety level of situation [ $F(2, 104)=0.95$ , ns,  $ES=0.11$ ]. Regardless of anxiety level, patients rated their memories as less clear than NACs (see Table 2).

A 2 group (social phobia, NAC)×3 anxiety level of situation (low, medium, high) ANOVA with repeated measures on the second factor was conducted on ratings of movement. This analysis revealed main effects of group [ $F(1, 52)=4.69$ ,  $p<0.04$ ,  $ES=0.17$ ] and anxiety level of situation [ $F(2, 104)=8.15$ ,  $p<0.001$ ,  $ES=0.32$ ] but failed to reveal an interaction of group and anxiety level of situation [ $F(2, 104)=0.28$ , ns,  $ES=0.06$ ]. Regardless of anxiety level, patients rated their memories as having less movement than NACs. As anxiety level increased, both groups reported their memories as having less movement (see Table 2).

### 3.4. Relationship of anxiety levels to ratings of performance/nervousness

Ratings of performance and nervousness were combined (see Table 2). We performed a 2 group (social phobia, NAC)×3 anxiety level of situation (low, medium, high) ANOVA with repeated



measures on the second factor on collapsed performance/nervousness scores. This analysis revealed main effects of group [ $F(1, 52)=128.96, p<0.001, ES=0.89$ ] and anxiety level of situation [ $F(2, 104)=89.83, p<0.001, ES=1.06$ ]. These main effects were modified by a significant interaction of group and anxiety level of situation [ $F(2, 104)=20.25, p<0.001, ES=0.50$ ].

To examine the nature of this interaction, we performed simple main effects analyses. Analyses of the simple main effect of anxiety level of situation indicated that individuals with social phobia rated themselves more negatively for each successive increase in anxiety level [low vs medium:  $t(29)=11.66, p<0.001, ES=1.25$ ; medium vs high:  $t(29)=3.79, p<0.001, ES=0.53$ ; and low vs high:  $t(29)=15.79, p<0.001, ES=1.78$ ]. In slight contrast, NACs were not shown to differ on their composite ratings for low and medium anxiety memories [ $t(23)=1.89, ns, ES=0.23$ ] but did rate themselves more negatively for high anxiety memories than for medium anxiety [ $t(23)=3.03, p<0.01, ES=0.49$ ] or low anxiety [ $t(23)=4.85, p<0.001, ES=0.73$ ] memories.

Analyses of the simple main effect of group indicated that the social phobics rated themselves significantly more negatively than NACs for memories from all three anxiety levels [low anxiety:  $t(52)=-2.99, p<0.01, ES=0.41$ ; medium anxiety:  $t(52)=-8.96, p<0.001, ES=1.22$ ; high anxiety:  $t(52)=-8.39, p<0.001, ES=1.14$ ].

### 3.5. Relationship of anxiety levels of situations to attributions

For each participant, at each anxiety level, a composite attribution score was calculated by taking the mean of his or her ratings for internality, stability, and globality for his or her performance and nervousness (see Fig. 2). We then performed a 2 group (social phobia, NAC)  $\times$  3 anxiety level of situation (low, medium, high) ANOVA with repeated measures on the second factor for composite attributions. This analysis failed to reveal a main effect of Group [ $F(1, 52)=0.96, ns, ES=0.08$ ] but did reveal a significant main effect of anxiety level of situations [ $F(2, 104)=4.85, p<0.01, ES=0.25$ ] and a significant interaction of group and anxiety level of situations [ $F(2, 104)=15.98, p<0.001, ES=0.45$ ].

Analyses of the simple main effect of anxiety level of situations indicated that individuals with social phobia rated the causes of their performance/nervousness as significantly more internal, stable and global for their medium anxiety memories compared to their low anxiety memories

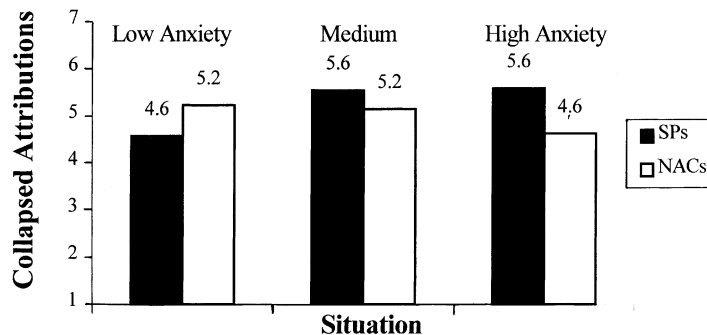


Fig. 2. Collapsed attribution ratings as a function of group and anxiety level of situation remembered. Higher scores represent more internal, stable, and global attributions.

$[t(29)=-5.43, p<0.001, ES=0.47]$  and for their high anxiety memories compared to their low anxiety memories  $[t(29)=-4.75, p<0.001, ES=0.49]$ . However, the attributions of individuals with social phobia were not shown to differ significantly between medium and high anxiety memories  $[t(29)=-0.17, ns, ES=0.01]$ . NACs rated the causes of their behavior as significantly *less* internal, stable and global for their high anxiety memories than their medium anxiety memories  $[t(23)=2.70, p<0.02, ES=0.25]$  or their low anxiety memories  $[t(23)=2.80, p<0.02, ES=0.29]$ . However, the attributions of NACs were not shown to differ significantly between low and medium anxiety memories  $[t(23)=0.48, ns, ES=0.04]$ .

Analyses of the simple main effect of group indicated that individuals with social phobia rated their attributions for low anxiety memories as significantly *less* internal, stable, and global than NACs  $[t(52)=-2.30, p<0.03, ES=0.31]$  but rated their attributions of high anxiety memories as significantly *more* internal, stable, and global than NACs  $[t(52)=3.14, p<0.01, ES=0.43]$ . The groups were not shown to differ on their composite attributions for the medium anxiety memories  $[t(52)=1.42, ns, ES=0.19]$ .

### 3.6. Relationship of anxiety levels of situations to age of memory

Mean ratings of age of the memories as a function of group and anxiety level are presented in Table 2. We conducted a 2 group (social phobia, NAC)  $\times$  3 anxiety level of situation (low, medium, high) ANOVA with repeated measures on the second factor for the age of memories. This revealed a main effect of anxiety level of situation  $[F(2, 102)=6.58, p<0.002, ES=0.29]$  but failed to reveal a main effect of group  $[F(1, 51)=0.02, ns, ES=0.01]$  or an interaction of group and anxiety level of situation  $[F(2, 102)=1.85, ns, ES=0.15]$ .<sup>4</sup> Regardless of group, as anxiety level increased, memories were reported as being older. This suggests that differences in patterns of perspective between groups across the three anxiety levels were not likely to be due to differences in the age of the memories.

### 3.7. Exploratory analysis: comparing individuals with social phobia who took field vs observer perspectives for high anxiety memories

While our pattern of findings regarding ratings of perspective by group and anxiety level of situation was as expected, the magnitude of the social phobia participants' ratings of perspective for the high anxiety situation was not as strong (as clearly in the observer range) as would be expected from previous reports (Wells et al., 1998; Wells & Papageorgiou, 1999). Therefore, we examined some characteristics of the social phobia participants' memories for the high anxiety situation by comparing those who reported an observer perspective (+1, +2, or +3) to those who took a field perspective (-3, -2, -1).<sup>5</sup> Examination of the ratings of perspective within this cell

<sup>4</sup> Due to the large variances and likely violation of the assumption of homogeneity of variance, we re-ran our analyses after conducting an appropriate transformation. In most instances, parametric procedures applied to appropriately transformed data are equivalent to nonparametric procedures (see Rosenthal & Rosnow, 1991). Specifically parametric analyses conducted on the data after a log base 10 transformation revealed the same pattern of results as reported in the text using raw data.

<sup>5</sup> Note that there were no instances in which a perspective rating of 0 was given by an individual with social phobia for their high anxiety memory, and therefore the splitting of perspective ratings into the dichotomy of either field or observer did not include any ratings which had originally been a 0 on the continuous scale.

revealed that 14 social phobia participants took a field perspective while 16 took an observer perspective. We then compared these two groups on level of anxiety reported for the situation (SUDS) and the types of high anxiety situations they recalled. We were also interested in comparing these groups on social phobia subtype; however a disproportionately small number of persons with nongeneralized social phobia in this sample prohibited this comparison (only five of the 30 participants with social phobia were classified as having the nongeneralized subtype). Comparisons of patients who reported a field vs observer perspective for the high anxiety situation did not reveal differences in reported anxiety level [ $t(28)=-0.25$ , ns,  $ES=0.05$ ; field: 90.21 (15.8), observer: 91.56 (13.9)].

In order to examine possible effects of the type of situation recalled, two coders classified situations into five categories: performance/public speaking, incidental observation, one-on-one interaction, group interaction, and other/miscellaneous. The two coders were found to have good reliability ( $\kappa=0.89$ ). Discrepancies were resolved by an independent judge. Due to the small cell sizes, and the exploratory nature of this question, we chose not to perform statistical analyses at this time, but instead examined the patterns of percentages as an indicator of whether this is a topic worthy of future research efforts. Comparisons of social phobia subgroups (field vs observer) on types of situations recalled revealed that, of the social phobia participants reporting a field perspective, fewer than half recalled a performance/public speaking event (42.9%), half remembered a one-on-one interaction (50.0%), and one person remembered an incidental observation event (7.1%). In contrast, for social phobia participants reporting an observer perspective, almost two-thirds recalled a performance/public speaking event (62.5%), and less than one-fifth recalled a one-on-one interaction (18.8%) or a group interaction (18.8%). Stated differently, of those recalling a performance/public speaking event, 37.5% reported a field perspective and 62.5% reported an observer perspective, in contrast to memories for one-on-one interactions, in which 70.0% reported a field perspective and 30.0% reported an observer perspective. This tentatively suggests that the type of situation recalled may influence the perspective from which it is remembered. However, more research with larger samples for various types of situations is needed before definitive statements can be made.

#### 4. Discussion

Among individuals with social phobia, highly anxiety-provoking social situations were more likely to be recalled from an observer perspective while less anxiety-provoking social situations were more likely to be recalled from a field perspective. Moreover, individuals with social phobia did not simply recall all social situations from an observer perspective, but did so as the recalled social situation was perceived as more threatening. In contrast, normal controls generally took a field perspective for all situations. These findings are consistent with recent theoretical accounts (Clark & Wells, 1995; Rapee & Heimberg, 1997) and research (Hackmann et al., 1998; Wells & Papageorgiou, 1999; Wells et al., 1998) on social phobia, suggesting that, for social situations perceived as threatening, individuals with social phobia become self-focused by forming images and memories of themselves from an observer perspective. This observer perspective is problematic in that it is likely to be distorted (Clark & Wells, 1995; Hackmann et al., 1998; Rapee & Heimberg, 1997) and interfere with the individual's ability to process information from the

environment that is contrary to his or her negative beliefs. Furthermore, as individuals with social phobia attempt to simultaneously monitor this self-generated image for flaws that might elicit negative evaluation from others, while they also allocate attentional resources to the detection of threatening social cues in the environment (e.g., Hope, Rapee, Heimberg, & Dombek, 1990) and attend to and engage in the social tasks at hand, they are operating within a multiple-task paradigm, which increases the probability of disrupted performance (MacLeod & Mathews, 1991). Under these circumstances, as the complexity of the social task increases, so does the probability of the individual giving a poor social performance (Rapee & Heimberg, 1997). Disrupted social performance may then result in actual negative reactions or feedback from others, which may further reinforce the individual's negative self-image.

Interestingly, the current study failed to find as dramatic a bias toward the observer perspective among individuals with social phobia for high anxiety social situations as previous research (Wells & Papageorgiou, 1999; Wells et al., 1998). In fact, there was an almost even split between the number of individuals with social phobia who adopted a field perspective and the number who took an observer perspective in the high anxiety social situation. The reasons that our findings differ from those of other studies using the same instructions are not entirely clear.

An exploratory examination of our data suggests that certain types of high anxiety social situations are more likely to be remembered from an observer perspective. Specifically, high anxiety social situations recalled from an observer perspective appear particularly likely to be of a performance/public speaking nature. In these situations, individuals may automatically rely more heavily on internal sources of information to estimate the quality of their behavioral performance since external sources of feedback may be less available or more ambiguous. This pattern fits nicely with the findings of Woody, Chambless and Glass (1997), who studied changes in self-focused attention over the course of cognitive-behavioral group therapy for social phobia. Among patients who primarily suffered from public speaking fears, reductions in self-focused attention were strongly related to decreases in speech anxiety.

Among individuals with social phobia, high anxiety social situations were more likely to elicit internal, stable and global attributions for performance and nervousness. Paralleling the pattern of results in which memory perspective moved toward an observer perspective, attributions became more internal, stable, and global as the social situations became more threatening to the patient. Unfortunately, a lack of power and a restricted range of scores on our measures of memory perspective and attributions within each level of anxiety limited our ability to directly examine the correlations of memory perspective and attributional style in this study. Future research will be needed to more directly test the hypothesis that an observer perspective increases the likelihood that individuals with social phobia will attribute negative outcomes to dispositional factors.

As a group, the non-anxious controls rated the "high anxiety" social situation as only mildly anxiety-provoking. Nevertheless, it is interesting to note that, as a social situation was perceived as more threatening by non-anxious normal controls, attributions became more situational (i.e. more external, unstable, and specific), a pattern opposite of that demonstrated by the social phobia patients in this study but consistent with the notion that a field perspective should be associated with relatively more external, unstable, and specific attributions. It is also interesting to consider the patterns of attributions across anxiety levels within the context of research on the self-serving bias in causal attributions. In general, individuals attribute their successes to their own efforts, abilities, and other dispositional or internal causes, whereas they attribute their failures to bad

luck, task difficulty, or other external causes (Bradley, 1978). The responses of control subjects in this study are consistent with this self-serving bias. As anxiety level increased, controls rated themselves as performing more poorly and experiencing greater nervousness. Increased anxiety and decreased performance were related to more external, unstable and specific attributions. Social phobia patients also rated themselves as performing more poorly and experiencing more nervousness as anxiety level increased. However, in opposition to control subjects, these increases in anxiety and poorer performance were related to more internal, stable, and global attributions. This finding is consistent with previous studies showing that individuals with social evaluative concerns reverse the self-serving bias when there is a self-presentation component to their attributions (e.g., when evaluation of their attributions by others is imminent; Arkin, Appelman & Burger, 1980).

We attempted to rule out several alternative explanations for our findings on memory perspective. First, as expected, we found a group by situation interaction for perspective but not for movement or clarity. Thus, the observed results for memory perspective cannot be accounted for by a general bias in the way that individuals with social phobia evaluate their memories. Also, given that avoidance of feared social situations is common among patients with social phobia, it was possible that the specific social situations recalled by the patient group would be older than those recalled by the comparison group. This possibility had not been examined in previous research, but no differences were found in the current study between groups for the age of memories across the various levels of anxiety, suggesting that the observed results cannot be fully accounted for by this extraneous variable. However, this conclusion is limited as there was a high amount of variability in the age of the memories reported. Future studies may wish to further assess the relationship of age and perspective of memories and include age of memory as a more central variable in their designs. For example, future studies could examine memory perspective prospectively across time. Do anxious and non-anxious groups both report the same perspective a few minutes after an event but diverge across time? Do socially anxious individuals shift to an observer perspective more rapidly? Or are differences in memory perspective tied to encoding differences and therefore different between socially anxious and non-anxious groups shortly after an event?

## 5. Conclusion

Results of this study both replicate and extend previous findings. The consistency of a memory perspective bias in individuals with social phobia across numerous studies, and now from multiple research groups, attests to the robustness of this phenomenon. The consistency of these findings with cognitive-behavioral models of social phobia attests to the importance of the findings. Manipulations of focus of attention have already been shown to be useful during exposure treatment interventions for social phobia (Wells & Papageorgiou, 1998) and a refined understanding of the relationship of memory perspective and related processes (e.g., attributions) to social phobia may also prove useful for refining treatment strategies in the future.



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