Main Section

SOCIAL ANXIETY, SELF-FOCUSED ATTENTION, AND THE DISCRIMINATION OF NEGATIVE, NEUTRAL AND POSITIVE AUDIENCE MEMBERS BY THEIR NON-VERBAL BEHAVIOURS

Stuart Perowne

University of Oxford, UK

Warren Mansell

Institute of Psychiatry, London, UK

Abstract. Recent research indicates the apparent paradox that social anxiety may be associated with both self-focused attention and selective attention to external social threat cues. A naturalistic paradigm was designed to explore both processes. High and low socially anxious individuals were asked to make a speech to a monitor displaying six people whom they believed to be watching them live. Two audience members exhibited only positive behaviours, two only neutral ones and two only negative behaviours. In contrast to the low social anxiety group who selectively discriminated positive audience members, the high social anxiety group selectively discriminated the negative individuals, yet they were no more accurate at discriminating the negative behaviours the audience members had performed and they reported more self-focused attention than the low social anxiety group. The effects remained while covarying for differences in dysphoria. The results indicate that socially anxious individuals base their judgements of being disapproved by others on limited processing of their social environment.

Keywords. Social anxiety, social phobia, self-focus, selective attention, cognitive bias.

Introduction

Cognitive models of social phobia and social anxiety have conceptualized the allocation of attentional resources as being a critical maintaining factor (Clark & Wells, 1995; Rapee & Heimberg, 197). Specifically, the models make two proposals concerning the balance of attention. One proposal is that attention becomes focused on internal cues such as thoughts,

---

images and bodily sensations under conditions of social-evaluative threat. The second suggests that attention becomes biased towards external threat cues, such as indicators of negative evaluation from other people in the social situation. The two proposals concerning the balance of attention during social situations are not necessarily mutually exclusive,[1] but they need to be resolved with respect to one another. Clark and Wells (1995) do so by specifying that the detection of negative social cues in others is followed by avoidance and self-focused attention: ''When social phobics think they are in danger of negative evaluation by others, they shift their attention to detailed monitoring and observation of themselves.'' (Clark & Wells, 1995, p. 70).

Both processes of attentional allocation have support in the literature. Certain studies support the idea that high socially anxious individuals attend to external threat. In particular, a tendency for socially anxious individuals to allocate excess attention to indicators of negative evaluation has been demonstrated by interference when colour-naming evaluative words compared to non-socially anxious individuals in the Stroop task (e.g. Hope, Rapee, Heimberg, & Dombeck, 1990; Mattia, Heimberg, & Hope, 1993). However, the Stroop task has been criticized as a method for measuring attention (MacLeod, Mathews, & Tata, 1986) and consequently other investigative techniques have been developed. In order to increase the ecological validity of the tasks, some investigators have used real-world social cues, such as faces, rather than visually presented words, and/or have measured biases during social-evaluative situations. Evidence from many studies using designs of this kind (see Clark, 2000, for a review) suggests that, compared to low socially anxious individuals, high socially anxious individuals typically show reduced processing of external social information and increased self-focused attention during social interactions (e.g. Daly, Vangelisti, & Lawrence, 1989; Hope, Heimberg, & Klein, 1990; Kimble & Zehr, 1982; Mansell, Clark, Ehlers, & Chen, 1999; Mellings & Alden, 2000). Nevertheless, two studies have used highly ecologically valid paradigms in which individuals are asked to detect social cues (facial expressions or non-verbal behaviour) and found the opposite results (Gilboa-Schechtman, Foa, & Amir, 1999; Veljaca & Rapee, 1998). Their findings suggest that high socially anxious individuals appear to show better detection of social cues that indicate disapproval from others compared to low socially anxious individuals. Three other studies using a similar paradigm have failed to find this effect (Esteves, 1999; Pozo, Carver, Wellens, & Scheier, 1991; Winton, Clark, & Edelmann, 1995). The methods and results of these five studies will be described in some detail here because of their relevance to the current study, which attempted to resolve the conflicting findings.

Each of the five studies exploring the detection of social cues differed somewhat in their experimental design. Winton et al. (1995) asked high and low socially anxious participants to carry out two relatively simple tasks. First, they had to detect the valence of negative or neutral faces which were each independently presented for 60 milliseconds. Next, they were asked to detect discrepant non-verbal social cues from 2-second video clips. In both studies,

---

[1] Although there is a tendency in the literature to interpret the two different theories of attentional allocation as mutually exclusive this is in fact not the case. It is conceivable that social phobics self-focus their attention whilst at the same time having a bias in the remaining attention towards external threat cues rather than positive social cues. For example, this would mean that high socially anxious individuals would show reduced attention to external information compared to low socially anxious individuals and *at the same time* show greater accuracy in detecting negative social cues, which is not accounted for by a response bias.

the high socially anxious participants showed a response bias to report that the stimuli had been more negative, but they showed no greater accuracy at discriminating the facial expressions or detecting discrepant nonverbal cues.

The study by Gilboa et al. (1999) used a paradigm that could be regarded as more ecologically valid than Winton et al. (1995) because multiple facial images were presented for a longer period of time, as would be the case in a typically social-evaluative situation. In this paradigm, the face-in-the-crowd task, participants were presented with a screen of 12 photographic images of facial expressions. On critical trials, a target face is displayed among an array of distracter faces of a different emotion (e.g. an angry face in a happy crowd, or a happy face in an angry crowd). The participants were instructed to indicate the presence or absence of a discrepant face in the crowd by pressing the appropriate computer key. The study showed that, compared to nonanxious controls, generalized social phobics showed faster detection times for angry faces than happy faces in a neutral crowd.

Esteves (1999) used a similar design to Gilboa et al. (1999), but presented nine schematic facial expressions (rather than photographic images of actual faces) to high and low socially anxious participants. In one study the participants were currently being evaluated by a video camera, and in a second study they were not being socially evaluated. In both studies, Esteves (1999) found that all participants were faster at detecting angry faces, but there was no difference in latency between high and low socially anxious participants. Thus, Esteves' findings failed to replicate Gilboa et al. (1999). It could be argued that schematic faces have less of an impact than photographic images of faces, but this would not explain why there was an advantage for all participants to detect angry faces. Alternatively, it could be suggested that only generalized social phobics show an improved detection of angry faces, but this would not be consistent with the findings of Veljaca and Rapee (1998) below.

Veljaca and Rapee (1998) used a more naturalistic design than Gilboa et al. (1999) and Esteves (1999). High and low socially anxious participants gave a speech to three audience members who had been trained to elicit nonverbal signs of negative and positive evaluation at irregular intervals. During the speech, the participants pressed one of two buttons to indicate whether they had noticed either a negative or positive behaviour. Using a signal detection analysis, Veljaca and Rapee (1998) found that the high socially anxious participants were more accurate at detecting negative behaviours, while low socially anxious participants were more accurate at detecting positive behaviours. This study demonstrates a clever design with a high ecological validity, but there would appear to be uncertainties about how well it could have been controlled. The audience members were asked to display a behaviour ''when they felt it was most appropriate'', and thus the behaviours could have been timed to coincide with specific behaviours from the participants themselves, leading to a contamination by the participants' own behaviour. An effective method of bypassing this form of contamination was developed in an earlier study by Pozo et al. (1991). In this study, high and low socially anxious participants answered a series of questions about themselves, replying to what they thought was a closed circuit TV connection to another person, but was in fact a video tape of an individual portraying fixed proportions of negative, neutral and positive facial expressions. Thus, the interaction was perceived to be real, but was in fact pre-recorded and therefore controlled. Furthermore, the participants were asked to rate their interviewer's approval of them *after* the video, so that their interaction was not contaminated by instructions to deliberately monitor the other person's reactions. Pozo et al. (1991) found that, compared to low socially anxious individuals, high socially anxious

participants rated that the interviewer had shown less approval of them, but there was no difference in the two groups' ability at detecting changes in facial expression.

In summary, the findings of research to date are ambiguous, but it appears that arguably the most well-controlled and ecologically valid study (Pozo et al, 1991) did not find evidence of improved detection of threatening social cues in high socially anxious participants. Thus, the evidence is still consistent with the view that high socially anxious individuals focus their attention internally during social-evaluative situations, rather than showing extensive processing of the social cues elicited by others. In order to test the theory more closely, the current study followed the design of Veljaca and Rapee (1998), while including three advantages of the Pozo et al. (1991) study. First, the participants were told they were talking to a live audience when in fact it was a pre-recorded video. Second, their discrimination ability was tested after the speech so that instructions to detect social cues would not interfere with their normal pattern of attention. Third, neutral as well as negative and positive social cues were presented. Further, it is important to know whether socially anxious individuals are extensively processing the social cues that they detect, or are in fact discriminating disapproval from others on the basis of very little information from their social environment, because the majority of their attention is self-focused. Therefore, participants were asked to rate the general approval shown by each member of the audience, and also to separately identify the social cues that the audience members had elicited.

The following hypotheses were tested. If high socially anxious individuals show better discrimination of negative audience members compared to neutral and positive ones, they should rate these individuals as more disapproving when tested following the speech. However, if this ability is based on brief rather than extensive processing (as suggested by Clark & Wells, 1995), they should be no better than low socially anxious individuals at discriminating the specific social cues that the audience members had elicited. Further, if high socially anxious individuals in fact engage in more self-focused attention than low socially anxious individuals, this should be demonstrated in their self-reports. Also, a reduced ability to discriminate social cues would provide indirect support for increased self-focused attention.

Method

Participants

Participants were students from University of Oxford and Oxford Brookes University who scored < 8 (lower quartile) or > 17 (upper quartile) on the Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969). The FNE has successfully distinguished between high and low socially anxious participants in earlier studies (e.g. Mansell et al., 1999; Winton et al., 1995). One high socially anxious participant who scored above 20 on the Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) was excluded. Data were unavailable for four high socially anxious participants who refused to give the speech and six participants (two high socially anxious, four low socially anxious) who stopped speaking after realizing that the audience was pre-recorded. The numbers in the two experimental groups were as follows: high social anxiety ($n = 10$; 4 males, 6 females) and low social anxiety ($n = 10$; 5 males, 5 females). All participants completed the following questionnaires: FNE, BDI, Personal Report of Confidence as a Speaker (PRCS; Paul, 1966), Social

Table 1. Trait and state characteristics of the low and high social anxiety groups

Measure	Low social anxiety		High social anxiety		
	Mean	*SD*	Mean	*SD*	*t*
FNE	4.7	1.6	25.8	3.2	†
SADS	1.8	2.2	11.4	6.4	4.5**
PRCS	5.4	2.6	19.6	8.1	5.3**
STAI-T	29.5	6.8	53.0	8.5	6.8**
BDI	2.8	3.5	8.1	3.0	3.7*
Age	21.8	3.1	22.1	7.0	0.8
FAQ-Self	10.6	3.0	14.8	2.1	3.6*
FAQ-Other	10.6	2.3	7.4	2.0	3.3*
Behaviour composite	3.5	1.6	−2.0	3.9	4.1*
Success of speech	5.4	1.7	1.9	2.0	4.3**
Anxiety	29.0	15.2	77.0	22.6	5.6**

* $p < .01$. ** $p < .001$. † Bimodal variable upon which participants were selected

Avoidance and Distress Scale (SADS; Watson & Friend, 1969) and the trait version of the State-Trait Anxiety Inventory (STAI-T; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Independent samples *t*-tests (see Table 1) indicated that the high social-anxiety group scored higher than the low social-anxiety group on all measures but did not differ in age.

Materials

Audience behaviours. The most appropriate positive and negative behaviours from Veljaca and Rapee (1998) were selected, in addition to further negative, neutral and positive items to make six behaviours in each category. Negative behaviours were yawning, looking at watch, look of disbelief, shaking head, attempting to talk to neighbour, and long look around the room. Neutral behaviours were scratch head, adjust seating position, play with pen, squint, brief look around room, and rub eyes. Positive behaviours were leaning forward, smiling, nodding in agreement, nodding in acknowledgement, making notes, and pointing in agreement.

Audience videotapes. Six confederates were divided into three (negative, neutral and positive) opposite sex pairs. Three videos were created in one filming session. The seating was balanced over the three videos so that no two people would sit next to each other doing the same type of behaviours, and so that over the three videos two individuals carried out each of the three categories of behaviour in each of the left, centre and right sections of the audience. Each audience member was assigned a different set of three behaviours from one category. Throughout each video, one randomly selected behaviour occurred every 4 seconds, with a buffer of 10 seconds at the beginning and end of the video to reduce the possibility of primacy and recency effects. Each behaviour was performed twice – once in the first half of the video and once in the second half. This meant that participants would see a total of 36 behaviours balanced across the audience members in just under 3 minutes. Each participant was randomly allocated one of the three videos at the start of the study.

Valence and observability ratings of audience behaviours. To confirm that the three categories of behaviours could be distinguished as negative, neutral and positive, 12 independent raters (four raters for each of the three videos), blind to the experimental hypothesis, rated the valence of each behaviour from the videos on scales from −3 (negative), through 0 (neutral) to 3 (positive). A one-way ANOVA indicated a highly significant effect of category on valence ratings, $F(2, 22) = 348.4$, $p < .001$. The means and standard deviations for each category were: negative = −2.06 (0.32); neutral = −.28 (0.26); positive = 1.68 (0.39). Paired-samples t-tests indicated that negative behaviours were rated more negatively than neutral behaviours, $t(11) = 15.0$, $p < .001$, and that positive behaviours were rated more positively than neutral behaviours, $t(11) = 13.9$, $p < .001$. Thus, the three valences of behaviour could be clearly distinguished from the video.

In order to investigate whether the three categories of behaviour would be equally noticeable from the video, the independent raters were instructed to make noticeability ratings from 0 (not at all) to 10 (extremely). A one-way ANOVA revealed an effect of category on noticeability ratings, $F(2, 22) = 34.5$, $p < .001$. The means and standard deviations for each category were: negative = 7.40 (1.25); neutral = 4.44 (1.74); positive = 5.44 (1.56). Paired-samples t-tests indicated that negative behaviours were rated as more noticeable than positive behaviours, $t(11) = 6.5$, $p < .001$, and that positive behaviours were rated as more noticeable than neutral behaviours, $t(11) = 2.3$, $p < .05$.

Measures. A photograph of the audience members with neutral expressions was used for identification. The participants provided ratings of how much they thought each audience member had enjoyed the speech on a Likert scale from 0 (not at all) to 8 (very much). Following this, they completed a forced choice behaviour checklist in which they had to tick the three behaviours they noticed most for each audience member from a table containing all 18 behaviours. They then completed the Focus of Attention Questionnaire (FAQ; Woody, 1996), a 10-item scale that measures participants' reports of their self-focused attention (e.g. ''I was focusing on what I would say or do next'') and other-focused attention (e.g. ''I was focusing on the other people's appearance or dress''). They completed the behaviour checklist (Mansell & Clark, 1999) to assess their perceived performance during the speech. This scale consists of 7 positive characteristics (e.g. confident) and 10 negative characteristics (e.g. awkward), each rated on a scale of 0 (not at all) to 8 (extremely). It also included an item to gauge their perceived overall success of the speech. Finally, participants indicated their feelings of anxiety during the speech on a scale of 0 (not at all) to 100 (extremely).

Procedure

Participants were tested individually. They were told that after they had filled in the trait questionnaires they would be asked to carry out a mildly stressful task. The speech was introduced as follows:

> The next part of the experiment will assess your social skills and public speaking ability. In a short while I shall ask you to make a 3-minute speech on a controversial topic. You will only have one minute to prepare the speech. There will be a video camera projecting your image to an audience in another room in the building. There is also a camera filming the audience that you will be able to see on the monitor. The audience will be assessing the quality of your speech style. The purpose of giving a speech through a video link is to

enable the experimental comparison of real live interaction compared with ''virtual'' live interaction. Shortly after completing the speech you will have the chance to meet the audience and they will discuss your performance with you.

Participants stood two metres from the monitor that was mounted with a video camera and were told they would appear facing the audience on the monitor next door if they gave the speech directly to the audience. The experimenter briefly left the room on the pretence of checking that the participant was in focus for the audience. The participants were encouraged to keep speaking throughout and explained that the video link would automatically activate when they were to start and cut out when they were to stop. They were also told that there was no microphone from the audience, to prevent them from attempting actual interaction. The topic of the speech was given: ''The death penalty''. Whilst they were preparing the experimenter would turn on the monitor and secretly start the videotape, which had a one minute blank before the audience appeared. After the speech, the participants completed the remainder of the questionnaires, were probed for their belief that the video was of a live audience and asked to express it as a percentage, and were debriefed.

Data analysis

Detection of behaviours was indexed by the number of behaviours out of 6 in each category attributed to the correct audience member (hits) and the number of behaviours out of 18 in each category that were misattributed (false alarms). Following MacMillan and Creelman (1991), discrimination (d') scores and response bias (c) scores were calculated. The checklist of participants' own behaviours was used to calculate a behaviour composite score: the mean for negative characteristics subtracted from the mean for positive characteristics. The statistical analyses used were either independent samples t-tests between the two social anxiety groups or two-way repeated measures ANOVAs with social anxiety as the between-group variable and category (positive–neutral–negative) as the within-group variable. Where the variances in the two groups were found to be unequal, t-tests were carried out making no assumption of equality of variance. Finally, following recommendations from a referee, where the analyses indicated group differences in a key variable, BDI was entered as a covariate in the analysis to control for the effects of dysphoria.

Results

Discrimination of positive, neutral and negative audience members

In order to test whether high socially anxious individuals showed a bias to discriminate disapproving (negative) audience members compared to neutral and positive ones, the two-way ANOVA was carried out on the participants' ratings of how much they thought each audience member had liked their speech. The means and standard deviations are displayed in Table 2. The analysis indicated a significant group main effect F (1, 18) = 35.0, p <0.001; across all audience members the high social anxiety group gave lower ratings of how much the audience members had liked their speech than the low social anxiety group.

There was also a main effect of category, F (2, 36) = 16.4, p < 0.001, which was qualified by the predicted interaction between group and category, F (2, 36) = 4.5, p < 0.05. To investigate this interaction, separate one-way Category ANOVAs were carried out on each
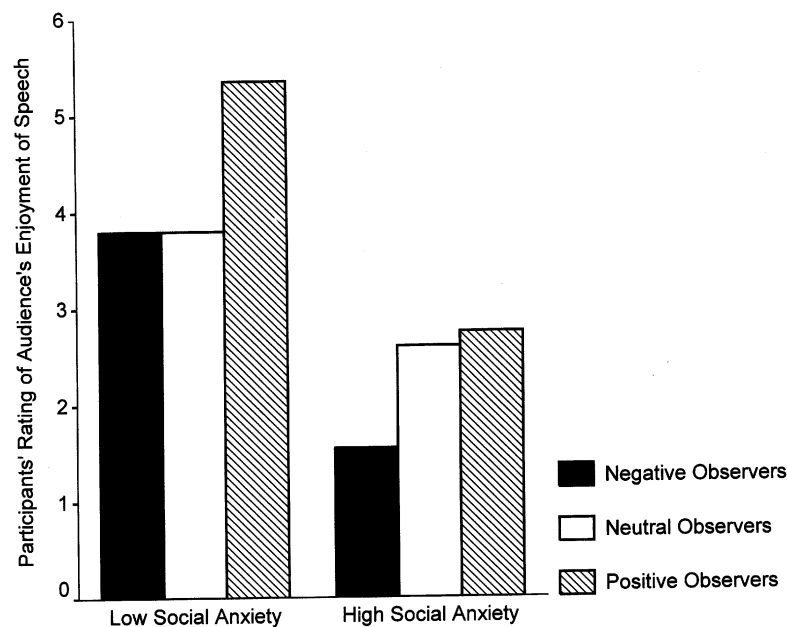
Figure 1. Discrimination of negative, neutral and positive audience members based on ratings of how much the participants thought they had liked the speech

group. The main effect of valence was significant in each group, $F (2, 18) = 7.1$, $p < .05$ and $F (2, 18) = 14.0$, $p < .01$, for the high and low social-anxiety groups respectively. Paired *t*-tests were conducted between each of the categories. In the high socially anxious group, significant differences were found only between ratings of positive and negative audience members, $t (9) = 3.2$, $p < 0.05$, and between ratings of neutral and negative audience members, $t (9) = 3.2$, $p < 0.05$. In the low socially anxious group significant differences were detected only between ratings of positive and neutral audience members, $t (9) = 4.2$, $p < 0.01$, and between positive and negative audience members, $t (9) = 4.0$, $p < 0.01$. The results indicate that the high social anxiety group specifically discriminated the negative individuals as predicted, and the low social anxiety group specifically discriminated the positive individuals (see Figure 1).

Audience behaviours

In order to test whether the discrimination of negative individuals was based on limited or extensive processing of their non-verbal behaviour, the two-way ANOVA was carried out on the discrimination scores of the audience behaviours. The means and standard deviations are displayed in Table 2. There was no evidence of an interaction between group and valence, $F (2, 36) = 0.5$, *ns*, consistent with the hypothesis that the high socially anxious individuals did not engage in extensive processing of negative social cues. Indeed, an analysis of the means indicated that in fact the low social anxiety group showed

Table 2. Means and standard deviations of ratings of audience members and the participants' discrimination of their behaviours

Measure	Low social anxiety		High social anxiety	
	Mean	SD	Mean	SD
Ratings of audience members				
Negative	3.80	0.89	1.55	0.80
Neutral	3.80	0.48	2.60	0.81
Positive	5.35	1.31	2.75	1.34
Audience behaviours – discrimination (d)				
Negative	0.52	0.46	0.11	1.08
Neutral	−0.33	1.22	−0.76	1.07
Positive	0.13	0.51	0.15	1.03
Audience behaviours – response bias (c)				
Negative	0.83	0.33	0.91	0.36
Neutral	0.96	0.52	0.74	0.59
Positive	0.43	0.28	0.84	0.44

(non-significantly) higher discrimination scores for negative social cues than the high social anxiety group (see Table 2; $t(18) = 1.1$, $p = .28$). A power analysis indicated that if the sample size were to be doubled, this effect would be statistically significant. There was no main effect of group, $F(1, 18) = 0.9$, providing no indirect support that the high social anxiety group were more self-focused, although the means were in the predicted direction.

There was a significant main effect of valence, $F(2, 36) = 5.9$, $p < 0.05$. Separate paired samples t tests indicated that participants detected more positive, $t(19) = 2.8$, $p < .05$, and more negative, $t(19) = 3.0$, $p < .01$, than neutral behaviours, but there were no differences in the detection of negative and positive behaviours, $t(19) = 0.73$ (see Figure 2). No significant effects were found for response bias.

Self-focus, mood and performance measures

The high social anxiety group reported greater self-focused attention, less other-focused attention, more anxiety, worse overall success and lower scores on the behaviour composite measure (see Table 1 for means and statistics).

Belief in a live audience

The percentage ratings were skewed and so a Mann Whitney U test was used. There was no indication of a group difference in belief that the audience was live, $z = 0.232$, ns, $Ms = 74.0$ and 71.5 for the low and high social anxiety groups respectively.

Covarying for dysphoria

The experimental groups differed significantly on BDI scores in addition to social anxiety. In order to control for the effects of dysphoria, BDI was entered as a covariate in the
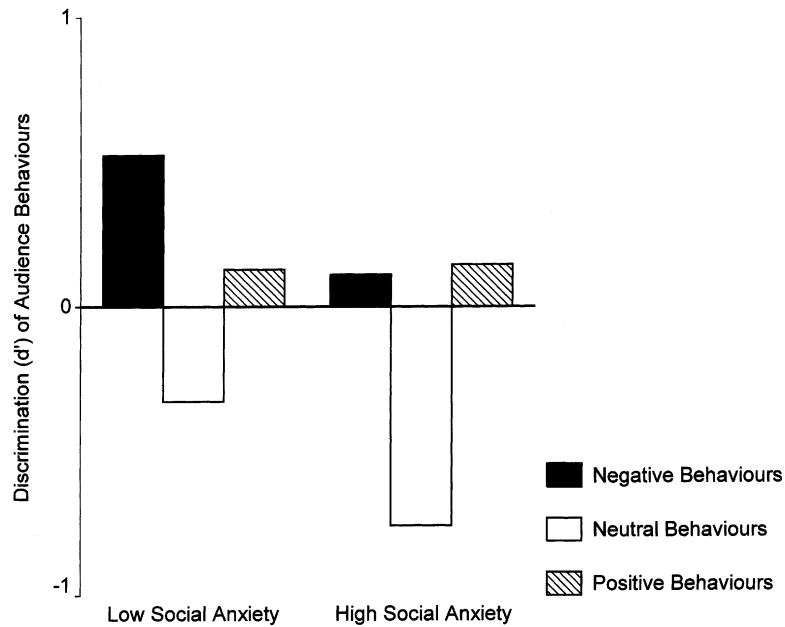
Figure 2. Discrimination of negative, neutral and positive audience behaviours

analyses which had found an effect of social anxiety. The important interaction between group and valence on ratings of the audience members remained significant, $F (2, 34) = 4.1$, $p < .05$, as did group differences in self-focused attention, $F (1, 17) = 4.6$, $p < .05$, feelings of anxiety, $F (1, 17) = 9.5$, $p < .01$ and overall success, $F (1, 17) = 5.1$, $p < .05$. Group differences in other-focused attention and the behaviour composite measure became non-significant, $Fs (1, 17) = 1.7$ and 3.5, respectively.

Discussion

The high social anxiety group reported that overall the audience had judged their performance more negatively than the low social anxiety group, as indicated by their mean ratings of audience members' perception of them and their perceived overall success of the speech. More specifically, high socially anxious individuals were found to selectively discriminate audience members who were negatively evaluating them, whereas low socially anxious individuals selectively discriminated audience members who were positively evaluating them. Nevertheless, there was no evidence that the high socially anxious individuals specifically selectively detected negative behaviours compared to low socially anxious individuals, or indeed that the low socially anxious individuals selectively detected more positive behaviours. Instead, all emotional behaviours were better detected by both groups, consistent with the judgements made by independent raters. The behaviour detection data did not support the hypothesis that high socially anxious individuals would show less externally focused attention, although the means were in the predicted direction (with negative behaviours being non-significantly better detected by the *low* social anxiety group). In sup-

port of the hypothesis, the high social anxiety group reported more self-focused attention than the low social anxiety group.

From the current study it appears that when confronted with a range of people who hold differing views of them, high socially anxious individuals selectively discriminated the disapproving audience members and low socially anxious individuals selectively discriminated the approving ones; yet in this study both views were biased reflections of the actual situation. To our knowledge, the current study was the first to explore the selective processing of different audience members and their behaviours, during a real performance situation, in which any possible contamination of audience reactions from participants' responses was ruled out.

The current study relied on using participants' retrospective ratings of how much each audience member liked their speech as a measure of how effective they were at discriminating them. It is important to determine whether this discrimination bias reflects either: (a) a general interpretative bias, (b) a bias in memory for the audience members, or (c) a bias in detection of the audience members. Explanation (a) can be eliminated because if a general negative interpretative bias was operating we would have expected neutral audience members to have been rated more negatively by the high socially anxious participants, whereas actually they found them indistinguishable from positive audience members. Explanation (b) has some support from the literature. For example, a recent well-controlled study found a memory bias for negative rather than positive information about the observable self in social anxiety (Mansell & Clark, 1999). Explanation (c) remains a strong possibility and should be further tested because no other studies have specifically investigated detection of negative individuals, as opposed to negative social cues.

The findings of the current study were based on a small sample size and therefore a replication of the findings would be desirable. At the time of experimentation, continuing the study to include more participants proved very difficult owing to the high attrition rate, and other practical issues. Nevertheless, the effect appeared to be powerful enough to lead to statistically significant findings, maybe due to the extreme nature of the two experimental groups, the clear distinction between negative, neutral and positive behaviours as rated by independent assessors, and the exclusion of individuals who discovered the manipulation. The study used a population of students, who were not clinically diagnosed. Nevertheless, there are indications that the high social anxiety group were on the clinical continuum. The mean score of the high social-anxiety group on the FNE of 25.8 was closely comparable with clinical populations and the mean score on the PRCS above that used as a cut-off to indicate public speaking anxiety (Gatchel, Hatch, Maynard, Turns, & Taunton-Blackwood, 1979; Paul, 1966). Future research could test whether, like earlier research using the FNE (see Stopa & Clark, 2001 for a review), these findings generalize to a clinical population. Future research could also attempt to equate the noticeability of each of the three categories of behaviour (negative, neutral and positive). Negative behaviours were rated as more noticeable than positive behaviours, which in turn were rated as more noticeable than neutral behaviours. This finding does not detract from the conclusions of the study, because if the significant group differences in participants' ratings of the audience members were a function of observability, then the main contrast would be between negative and neutral audience members, rather than the contrast between negative and positive audience members that was found.

In summary, the results suggest that, following a social-evaluative situation, high socially

anxious individuals report that specific audience members evaluated them negatively, but they do not have an enhanced ability to identify the non-verbal information on which they based this judgement. High socially anxious individuals also report focusing attention on themselves. The findings do not provide evidence for the view that high socially anxious individuals extensively process external sources of threat, but instead are consistent with the suggestion that they observe others until evidence of negative evaluation is detected and then direct their attention towards internal cues (Clark & Wells, 1995). One consequence is that they are then unable to disconfirm their view that other people are negatively evaluating them in the light of new external information. Treatment is therefore designed to reduce self-focused attention and increase the processing of disconfirmatory information from the external environment (Clark & Wells, 1995; Wells & Papageorgiou, 1998; Woody, Chambless, & Glass, 1997).

Acknowledgements

References

BECK, A. T., RUSH, A. J., SHAW, B. F., & EMERY, G. (1979). *Cognitive therapy of depression.* New York: Guilford Press.

CLARK, D. M. (2000). A cognitive perspective on social phobia. In R. Crozier & L. E. Alden (Eds.), *International handbook of social anxiety*. Chichester: Wiley.

CLARK, D. M., & WELLS, A. (1995). A cognitive model of social phobia. In R. Heimberg, M. Liebowitz, D. A. Hope & F. R. Schneier (Eds.), *Socal phobia: Diagnosis, assessment and treatment* (pp. 69–93). New York: Guilford Press.

DALY, J. A., VANGELISTI, A. L., & LAWRENCE, S. G. (1989). Self-focused attention and public speaking anxiety. *Personality and Individual Differences, 10*, 903–913.

ESTEVES, F. (1999). Attentional bias to emotional facial expressions. *European Review of Applied Psychology, 49*, 91–97.

GATCHEL, R., HATCH, J., MAYNARD, A., TURNS, R., & TAUNTON-BLACKWOOD, A. (1979). Comparison of heart rate biofeedback, false biofeedback, and systematic desensitization in reducing speech anxiety: Short- and long-term effectiveness. *Journal of Consulting and Clinical Psychology, 47*, 620–622.

GILBOA-SCHECHTMAN, E., FOA, E. B., & AMIR, N. (1999). Attentional biases for facial expressions in social phobia: The face-in-the-crowd paradigm. *Cognition and Emotion, 13*, 305–318.

HOPE, D. A., HEIMBERG, R. G., & KLEIN, J. F. (1990). Social anxiety and the recall of interpersonal information. *Journal of Cognitive Psychotherapy, 4*, 185–195.

HOPE, D. A., RAPEE, R. M., HEIMBERG, R. G., & DOMBECK, M. J. (1990). Representations of the self in social phobia: Vulnerability to social threat. *Cognitive Therapy and Research, 14*, 177–189.

KIMBLE, C. E., & ZEHR, H. D. (1982). Self-consciousness, information load, self-presentation, and memory in a social situation. *Journal of Social Psychology, 118*, 39–496.

MACLEOD, C., MATHEWS, A., & TATA, P. (1986). Attentional bias in emotional disorders. *Journal of Abnormal Psychology, 95*, 15–20.

MACMILLAN, N. A., & CREELMAN, C. D. (1991). *Detection theory: A user's guide*. Cambridge: Cambridge University Press.

Mansell, W., & Clark, D. M. (1999). How do I appear to others? Processing of the observable self in social anxiety. *Behaviour Research and Therapy, 37*, 419–434.

Mansell, W., Clark, D. M., Ehlers, A., & Chen, Y. (1999). Social anxiety and attention away from emotional faces. *Cognition and Emotion, 13*, 673–690.

Mattia, J. L., Heimberg, R. G., & Hope, D. A. (1993). The revised Stroop colour-naming task in social phobics. *Behaviour Research and Therapy, 31*, 305–313.

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.

Paul, G. L. (1966). *Insight vs. desensitization in psychotherapy. An experiment in anxiety reduction.* Stanford, CA: Stanford University Press.

Pozo, C., Carver, C. S., Wellens, A. R., & Scheier, M. F. (1991). Social anxiety and social perception: Construing others' reactions to the self. *Personality and Social Psychology Bulletin, 17*, 355–362.

Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioural model of anxiety in social phobia. *Behavoiur Research and Therapy, 35*, 741–756.

Spielberger, C. D., Gorsuch, R. L., Lushene, R. E., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the State-Trait Anxiety Inventory.* Palo Alto, CA: Consulting Psychologists Press.

Stopa, L., & Clark, D. M. (2001). Social phobia: Comments on the viability and validity of an analogue research strategy and British norms for the Fear of Negative Evaluation Scale. *Behavioural and Cognitive Psychotherapy, 29*, 423–430.

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.

Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting and Clinical Psychology, 33*, 448–457.

Wells, A., & Papageorgiou, C. (1998). Social phobia: Effects of external attention on anxiety, negative beliefs and perspective taking. *Behavior Therapy, 29*, 357–370.

Winton, E., Clark, D. M., & Edelmann, R. J. (1995). Social anxiety, fear of negative evaluation and the detection of negative emotion in others. *Behaviour Research and Therapy, 33*, 193–196.

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.

Woody, S. R., Chambless, D. L., & Glass, C. R. (1997). Self-focused attention in the treatment of social phobia. *Behaviour Research and Therapy, 35*, 117–130.