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Social Anxiety and the Effects of Engaging in Mental Imagery[1]

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Previous research has shown that patients with social phobia often experience negative, observer-perspective self-images when in anxiety-provoking social situations [Hackmann, A., Clark, D. M., & McManus, F. (2000). Recurrent images and early memories in social phobia. Behaviour Research and Therapy*, 38, 601–610]. The present experiment investigated whether negative images play a role in the maintenance of social anxiety. High and low socially anxious individuals (n = 40 in each group) were asked to give a speech in front of a camera. Half of the samples were instructed to hold in mind a negative, observer-perspective self-image during the speech, whereas the other half held a positive image of themselves. High socially anxious participants in the negative imagery condition perceived more bodily sensations, rated specific aspects of their performance unfavourably, and rated the self-image as a more accurate reflection of the self, compared to high socially anxious individuals in the positive imagery condition. For the low socially anxious individuals there was no significant difference between the two imagery conditions on measures of anxiety and performance. These results support the hypothesis that negative self-imagery may be involved in the maintenance of social anxiety.*

KEY WORDS: social anxiety; imagery; cognitive processes.

INTRODUCTION

Processing of distorted image of one's self has been conceptualised by cognitive–behavioral theorists as a key factor in the maintenance of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997). In particular, Clark and Wells (1995) have suggested that, when in a social situation, social phobics are prone to focus attention on themselves as a social object and experience spontaneously occurring images in which they see themselves as if viewed from outside (observer-perspective). The images are said to be excessively negative and at least

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partly distorted, but patients appear to believe that the image is accurate at the time it occurs. Unfortunately, in their image they do not see what a true observer would see, but rather see their worst fears which, in turn, further increases their in-situation anxiety. In a general sense, experiencing of negative self-images may interfere with the person's ability to process information contrary to their negative beliefs about the self and others (Clark & Wells, 1995). It is thus suggested that individuals with social phobia use these internal cues as evidence they have made a negative impression on others.

Several studies explored the nature of imagery in social phobia. 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. The images or impressions of individuals with social phobia were more negative and distorted and were more likely to involve seeing themselves from an observer's perspective (watching themselves) than the spontaneously occurring images or impressions of normal controls. Similarly, Wells, Clark, and Ahmad (1998) and Wells and Papageorgiou (1999) found that, compared to nonpatient controls, patients with social phobia are more likely to take an observer perspective when asked to image a recent social situation in which they have felt anxious. In contrast, nonpatients were more likely to take a field perspective (viewing the scene as if looking out at it through one's own eyes).

Hackmann, Clark, and McManus (2000) gave 22 patients with social phobia a semi-structured interview which aimed to further explore the nature of social phobic imagery. The results suggested that in patients with social phobia, early unpleasant experiences may lead to the development of excessively negative images of their social selves that are repeatedly activated in subsequent social situations and fail to update in the light of subsequent, more favourable experiences.

The studies reviewed above report results consistent with the experience of negative, observer-perspective images in social phobics. To determine whether these biases do actually play a role in generating anxiety and maintaining the condition it is necessary to experimentally manipulate the biases and show that such manipulations modulate the strength or the persistence of social anxiety. Hirsch, Clark, Mathews, and Williams (2003) recently reported a study which experimentally manipulated images. Patients with social phobia had a conversation with a stranger while holding in mind their typical negative, observer-perspective image or a more positive image of themselves. In the negative imagery condition patients felt more anxious, believed they looked more anxious and believed that they performed less well. An assessor who was blind to imagery condition also rated the patients' performance as poorer when the participants were holding in mind their negative image.

The data of Hirsch et al. (2003) support the hypothesis that the experience of negative self-images has a significant effect on how patients with social phobia feel and perform during a social situation. The present study provides a further test of this hypothesis in individuals high in social-evaluative anxiety and also tests the

hypothesis that socially anxious individuals would believe the negative self-image is accurate at the time it occurs. Moreover, a group of individuals low in social-evaluative anxiety was included as a control group.

In the present study, the role of distorted self-imagery was also investigated by experimentally manipulating the socially anxious individuals' spontaneous visual imagery and determine whether such manipulation has any effect on participants' self reported anxiety and on actual and believed performance. Therefore, high and low socially anxious participants were instructed to hold a negative, observer-perspective self-image (viewing themselves as if from an external point of view) or a positive image of themselves during an anxiety provoking social task. Several hypotheses were tested. The first hypothesis is that the experience of negative, observer-perspective self-images in social anxiety may increase the individuals' feelings of anxiety. Also, they are more likely to believe they look more anxious to others. The second hypothesis is that socially anxious individuals experiencing negative self-imagery are more likely to believe that they perform less well. The third hypothesis is that socially anxious individuals experiencing negative self-imagery are more likely to believe the image is accurate.

The high and low social-evaluative anxiety groups were selected using the Fear of Negative Evaluation scale (FNE: Watson & Friend, 1969). Previous research has indicated that when participants from the normal population are divided into high and low social anxiety groups on the basis of their FNE scores, the effects of experimental manipulations mirror those that are found when social phobics are compared to non-patient controls (for a review see Stopa & Clark, 2001).

METHOD

Participants

The participants were students at the University of Patras, Greece. They were recruited from a larger sample of students who had filled in the Fear of Negative Evaluation scale (FNE; Watson & Friend, 1969). This scale was used to select individuals who had scores in the top 25% and bottom 25% of the student population. These cutoffs were >23 or above for the high social anxiety group and <15 for the low social anxiety group. There were 40 individuals in each group (High: 34 female, 6 male. Low: 28 female, 12 male). The balance of sexes was not significantly different in the two social-anxiety groups, $\chi^2(1) = 2.58$, ns. Within the high and low social anxiety groups, equal numbers of individuals were assigned to the positive and negative imagery conditions.

Measures

Fear of Negative Evaluation Scale (FNE)

The FNE (Watson & Friend, 1969) is a 30-item questionnaire that assesses the degree to which respondents fear the possibility of negative evaluation by others. It was developed on a student population and, although it is not a diagnostic measure,

has often been used as a gross indicator of social anxiety in social phobia studies. In our study it was the main screening measure.

State-Trait Anxiety Inventory (STAI)

The STAI (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) is a 40 item self-report questionnaire assessing both current (state) and general (trait) anxiety. The STAI is commonly used in research and clinical settings and the internal consistency of the measure among samples of college students is above 0.9 (Spielberger et al., 1983). In the current study only the trait version of the measure was used (the 20 statements that evaluate the participant's general level of anxiety).

Beck Depression Inventory II (BDI II)

The revised BDI (Beck, Steer, & Brown, 1996) is a 21-item self-report instrument for measuring the severity of depression in adults and adolescents aged 13 years and older during the past two weeks. Research has shown that the BDI has good internal consistency, reliability and validity (Beck, Steer, & Garbin, 1988).

Body Sensations Questionnaire (BSQ)

The BSQ (Chambless, Caputo, Bright, & Gallagher, 1984) was completed after the speech task, when participants were asked to recall their anxiety related body sensations during the speech. The BSQ is a 17-item questionnaire measuring the experience of autonomic arousal. Each item is rated on a 10-point scale ranging from "*not at all*" (0) to "*very much*" (9). The BSQ has been shown to have good internal consistency and reliability (Chambless et al., 1984). In the current study, three items of sensations typically experienced by social phobics [e.g., muscle tension, feeling hot in the face (blushing) and trembling hands] were added. Data with these items included and not included have been analyzed in another study and no differences in results were found (Mellings & Alden, 2000), therefore, only the analyses using all 20 items are reported here.

Social Phobia and Anxiety Inventory (SPAI)

The SPAI (Turner, Beidel, Dancu, & Stanley, 1989) consists of 45 items; each is rated on a 7-point Likert scale, with higher numbers reflecting greater anxiety. Test–retest reliability was .86 over a 2-week period (Turner et al., 1989). The scale successfully discriminates individuals with social phobia from other anxiety-disordered individuals and from nonanxious individuals (Beidel, Turner, Stanley, & Dancu, 1989). In the present study only the social phobia subscale was used.

Self-Imagery Questionnaire

This questionnaire was designed to assess the emotional valence of the image the participants have just formed in their mind under the instructions of the experimenter. Participants rated how they appeared in the image they have just had

using two positive and three negative items-adjectives. The items were: nervous, anxious, embarrassed (negative) and composed, confident (positive). Each item was rated on a 0–8 scale ("*not at all*" to "*very much*"). Scores were calculated by simply summing the items and reversing appropriate items, such that higher scores signified a more negative image.

Participants also rated the clarity of their self-image using a scale of −3 ("*The image is not very clear, it is fuzzy*") to +3 ("*The image is very clear, it is crisp*"). Clarity ratings were not predicted to vary as a function of group membership or image manipulation (i.e., no interaction was predicted).

Anxiety

Two self-report measures of anxiety were used. First, participants rated how anxious they believed they *appeared* during the speech using a 9-point scale ranging from 0 ("*not at all*") to 8 ("*extremely*"). Next, they rated how anxious they believed they *felt* during the speech on an 11-point scale ranging from 0 ("*not at all anxious*") to 10 ("*extremely anxious*"). The performance and anxiety scales were administered upon completion of the speech task.

Behaviour Checklists

Participants used the checklists to rate their positive and negative behaviours during the speech task. The first checklist referred to participants' detailed, *Specific Behaviours* with the following positive items: relaxed posture, fluency, (clear voice, not quivering), expressive body movements and gestures, breathing normally, regular eye contact (with camera, the experimenter), comfortable movements. The negative items were: sweating, nervous hand movements, hand and knees tremble, go into fits of laughter, extraneous arm and hand movements, sways, face muscles tense, blushing, face "deadpan," (appearance stiff and awkward, "wooden"). Also, participants rated their *Overall Appearance* during the speech, by using another checklist with the following six more global, evaluative items: you were calm and composed, you were spontaneous, you were confident (positive items), you were embarrassed, you were anxious, you were awkward (negative items). They used a 0–9 scale ("*not at all*" to "*very much*") to make the ratings. Scores were calculated by summing the items and reversing appropriate items, such that higher scores signified a worse behaviour or appearance. Separate versions of the checklist were adapted for the independent observers to make their ratings.

Manipulation Check Measure

Two items measured the extent to which the participants followed the instructions during the speech. The participants rated the "extent to which you managed to keep in mind—during the speech—the experimenter provided image?" on a 0–8 scale ("*not at all*" to "*all the time*"). This was included to test the possibility that the participants were totally absorbed in their speech task and forgot the image or the instructions. The second item was "To what extent did other images—*opposite*

to the experimenter provided image—enter your mind *during the speech task?*" This was included to assess whether the effects of the image manipulation were mediated by other spontaneous images, especially those opposite (in valence) to the image formed by the individual before the speech (e.g., positive images instead of negative, or vice versa). The question was mainly directed at high socially anxious individuals assigned to the positive imagery condition, due to the negative spontaneous and recurrent images they usually experience when in stress. Participants rated this item on a 0–8 scale ("*none entered my mind*" to "*many entered my mind*").

Image Accuracy

Finally, participants rated the following single item: "To what extent do you believe the experimenter provided image coincided with the real impression you gave during the speech?" This item was included to explore whether participants in the negative imagery condition would be more likely to believe that the image they have formed was an accurate one at the time of the speech. They rated this item on a 0–8 scale ("*not at all*" to "*very much*").

Procedure

Participants first completed the FNE and BDI and were asked to a give one short presentation, which was videotaped. They were provided with the speech topic and were given 1 min to plan the speech before talking to a live video camera for 2 min. In order to equate for prior knowledge and salience of the topic across subjects, they were given a general topic that was related closely to their academic studies. Following Mansell and Clark (1999) the instructions emphasized that the experimenter would be evaluating their performance and that the video was made to allow a thorough evaluation of the speech by psychologists from the department after the session. Their purpose was to control the level of social evaluation across the two anxiety groups.

Before high and low socially anxious participants start delivering their speech, they were randomly allocated into two imagery conditions, so that these conditions were presented in a counterbalanced order within each group. They were given instructions to form a specific image of themselves in their mind. The exact instructions in the *negative imagery condition* were as follows:

> I would like you to form a typical negative image—as negative as you can—of yourself in which you appear to be nervous and feel really anxious and uncomfortable. It may help you if you recall a recent anxiety-provoking situation and imagine yourself being in that situation. I also want you to take an observer perspective in forming this image, that is, viewing the image of yourself as if you were outside of yourself, looking at yourself from an external point of view. 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.

The other half of the participants allocated into the *positive imagery condition* received the following instructions:

> I would like you to form a typical positive image—as positive as you can—of yourself in which you appear to be confident and feel relaxed and comfortable. It may help you if you recall a recent positive or successful situation and imagine yourself being in that situation.

> You don't have to describe this image to me. Once you've got it in mind, close your eyes and get as clear an image as you can.

Participants were allowed 15–30 s for imaging. Next, they rated how negative or positive the image they have just had was using the self-imagery questionnaire and further instructions were given as follows:

> Throughout the speech I want you to try as hard as possible to keep this image in mind. If other images of yourself happen to enter your mind, try to put them away. It is really important that you keep this image you have just formed as a predominant one of yourself while giving the speech. Is that clear?

The participants were allowed to ask questions to clarify the instructions. The video and the stopwatch were started and the experimenter also read out these instructions. Participants were reminded that the speech would last 2 min and that it was important they speak for the entire period. In the case that someone finishes earlier, the experimenter was obliged to put him questions concerning the speech topic in order to keep him talking. Thus, it was ensured that all participants would hold the image in mind for the same amount of time.

Immediately following the speech, participants completed the anxiety measures, the Behaviour Checklists, the BSQ and, finally, the manipulation check and image accuracy measures. In order to further characterize the amount of anxious symptomatology they were currently experiencing, participants were given the STAI-T and SPAI to complete and return it within one week.

Subsequently, two observers, blind to the experimental conditions and research hypotheses, independently rated videos of the speeches using the adapted versions of Behaviour and Appearance Checklists.

RESULTS

Participants' Characteristics

Table I shows the participants' mean scores on a range of standardized measures. Independent samples *t* tests were used to compare the scores for the high and low socially anxious individuals. The FNE and STAI-T measures failed Levine's test for equality of variance and so *t* tests assuming unequal variances were employed.

Table I. Characteristics of Participants in Each Social Anxiety Group

	Low social anxiety		High social anxiety		
Variable	*M*	*SD*	*M*	*SD*	*t*
FNE	9.62	2.89	26.45	1.80	31.28**
BDI II	7.95	6.05	14.05	7.41	4.03**
STAI-Trait	38.80	7.08	48.97	9.80	5.24**
SPAI	40.69	25.04	70.29	22.30	5.47**
Age	19.67	0.92	19.70	0.69	0.14

Note. $n = 40$ for each group except STAI-T, SPAI, $n = 39$ and 38.
*$p < 0.01$; **$p < .001$.

Table II. Mean Ratings Made by Participants of Manipulated Imagery and Following the Instructions, According to Image Manipulation and Low and High Social Anxiety ($n = 40$)

	Low social anxiety		High social anxiety	
	Positive	Negative	Positive	Negative
Emotional valence	7.65 (5.00)	26.50 (5.54)	11.50 (5.38)	31.65 (6.16)
Clarity	1.60 (1.39)	1.15 (1.39)	0.95 (0.94)	1.45 (1.90)
Keeping the image in mind	3.25 (1.86)	3.15 (1.98)	3.10 (1.65)	4.40 (2.48)
Spontaneous, opposite imagery	1.55 (1.96)	2.50 (2.35)	1.75 (1.33)	2.00 (2.53)

Note. Standard deviations appear in parentheses.

As expected, the high social anxiety group had higher scores on all measures except age, for which there was no difference.

The high and low socially anxious individuals had been randomly allocated to each experimental condition. To confirm that no significant differences between the groups had occurred by chance, each of the measures was submitted to a two-way Social Anxiety (high, low) × Imagery Manipulation (positive, negative) ANOVA. With two exceptions,[3] there was no evidence of any interactions or main effects involving imagery manipulation, as predicted from the random allocation of participants to each condition.

Manipulation Check

First to be investigated was the extent to which the participants were able to follow the instructions for each imagery manipulation and whether other images, opposite in valence, spontaneously entered their mind during the task. The ratings broken down by imagery manipulation by anxiety group are shown here in Table II. Inspection of the means revealed that in general, the participants did manage to keep in mind the experimenter provided image for some time, while they were giving a difficult speech ($M = 3.78$, $SD = 2.30$ for the negative imagery and $M = 3.18$, $SD = 1.74$ for the positive imagery). Also, they reported lower ratings of opposite (in valence) images coming spontaneously and involuntary in their mind, $M = 1.65$, $SD = 1.66$ for the positive-imagery condition and $M = 2.25$, $SD = 2.43$ for the negative-imagery condition.

In order to exclude any group differences in the actual imagery that took place during the speech task, the two manipulation-check measures were submitted separately to a two-way Social Anxiety (high–low) × Imagery Manipulation (positive–negative) ANOVA. No significant main effects or interactions between social anxiety group and imagery manipulation for any of the variables emerged. These results suggested that the two social-anxiety groups were comparable in following the instructions and suppressing opposite, in valence, imagery whether they were in positive- or negative-imagery condition.

[3]There was a significant main effect of image manipulation on SPAI, $F_{(1,73)} = 5.35$, $p < 0.025$, and on age, $F_{(1,76)} = 5.81$, $p < 0.02$. All the analyses to follow concerning imagery manipulation were repeated with SPAI or age as a covariate with no significant changes in the results.

Self-Imagery Questionnaire

It was also investigated whether the participants were able to follow the instructions and form the intended self-image in mind. Participants' ratings of the emotional valence of the recalled self-image were submitted to a two-way analysis of variance as above. The mean ratings and standard deviations broken down by imagery manipulation by anxiety group are displayed in Table II. There was a main effect of the imagery manipulation in the predicted direction, indicating that in general, the participants were able to form the prespecified image in their mind, $F_{(1,76)} = 248.16$, $p < 0.001$. There was also a main effect of anxiety group, $F_{(1,76)} = 13.21$, $p < 0.002$, indicating that, overall, high socially anxious participants formed more negative self-images than the low socially anxious participants. However, the interaction between anxiety group and imagery manipulation was not significant (ns), $F_{(1,76)} = 0.28$ (ns), suggesting no group differences in the type of image formed in each condition.

Additionally, in line with our predictions, participants' clarity ratings of their recalled self-image did not vary as a function of group membership or imagery manipulation, as it was suggested by the nonsignificant main effects or interactions.

Feelings of Anxiety and Perception of Bodily Sensations

Table III displays means and standard deviations of the ratings of feelings of anxiety and BSQ, divided by social anxiety and imagery manipulation. It was predicted that experiencing negative self-imagery would increase the participants' feelings of anxiety. Both ratings were submitted to a two-way Social Anxiety (high, low) × Imagery Manipulation (positive, negative) ANOVA. The predicted effect of the imagery manipulation was significant, $F_{(1,76)} = 12.44$, $p < 0.002$. The participants instructed to hold a negative self-image in mind reported that they felt more anxious during the speech than the participants holding a more positive image of themselves. Also, there was a trend for an interaction between social anxiety and imagery manipulation, $F_{(1,76)} = 3.11$, $p < 0.083$. Although not significant, the interaction suggested a trend for negative imagery to produce greater anxiety in the high

Table III. Mean Ratings Made by Participants and Assessor Ratings According to Image Manipulation and Low and High Social Anxiety ($n = 40$)

	Low social anxiety		High social anxiety	
	Positive	Negative	Positive	Negative
Anxious appearance	3.85 (2.03)	4.65 (1.72)	4.85 (1.60)	6.50 (1.28)
Feelings of anxiety	3.95 (2.54)	4.80 (2.26)	6.00 (2.15)	8.55 (1.54)
Specific behaviours	3.39 (0.92)	3.31 (1.20)	4.05 (1.03)	5.27 (1.30)
Overall appearance	3.32 (1.44)	3.70 (1.37)	4.87 (1.72)	5.97 (1.48)
BSQ	19.40 (17.37)	25.15 (21.14)	31.95 (20.00)	70.75 (38.45)
Image accuracy	4.00 (1.78)	2.85 (1.75)	3.25 (1.80)	4.80 (1.82)
Assessor rating				
Specific behaviours	2.91 (0.98)	3.32 (1.56)	3.81 (1.47)	4.24 (1.23)
Overall appearance	3.23 (1.56)	4.13 (2.44)	4.95 (2.10)	5.18 (1.73)

Note. Standard deviations appear in parentheses.

social anxiety group, $t_{(38)} = 4.31, p < 0.001$ while there was no trend for an effect in the low social anxiety group, $t_{(38)} = 1.12$ (ns) (see Table III).

The effects of the imagery manipulation on the participants' self-reports of their bodily sensations (BSQ) were also investigated. The Levene's test was found to be significant, which means that the assumption of homogeneity of variance was violated. However, we managed to remedy it by taking the square root of the dependent variable (Bryman & Cramer, 1999). The predicted main effect of the imagery manipulation was found, $F_{(1,76)} = 12.28$, $p < 0.002$, indicating that when in the negative-image condition the participants perceived more bodily sensations than in the positive-image condition. However, this main effect was qualified by an interaction between social anxiety and imagery manipulation, $F_{(1,76)} = 4.97$, $p < 0.03$. Separate independent samples t tests for each social-anxiety group showed that the high social-anxiety group reported higher BSQ ratings in the negative-imagery condition than in the positive-imagery condition, $t_{(38)} = 4.11$, $p < 0.001$, whereas in the low social-anxiety group there was no significant difference, $t_{(38)} = 0.89$ (ns) (see Table III and Figure 1).

Self-Ratings of Performance and Appearance

It was predicted that experiencing negative self-imagery would lead the participants to rate their social performance as worse than when experiencing positive

Fig. 1. Bar graph to show mean self-ratings of perceived body sensations (BSQ, 0–9) for positive and negative imagery conditions, for high and low social anxiety groups.

self-imagery. Three measures were taken: Specific Behaviours Checklist, Overall Appearance Checklist, and a single item rating of how anxious they believed they appeared during the speech (anxious appearance). Two-way Social Anxiety (high, low) × Imagery Manipulation (positive, negative) ANOVAs were carried out separately on each rating. See Table III for the means and standard deviations of these variables, divided by social anxiety and imagery manipulation.

Specific Behaviours Checklist

In line with our predictions, there was a significant main effect of imagery manipulation for the ratings of specific behaviours, $F_{(1,76)} = 5.04$, $p < 0.029$. This indicated that the participants holding a negative self-image in mind during speech rated their specific behaviours as more negative than the participants holding a more positive image of themselves. However, this main effect was qualified by an interaction between social anxiety and imagery manipulation, $F_{(1,76)} = 6.80$, $p < 0.012$. Follow-up independent-samples *t* tests for each social-anxiety group showed that the high social anxiety group reported more negative behaviour ratings in the negative-imagery condition rather than in the positive-imagery condition, $t_{(38)} = 3.28$, $p < 0.003$, whereas in the low social-anxiety group there was no significant difference, $t_{(38)} = 0.27$ (ns) (see Table III and Figure 2).

Fig. 2. Bar graph to show mean self-ratings of specific behaviours (0–9) for positive and negative imagery conditions, for high and low social anxiety groups (higher scores signify a worse behaviour).

Overall Appearance Checklist

This measure exhibited a main effect of imagery manipulation, $F_{(1,76)} = 4.90$, $p < 0.031$. This indicated that both high and low socially anxious participants believed they came across less well in the negative-imagery condition than in the positive-imagery condition (see Table III). However, this effect was not any stronger in the either social anxiety group, as evidenced by a nonsignificant interaction between imagery manipulation and social anxiety, $F_{(1,76)} = 1.16$ (ns).

Anxious Appearance

The predicted main effect of the imagery manipulation was significant for the rating of anxious appearance, $F_{(1,76)} = 10.63$, $p < 0.003$. This indicated that both high and low socially anxious participants believed they appeared more anxious in the negative imagery condition than they did in the positive-imagery condition (see Table III). However, this effect was not any stronger in either social-anxiety group, as evidenced by a nonsignificant interaction between imagery manipulation and social anxiety, $F_{(1,76)} = 1.28$ (ns).

Image Accuracy

Participants' ratings of the extent to which the experimenter-provided image coincided with their actual appearance during the speech (single item) were also submitted to a two-way analysis of variance. The social anxiety group $\times$ imagery manipulation interaction was significant, $F_{(1,76)} = 11.38$, $p < 0.002$. When this was broken down it indicated that the high social anxiety group believed the manipulated negative image was a more reflection of the self during the speech than the positive image, $t_{(38)} = 2.70$, $p < 0.011$. Within the low social-anxiety group this finding was reversed and significant too, $t_{(38)} = 2.06$, $p < 0.047$ (see Table III and Figure 3).

Ratings Made by Independent Assessors

Inter-rater reliability, based on Pearson correlation coefficients, was 0.53 and 0.63 ($p < 0.001$) for ratings of specific behaviours and overall appearance respectively. Average assessors ratings (see Table III) were submitted to a two-way (Social Anxiety $\times$ Imagery Manipulation) analysis of variance. No significant main effects or interactions concerning imagery manipulation emerged.

In order to determine whether participants in the high FNE group would underestimate their performance compared to the independent raters, and that they would underestimate it to a greater extent in the negative imagery condition than in the positive imagery condition, a three-way repeated measures ANOVA with rating (observer or self) as the within subjects variable was contacted. Again, no significant interactions concerning imagery manipulation were found.

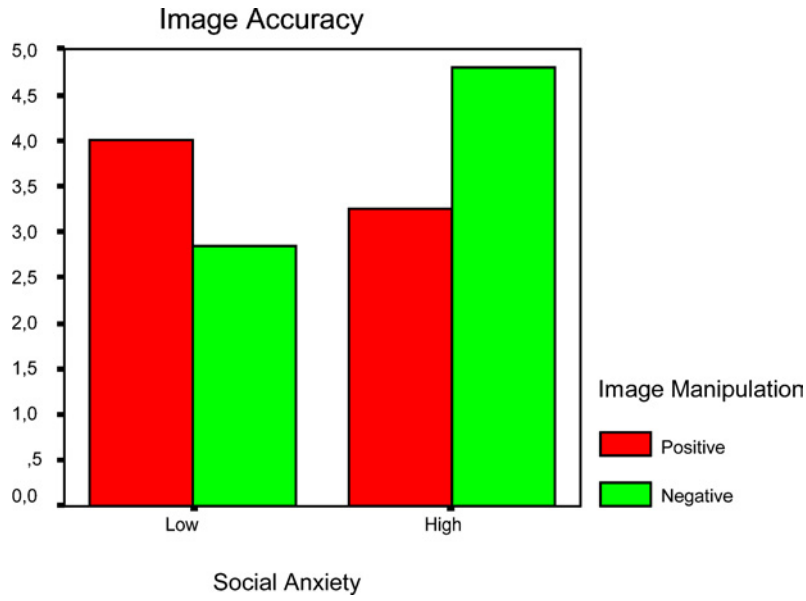

Fig. 3. Bar graph to show mean self-ratings of image accuracy (0–8) for positive and negative imagery conditions, for high and low social anxiety groups.

DISCUSSION

This study explored the effects of imagery on high and low socially anxious individuals during a social evaluative task. The specific hypotheses derived from the Clark and Wells' (1995) cognitive model of social phobia were that high socially anxious participants would report worse self-rated performance and increased self-image accuracy in the negative imagery than in the positive imagery condition. Also, we expected high socially anxious individuals in the negative imagery condition to report more in-situation anxiety. The results of this study were broadly consistent with the study's hypotheses as well as with the findings reported by Hirsch et al. (2003). By contrast, participants low in social anxiety did not appear to be significantly influenced by imagery manipulation and they only rated positive self-images as more accurate and representative of themselves during the social task.

High socially anxious individuals in the negative imagery condition rated their specific behaviours (e.g., face muscles tense, blushing, regular eye contact) as more negative, compared with the low anxious controls. However, for overall appearance ratings (e.g., confident, embarrassed, awkward) and a single-item measure of anxious appearance no significant interaction was found as *both* high and low socially anxious participants tended to rate their appearance as more negative in the negative rather than in the positive imagery condition. It is not clear why social anxiety group membership interacted with imagery manipulation for ratings of specific behaviours, but not for ratings of overall and anxious appearance. A possible explanation is that low socially anxious individuals generated a more

general impression or sense of themselves (where the visual component was not predominant or very strong), which took it later into consideration when judging their overall appearance during the task. In contrast, high socially anxious individuals may have generated self-images that have had a strong visual component (i.e., the content of the images involved visible exaggerations of behaviour or visualising feared outcomes; Hackmann et al., 1998, 2000) and/or may have been strongly motivated to search for direct links between internal and external events (e.g., looking red in the face in the image and blushing). Thus, although both anxiety groups seem to take spontaneous, negative self-images into consideration when evaluating their appearance to others, high socially anxious individuals' more distorted and exaggerated self-images lead to more unfavourable assessments of specific aspects of performance: those which they find as most salient and threat eliciting (Rapee & Heimberg, 1997). Another possibility is that it is not just a socially anxious individual's beliefs about appearance, but the meaning of the overall and anxious appearance (e.g., in terms of expected rejection, self-worth if rejected, etc.).[4] Therefore, socially anxious individuals may not significantly differ from low socially anxious individuals in their propensity to use self-images as evidence they are coming across badly to others, but they are more likely to infer catastrophic consequences stemming from their perceived anxious appearance (Stopa & Clark, 2000). Additional measures of anticipated consequences of the behavior should be examined in subsequent studies.

The finding that high socially anxious participants in the negative imagery condition reported more bodily sensations during the task could be interpreted in several ways. First, it is possible that the physical symptoms in the negative imagery groups were actually increased. Second, as it has been suggested (Clark & Wells, 1995; Hackmann et al., 2000), self-images are triggered by internal feelings and often contain visible exaggerations or visible symptoms of autonomic activation (such as hand shaking or sweating profusely). Therefore, it is possible that the sensory components of self-imagery were biased or colored by participants' perceptions of internal feelings and led to increased reports of bodily sensations. Third, it may suggest that experiencing of negative self-imagery increased participants' self-focus and self-monitoring with the result of making internal sensations more salient. Woody (1996) showed that a self-focus manipulation increased self-rated anxiety in a group made self-aware when sitting passively before an audience. Since we did not measure participants' self-focused attention during the speech, we cannot rule out the possibility that imagery manipulation actually affected direction of attention, which in turn may have influenced perception of bodily events. If this is the case, additional studies are required to investigate the relative contributions of attention and imagery to anxiety feelings.

The Clark and Wells' model suggests that when socially anxious individuals worry they are making a negative impression on others, they tend to engage in "safety behaviours." A safety behaviour is a behaviour which is performed in order to prevent or minimise a feared catastrophe (Salkovskis, 1991). However, carrying out the behaviours may in fact make them appear worse to other people. For

[4]The author is grateful to J. Riskind for this suggestion.

instance, clinical observations (Clark & Wells, 1995) suggested that the act of monitoring and evaluating one's speech can decrease the spontaneity of a conversation and make social phobics appear distant and aloof to other people. In contrast to the data reported by Hirsch et al. (2000), the current experiment did not provide evidence suggesting that independent observers rated participants as performing worse when holding the negative imagery in mind. We believe that our failure to find significant differences in observer-ratings of participants' performance may be due to the high degree of structure of the experimental social situation adopted in the study. As Rapee and Heimberg (1997) have proposed, situations that involve more clearly defined social rules (e.g., a speech) are less likely to produce a difference in social performance between social phobics and others and give less room to the performance of safety behaviours than the situations that involve unclear social structure (e.g., a party). Therefore, if we had adopted an experimental social task similar to that used in the Hirsch et al.'s study (e.g., an unstructured conversation between the participant and the confederate) we probably have found a significant effect of imagery manipulation on observers' ratings of performance. Alternatively, the use of a nonclinical population in the present study instead of diagnosed social phobics may be responsible for the nonsignificant results.

In terms of treatment implications, the present findings suggest that cognitive therapy may be most effective in modifying anxiety and negative beliefs when negative self-image is activated, and the individual is able to process information that disconfirms or corrects the negative self-image. For this reason, video feedback has proved a powerful technique for correcting the distorted self-images of socially anxious individuals and patients with social phobia (Clark, 1999; Harvey et al., 2000; Kim, Lundh, & Harvey, 2002; Vassilopoulos, 2003). In addition, it is encouraging that high socially anxious participants in the present study managed to hold a positive self-image and suppress negative images during the task, as the manipulation checks have showed. That means high socially anxious individuals are able to benefit from substituting their typical negative self-image with a positive one, before entering an anxiety-producing social situation, with the result of making the experience of the interaction less negative.

There is one more limitation in the study. Participants in the negative image condition were additionally instructed to take an observer-perspective in forming the image. Therefore, it is not clear whether the results in the present study are due to valence of self-images or to a potential difference in perspective taken by the participants. Indeed, Spurr and Stopa (2003) recently reported evidence suggesting that the use of the observer perspective produces more frequent negative thoughts and worse self-evaluation of performance in both high and low socially anxious participants. Additional studies are required to investigate the relative contributions of observer perspective and valence of images to anxiety feelings and negative self-evaluations during anxiety-provoking situations.

In conclusion, the results of this study provide further support for the notion that self-imagery affects self-perception and anxiety in individuals with social anxiety. Negative, observer-perspective self-imagery is associated with more negative evaluations of specific behaviours and an increase in perceived bodily sensations for high socially anxious individuals. Moreover, the finding that high socially anxious

individuals view negative self-images as pretty accurate and representative of themselves may account—together with reduced processing of disconfirming evidence—for the images' apparent lack of updating (Hackmann et al., 2000). Once experienced, observer-perspective images appear to be self-evidently true and are used as a source of evidence confirming socially anxious individuals preexisting negative beliefs about the self (Clark & Wells, 1995).

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