Using implementation intentions to overcome the effects of social anxiety on attention and appraisals of performance

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Using Implementation Intentions to Overcome the Effects of Social Anxiety on Attention and Appraisals of Performance

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Abstract

The present research examines whether forming implementation intentions can help people with social anxiety to control their attention and make more realistic appraisals of their performance. In Experiment 1, socially anxious participants (relative to less anxious participants) exhibited an attentional bias toward social threat words in a Visual Dot Probe task. However, socially anxious participants who formed implementation intentions designed to control attention did not exhibit this bias. Using a spatial cuing task, Experiment 2 showed that forming implementation intentions also promoted rapid disengagement from threatening stimuli. Experiment 3 ruled out the possibility that implementation intentions were effective merely because they provided additional goal-relevant information. In Experiment 4, participants gave a speech and subsequently rated their performance. Forming implementation intentions prevented the underestimation of performance that characterises socially anxious individuals. Together, the findings suggest that forming implementation intentions may provide an effective means of handling self-regulatory problems in social anxiety.

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Using Implementation Intentions to Overcome the Effects of Social Anxiety on

Attention and Appraisals of Performance

Numerous theories suggest that differences in attentional responses to threat-related stimuli are an important feature of anxiety disorders (for a review, see Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg, & van Ijzendoorn, 2007). For example, the cognitive model of social phobia (Clark & Wells, 1995) suggests that the primary fear among socially anxious individuals' is negative evaluation and, as such, they are vigilant for signs that they are being evaluated. Once these evaluative cues are detected (e.g., the person observes a colleague looking at them), Clark and Wells argue that attention is directed toward interoceptive information such as physiological cues that are indicative of anxiety (e.g., an increased heart rate, feelings of blushing, sweating, or dizziness). People with social anxiety then use this interoceptive information to infer how they appear to others (e.g., "I am blushing, so my colleague will think that I am stupid").

In an illustrative experiment, Musa, Lepine, Clark, Mansell, and Ehlers (2003) asked participants with social phobia to undertake a variant of the Visual Dot Probe task (VDP; MacLeod, Mathews, & Tata, 1986). Two words were presented simultaneously on a computer screen and one was replaced by either the letter 'E' or the letter 'F'. Participants' task was to indicate which letter was presented. Some words represented social threat (e.g., stupid, pathetic) whereas others were neutral words matched for length and frequency. A measure of attention to social threat was derived by comparing reaction times to probes that replaced social threat versus neutral words, based on the rationale that detection latencies are shorter in the attended area. Consistent with the idea of an attentional bias toward social threat information, participants with social phobia responded faster to probes replacing

threat words than to probes replacing neutral words, whereas this attentional bias was not observed amongst participants who did not have social phobia.

Although there is some debate concerning the nature of the attentional difficulties in social anxiety – for example, when faces rather than words are used as threat-related cues people with social anxiety appear to direct attention *away* from threat (Chen, Ehlers, Clark, & Mansell, 2002; Mansell, Clark, Ehlers, & Chen, 1999) – it is clear that when confronted with potential threat, people with high levels of social anxiety direct their attention in a different manner compared to people without social anxiety. These attentional differences are significant because they (a) reduce the person's ability to process benign social cues and reappraise the situation as non-threatening and (b) convince the person that they appear anxious to others or that they have performed poorly (for a review, see Bögels & Mansell, 2004). The implication is that strategies that promote the effective self-regulation of attention are a potentially useful avenue for reducing social anxiety (Bögels & Mansell, 2004; Rapee, Gaston, & Abbott, 2009).

Control of Social Anxiety Effects via Implementation Intentions

Self-regulation of social anxiety's characteristic effects on attention and judgment is likely to prove difficult, however, because such responses are over-learned and exhibit features of automaticity (Bargh, 1994). For instance, there is evidence that attentional responses in social anxiety occur relatively immediately (Mogg & Bradley, 2002; Ononaiye, Turpin, & Reidy, 2007), efficiently (Hope, Rapee, Heimberg, & Dombeck, 1990; Mansell, Clark, & Ehlers, 2003; Wenzel, 2006), and without conscious intent (Wikström, Lundh, & Westerland, 2003; Mogg & Bradley, 2002; Ononaiye et al., 2007). This means that just giving oneself the goal, "do not focus on threatening information" may

not be sufficient to offset the impact of social anxiety. A good example is the emotional Stroop task (Gotlib & McCann, 1984). Despite being motivated to name the ink colour of social threat words, people with social anxiety struggle to ignore the meaning of the words (e.g., Hope et al., 1990).

Although merely holding a strong intention to obtain a goal does not guarantee goal attainment (Webb & Sheeran, 2006), research suggests that forming an *implementation intention* (Gollwitzer, 1993, 1999; Gollwitzer & Sheeran, 2006) enhances the likelihood of translating goal intentions into action. Implementation intentions are plans that specify the when, where, and how of reaching one's goal in advance. These plans take the format, "If situation Y arises, then I will perform goal-directed response Z!" Thus, to reach the goal of appearing confident in a social situation, implementation intentions would specify both a good opportunity to further goal pursuit (e.g., "If I am introduced to someone at a party…") and a suitable response to enact in this situation (e.g., "…then I will smile and ask if they have travelled far"). Evidence that implementation intentions promote effective goal striving comes from a meta-analysis that found a medium-to-large effect of implementation intention formation on goal attainment ($d_+ = 0.65$, 94 studies) over and above the impact of goal intention strength (Gollwitzer & Sheeran, 2006).

To date, however, only one study has shown that forming implementation intentions can control affective states. Schweiger Gallo, Keil, McCulloch, Rockstroh, and Gollwitzer (2009, Experiment 1) showed participants a series of disgusting images from the International Affective Picture System (Lang & Öhman, 1988). Participants were either given no instructions, asked to form goal intentions ("I will not get disgusted!"), or asked to form goal intentions plus an implementation intention ("If I see blood, then I will remain

calm and collected!"). Findings showed that participants who formed implementation intentions reported lower arousal when confronted with disgusting stimuli compared to the other two groups. Subsequent experiments indicated that participants who formed implementation intentions also reported less negative affect and had reduced objective arousal (according to the P1 electrocortical index) in response to frightening stimuli. Thus, planning engendered more effective emotion regulation compared to forming mere goal intentions.

The Present Research

The present research extends previous implementation intention research in two key respects. First, no previous studies have assessed the potential benefits of implementation intentions in aiding self-regulation by socially anxious persons. Such a test seems worthwhile given the prevalence and disruptive consequences of social anxiety. Moreover, because the effects of social anxiety on attention exhibit features of automaticity, this context affords a stern test of the capacity of implementation intentions to aid self-regulation. Second, whereas Schweiger-Gallo et al. (2009) assessed the impact of implementation intentions on experienced emotion (assessed via electrocortical or self-report measures), the present studies extend this line of enquiry by assessing the impact of implementation intentions on the cognitive consequences (attention, judgment) of a chronic affective state (social anxiety). The prediction tested here is that implementation intention formation can overcome the characteristic negative impact of social anxiety on both attentional responses and appraisals of performance.

Four experiments were conducted to test this prediction. In each experiment, participants were divided into those with low versus high levels of social anxiety. The low

social anxiety participants served as the control group and, with the exception of Experiment 2, only received basic task instructions. The high social anxiety participants were randomly allocated to one of three conditions that either received only basic task instructions, were assigned the goal to control their anxiety, or were assigned the anxiety control goal and also formed an implementation intention specifying when and how to direct their attention during the task. The first three experiments adopted key cognitive paradigms used by researchers studying attentional processes (e.g., Fox, Russo, Bowles, & Dutton, 2001; Musa et al., 2003) and tested whether implementation intentions can overcome the biased responses associated with social anxiety. The final experiment investigated whether forming an implementation intention that specified how to direct attention during a speech task could promote more realistic appraisals of speech performance.

Experiment 1: Strategic Direction of Attention in a Dot Probe Task

Experiment 1 adopted the VDP task to compare orienting of attention to social threat between high and low social anxiety participants. Prior to the task, one-third of the high social anxiety participants formed an implementation intention to focus attention exclusively on neutral stimuli, one-third received no instructions, and the remaining one-third were explicitly asked to try to remain calm. All of the low social anxiety participants received no instructions about controlling anxiety or attention and served as the control group. The prediction was that, without implementation intentions, participants with high levels of social anxiety – relative to participants with low levels of social anxiety – would show an attentional bias toward words representing social threat even if they were

explicitly asked to remain calm. However, we predicted that this bias would not be observed when high social anxiety participants formed implementation intentions.

Method

Participants

Undergraduate students were sent an e-mail inviting them to complete an online version of the Social Avoidance and Distress scale (SAD; Watson & Friend, 1969). A sample of the participants with scores of less than 4 ($N = 15$, $M_{SAD} = 1.80$, $SD_{SAD} = 1.61$) or greater than 9 ($N = 38$, $M_{SAD} = 15.79$, $SD_{SAD} = 5.30$) comprised the low and high social anxiety groups, respectively. Participants were predominantly female (64.15%), had a mean age of 23.62 years ($SD = 8.84$), and were compensated £5 for their time.[1]

Design and Procedure

The experiment adopted a 4-between (condition: low anxiety-no instruction, high anxiety-no instruction, high anxiety-goal intention, high anxiety-implementation intention) design. On arrival at the laboratory, all participants were informed about the general aims of the study and then completed the Fear of Negative Evaluation scale (FNE; Watson & Friend, 1969), the Personal Report of Confidence as a Speaker (PRCS; Paul, 1966), and the Trait Anxiety Inventory (STAI-T; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

Creating a Social Evaluative Situation

When participants had completed the questionnaires, they were sat at a computer and asked to follow the instructions. The first screen informed participants; *"The next part of this experiment is an assessment of your social skills and public speaking ability. After a short computer task you will be asked to give a speech on a controversial topic that will be given to you. You will then have 3 minutes to prepare for the speech. The experimenter will*

watch you give your speech and will rate the effectiveness of your presentation. A video camera will also record your speech so that, later, some expert psychologists can make ratings of your ability as well. Right, now it is time to start the computer task. One final note is that your performance here today on all tasks has been shown to predict your general intelligence. You will be given full feedback on this after the experiment." These instructions have been reliably shown to increase state anxiety in a number of studies (e.g., Mansell et al., 1999). A video camera was set up on a tripod to the right side of the participant. Although this camera did not contain a tape, a recording light was turned on to enhance the realism of the situation.

The Dot-Probe Task

Participants then undertook a differentiation variant of the VDP (Salemink, van den Hout, & Kindt, 2007). Participants were told; *"The next part of the experiment is a computer task. You will see two words on the screen, one above the other. One of these words will be replaced by an E or by an F. Your task is to press the pink key marked E if the letter E appears and the yellow key marked F if the letter F appears. You need to do this as quickly and as accurately as possible."* Following a central fixation cross for 500ms, a pair of words was presented for 500ms. Words were presented in upper case letters and were 3cm apart on the screen (above and below fixation). Thirty-two words representing social threat (e.g., criticised, failure) and 32 neutral words matched for length and frequency of use in the English language (e.g., ingredient, balance) were taken from the word lists composed by Ononaiye et al. (2007).[2] An additional 32 neutral word pairs were also included giving a total of 64 word pairs (see Appendix 1). Following presentation of the words, there was a 25ms delay before a probe (E or F) replaced one of the words.

The probe remained on the screen until the participant responded. Finally, to maintain vigilance, there was a randomly selected delay (500ms or 1250ms) before the next trial. Each of the 64 word pairs was presented twice (in a random order with the probe replacing a different word each time) giving a total of 128 trials. The position of the social threat and neutral words (upper or lower) was also counterbalanced.

Manipulation of Goal Intention and Implementation Intentions

Following 28 practice trials with neutral word pairs, high social anxiety participants received instructions depending on the condition to which they had been assigned. Participants in the 'goal intention' condition were told; *"During the computer task, it is important that you remain calm and do not worry about the speech"*. High social anxiety participants in the 'implementation intention' condition were given the same instructions as participants in the goal intention condition, but were also asked to form a plan; *"If I see a neutral word, then I will focus all my attention on it!"* Finally, participants in the 'no instruction' condition were given no further instructions about what to do during the computer task. Participants with low levels of social anxiety also received no further instructions. Upon completion of the VDP task, all participants were debriefed, told that they performed very well on the task, and would not have to give a speech.

Results

Following the recommendations of Fox et al. (2001) the response latency data was filtered by removing any responses faster than 100ms or more than 2.5 standard deviations from each participant's mean. Only response latencies for correct trials (when the participant accurately reported that the probe was an E or an F) were included in the calculation of attentional bias scores to ensure that the participant had seen the probe. The

average error rate across all 64 threat trials was low ($M = 2.45\%$). Response latencies were

converted into attentional bias scores (cf. MacLeod et al., 1986) using the equation:

$$0.5 \text{ x } [(\text{UpLt} - \text{UpUt})] + [(\text{LpUt} - \text{LpLt})]$$

Where U = upper position, L = lower position, p = probe, t = threat word.

In this equation UpLt, for example, represents a participant's mean response latency

to trials in which a probe appears in the upper position of the screen (Up) with a threat

word in the lower position of the screen (Lt). Positive attentional bias scores reflect a bias

toward threatening words, whereas negative attentional bias scores reflect a bias away from

threatening words.

Attentional bias scores were submitted to a 4-between (condition: low anxiety-no

instruction, high anxiety-no instruction, high anxiety-goal intention, high anxiety-

implementation intention) ANOVA (see Figure 1). The main effect of condition was

significant, $F(3, 49) = 4.66$, $p < .01$, $eta^2 = .22$. Pairwise comparisons revealed that high

social anxiety participants given no instructions showed a greater attentional bias toward

words representing social threat ($M = 15.54$, $SD = 5.21$) than did low social anxiety

participants ($M = -7.80$, $SD = 4.85$), $F(1, 28) = 8.59$, $p < .01$, $eta^2 = .25$, thus replicating the

characteristic impact of social anxiety on attention to social threat information. There was

no difference between the attentional bias scores of high social anxiety participants given

no instructions ($M = 15.54$, $SD = 5.21$) and high social anxiety participants who formed

goal intentions ($M = 9.33$, $SD = 5.42$), $F(1, 23) = 0.63$, ns, $eta^2 = .03$. However, the

attentional bias scores of high social anxiety participants who formed implementation

intentions ($M = -4.13$, $SD = 5.21$) were significantly lower than both high social anxiety

participants given no instructions ($M = 15.54$, $SD = 5.21$), $F(1, 24) = 6.03$, $p < .05$, $eta^2 =$

.20, and high social anxiety participants who formed goal intentions ($M = 9.33$, $SD = 5.42$),

$F(1, 23) = 4.50$, $p < .05$, eta^2 = .16. There was no difference between the attentional bias

scores of high social anxiety participants who formed implementation intentions ($M = $ -

4.13, $SD = 5.21$) and low social anxiety participants ($M = -7.80$, $SD = 4.85$), $F(1, 26) = $

0.29, *ns*, eta^2 = .01.

Discussion

Experiment 1 used a VDP task to investigate attentional processing under

conditions of social evaluative threat. As expected, participants with high levels of social

anxiety (relative to participants with low levels) preferentially directed attention toward

words representing social threat. This attentional bias was observed even when high social

anxiety participants formed a goal intention to remain calm. However, high social anxiety

participants who supplemented the goal intention to remain calm with a specific plan to

focus their attention on neutral stimuli were able to prevent this attentional bias from

influencing their responses. In fact, high social anxiety participants who formed an

implementation intention showed equivalent responses to low social anxiety participants. In

summary, the findings of Experiment 1 replicate and support previous research into

attentional biases in social anxiety (e.g., Musa et al., 2003), and provide the first evidence

that implementation intentions can overcome the characteristic effects of social anxiety on

attention.

Experiment 2: Strategic Disengagement of Attention in a Cuing Paradigm

Fox et al. (2001) argued that the attentional biases observed among people with

high levels of anxiety reflect slow disengagement of attention from threat-related stimuli,

rather than fast initial orienting. Furthermore, accumulated evidence supports the idea that

the attention of people with social anxiety is more likely to be held by threat-related words than by neutral words (Amir, Elias, Klumpp, & Przeworski, 2003; Fox et al., 2001; Yiend & Mathews, 2001). Thus, we wanted to investigate whether implementation intentions could facilitate rapid disengagement from information representing social threat among people with social anxiety. Experiment 2 adopted an emotional spatial cuing task developed by Fox et al. (2001) to investigate this hypothesis.

Experiment 2 also compared two different types of implementation intention. Whereas task-facilitating plans specify an optimal strategy for executing the behavior and take the form "If situation Y arises, then I will perform the task in this [specified] way!", anxiety-inhibiting plans specify that one will ignore a particular anticipated internal or external cue that could derail goal pursuit (Gollwitzer & Schaal, 1998). Anxiety-inhibiting plans have the format "If situation Y arises, then I will ignore it in this [specified] way!" A number of studies attest to the benefits of both facilitating plans (e.g., Webb & Sheeran, 2003) and inhibiting plans (e.g., Achtziger, Gollwitzer, & Sheeran, 2008), but the two forms of if-then planning have been compared only once in an unpublished manuscript (Schaal & Gollwitzer, 1997). Finally, Experiment 2 adopted a fully crossed design in order to investigate the effect of planning among low as well as high socially anxious participants. Although implementation intentions have proved effective across a range of samples, there is also evidence that effects are moderated by the presence of a volitional problem – implementation intentions are more effective when people experience difficulty regulating their behaviour (see Gollwitzer & Sheeran, 2006, for a review). Therefore, we may find that implementation intentions have greater effects among high, relative to low,

socially anxious participants because only high socially anxious participants struggle to disengage their attention from social threat information.

Method

Participants

Undergraduate students completed an online version of the SAD and a sample of those scoring less than 4 ($N = 81$, $M_{SAD} = 2.33$, $SD_{SAD} = 1.63$) or greater than 9 ($N = 77$, $M_{SAD} = 16.05$, $SD_{SAD} = 5.26$) on the SAD comprised the low and high social anxiety groups, respectively. Participants were predominantly female (57.59%), had a mean age of 21.13 years ($SD = 4.51$), and were compensated £5 for their time.

Design and Procedure

The experiment adopted a 2-between (social anxiety group: low vs. high) by 4-between (condition: control, goal intention, anxiety-inhibiting plan, task-facilitating plan) design. On arrival at the laboratory, all participants completed the SAD a second time along with the FNE, PRCS and STAI-T. A social evaluative context was created in an identical manner to Experiment 1.

The Emotional Spatial Cuing Task

Following the social evaluative manipulation, participants undertook a replication of Fox et al.'s (2001, Experiment 5) paradigm with the exception that the threat-related words reflected social threat rather than general threat (see Appendix 2). An asterisk (fixation) appeared in a box in the centre of the screen for 1000ms. Next, the asterisk was replaced by either a threat-related word or a matched neutral word. Finally, 600ms after presentation of the word a probe (either a '4' or an '8') was presented for 50ms either 3.5cm to the right, to the left, above, or below the centrally presented word. Participants'

task was to press either the 4 or the 8 key to indicate which probe had been presented. The cue word remained at fixation until the participant responded.

Each participant completed a practice block of 48 trials (6 neutral words were followed by all possible combinations of probe and location) and then four blocks of 128 trials (32 social threat and 32 neutral words were followed by all possible combinations of probe and location). Trials were presented in a random order.

Manipulation of Goal Intention and Implementation Intentions

Following the practice trials, participants in the 'goal intention' condition were told; "*during the computer task, it is important that you remain calm and do not worry about the speech*". Participants in the 'task facilitating implementation intention' condition were asked to supplement their positive intentions with a specific plan; "*If I see a word, then I will look out for the number 4 or 8 appearing around the box!*" Participants in the 'anxiety-inhibiting implementation intention' condition were asked to form the plan; "*If I see a word, then I will ignore it's meaning!*" Participants in the 'no instruction' group received no further instructions.

Results

Error trials and any responses faster than 100ms or more than 2.5 standard deviations from that participant's mean were removed (see Fox et al., 2001). The average error rate across all trials was low (4.21%). Reaction times were submitted to a 2-between (social anxiety group: low vs. high) by 2-between (implementation intentions: formed vs. not formed) by 4-between (condition: control, goal intention, anxiety-inhibiting plan, task-facilitating plan) by 2-within (cue type: social threat vs. neutral) nested ANOVA (the effect of condition was nested within the higher order effect of implementation intentions). The

main effects of cue type, $F(1, 150) = 1.49$, *ns*, eta^2 = .01, social anxiety group, $F(1, 150) =$ 0.21, *ns*, eta^2 = .00, and condition (nested within implementation intention conditions), $F(2, 150) = 0.02$, *ns*, eta^2 = .00, were all non-significant (see Figure 2). The main effect of implementation intentions was marginally significant, $F(1, 150) = 3.57$, $p = .06$, eta^2 = .02, Participants who formed implementation intentions responded marginally faster to all probes ($M = 391$, $SD = 70$) than did participants who did not form implementation intentions ($M = 412$, $SD = 71$). However, the effect of implementation intentions was qualified by a significant three-way interaction between cue type, social anxiety group, and implementation intentions, $F(1, 150) = 4.53$, $p < .05$, eta^2 = .03. None of the other interactions reached significance, all Fs < 1.00.

In order to decompose the three-way interaction, we first examined the two-way interaction between cue type and social anxiety group when participants had formed versus not formed implementation intentions. The interaction was marginally significant when participants had not formed implementation intentions, $F(1, 73) = 3.53$, $p = .06$, eta^2 = .05, but was non-significant when participants formed an if-then plan specifying how to control their attention, $F(1, 81) = 1.32$, *ns*, eta^2 = .02. Simple main effects revealed that cue type only influenced reaction times when highly socially anxious participants had not formed implementation intentions, $F(1, 30) = 6.17$, $p < .05$, eta^2 = .17. High socially anxiety participants without plans responded slower to probes appearing around social threat words ($M = 416$, $SD = 58$) than to probes appearing around neutral words ($M = 412$, $SD = 57$). Cue type did not influence reaction times among low socially anxiety participants who did not form implementation intentions, $F(1, 43) = 0.25$, *ns*, eta^2 = .01 (Ms = 409 and 410, respectively, both SDs = 80) and, crucially, did not influence reaction times among high

socially anxious participants who formed implementation intentions, $F(1, 45) = 0.19$, *ns*, eta^2 = .00 (*M*s = 393 and 394, *SD*s = 73 and 74, respectively).

Discussion

Experiment 2 used an emotional spatial cuing task to investigate attentional disengagement under conditions of social evaluative threat. High social anxiety participants who had not formed an implementation intention took longer to identify probes that appeared after words relating to social threat than did low social anxiety participants. This slowed response was not observed when probes were presented alongside neutral words, suggesting that high social anxiety participants struggled to disengage attention from stimuli representing social threat in particular. The same attentional difficulties were observed when participants were explicitly instructed to remain calm and not to worry about the speech. However, consistent with the idea that implementation intentions can be used to strategically facilitate shifts in attention away from threat-related cues, the nature of the word (social threat versus neutral) did not influence responses when participants had formed an implementation intention. High social anxiety participants who formed implementation intentions identified probes that appeared after social threat words just as quickly as probes that appeared after neutral words.

There was no difference between the effects of anxiety-inhibiting and task-facilitating plans. This finding supports previous research on the efficacy of both task-facilitating and temptation-inhibiting implementation intentions (e.g., Achtziger et al., 2008; Schaal & Gollwitzer, 1997; Webb & Sheeran, 2003) and suggests that there is some flexibility in how plans are targeted at particular volitional problems (Gollwitzer, Parks-Stamm, Jaudas, & Sheeran, 2007). Although forming implementation intentions

marginally sped up the responses of both low and high social anxiety participants, implementation intention formation only reduced the impact of social threat on the responses of high social anxiety participants. This moderation occurred because only high social anxiety participants experienced difficulties disengaging their attention from social threat information. Therefore, the findings replicate the often reported moderation of planning effects by the presence of a volitional problem – implementation intentions are helpful mainly when people experience difficulty regulating their behaviour (see Gollwitzer & Sheeran, 2006, for a review).

Experiment 3: Specific Goal Intentions versus Implementation Intentions

Experiments 1 and 2 demonstrate that by forming implementation intentions people with social anxiety no longer exhibit two attentional biases with respect to social-threat information that characterise their anxiety – namely, heightened vigilance and slower disengagement. However, it is possible to claim that participants in the implementation intention conditions were given more information about the upcoming task than were participants in the goal intention and control conditions (e.g., that neutral words would be presented or that it might be beneficial to ignore the meaning of the words). To rule out this interpretation of implementation intention effects, it is therefore necessary to include a 'specific goal intention' condition that receives equivalent information to that provided in the implementation intention condition, but does not use the "if (situation), then (goal-directed response)" format of an implementation intention (Oettingen, Hönig, & Gollwitzer, 2000, Study 3). We predicted that the attentional bias would be greater in both standard goal intention and specific goal intention conditions compared to the implementation intention condition – because strong links are forged between the (social

threat) opportunity and (bias-alleviating) response only when the defining "if (situation), then (goal-directed response)" format of implementation intentions is used.

Method

Participants

Undergraduate students completed an online version of the SAD and a sample of those scoring less than 4 ($N = 14$, $M_{SAD} = 2.36$, $SD_{SAD} = 1.34$) or greater than 9 ($N = 51$, $M_{SAD} = 18.57$, $SD_{SAD} = 4.55$) comprised the low and high social anxiety groups, respectively. Participants were predominantly female (69.23%), had a mean age of 20.65 years ($SD = 4.51$), and were compensated £5 for their time.

Design and Procedure

The experiment adopted a 4-between (condition: low anxiety-standard goal intention, high anxiety-standard goal intention, high anxiety-specific goal intention, high anxiety-implementation intention) design. On arrival at the laboratory, all participants completed the SAD a second time along with the FNE, PRCS, and STAI-T. Participants were then informed that they would have to give a 3-minute speech in the same manner as Experiment 1 and 2.

The Dot-Probe Task

Participants then undertook a differentiation variant of the VDP similar to that used in Experiment 1. The only difference was that each threat-related word was paired with a matched furniture word (see Appendix 3). There were 48 word pairs in total; 16 threat-related words matched with furniture words and an additional 32 neutral word pairs. Each word pair was presented twice giving a total of 96 trials.

Manipulation of Goal Intention and Implementation Intentions

Following 8 practice trials with neutral word pairs, participants received instructions depending on the condition to which they had been assigned. Participants with low social anxiety and high social anxiety in the 'standard goal intention' condition were told that "*Research has shown that anxiety can influence peoples' ability to perform well on the computer tasks that you will do today and can also influence peoples' ability to give a good speech. Therefore, during all the tasks, it is important that you remain calm.*" High social anxiety participants in the 'specific goal intention' condition were also told that "*People become anxious because their thoughts stray to how well they are doing and how they appear to others. To stay calm and to keep your thoughts on track, clinical psychologists have shown that it is useful to focus your attention on neutral features of the situation, such as the furniture. Furniture is a good focus of attention because it is present in virtually every social situation that you are likely to encounter. In this computer task you should try to focus on words that describe items of furniture (e.g., 'trunk', 'daybed', 'console').*" Finally, high social anxiety participants in the 'implementation intention' condition received the same information as those in the specific goal intention condition, but were also asked to form a plan to control their attention during the task; "*If I see furniture, then I will focus all my attention on it!*"

Results

Attentional bias scores were computed as in Experiment 1. The average error rate across the 32 threat trials was low ($M = 4.52\%$). Attentional bias scores were submitted to a 4-between (condition: low anxiety-standard goal intention, high anxiety-standard goal intention, high anxiety-specific goal intention, high anxiety-implementation intention)

ANOVA (see Figure 3). The main effect of condition was significant, $F(3, 61) = 3.49$, $p <$ .01, eta^2 = .15. Pairwise comparisons revealed that high social anxiety participants who formed standard goal intentions showed a greater attentional bias toward words representing social threat ($M = 10.15$, $SD = 15.02$) than did low social anxiety participants given the same instructions ($M = -7.20$, $SD = 22.37$), $F(1, 29) = 6.62$, $p < .05$, eta^2 = .19; again, the characteristic impact of social anxiety levels on attention to social threat information was replicated. There was no difference between the attentional bias scores of high social anxiety participants given standard goal intentions ($M = 10.15$, $SD = 15.02$) and high social anxiety participants who formed specific goal intentions ($M = 11.02$, $SD =$ 29.95), $F(1, 32) = 0.01$, ns, eta^2 = .00. However, the attentional bias scores of high social anxiety participants who formed implementation intentions ($M = -14.67$, $SD = 38.13$) were significantly lower than both high social anxiety participants who formed standard goal intentions ($M = 10.15$, $SD = 15.02$), $F(1, 32) = 6.23$, $p < .05$, eta^2 = .16, and high social anxiety participants who formed specific goal intentions ($M = 11.02$, $SD = 29.95$), $F(1, 32)$ = 4.77, $p < .05$, eta^2 = .13. There was no difference between the attentional bias scores of high social anxiety participants who formed implementation intentions ($M = -14.67$, $SD =$ 38.13) and low social anxiety participants given standard goal intentions ($M = -7.20$, $SD =$ 22.37), $F(1, 29) = 0.42$, ns, eta^2 = .01.

Discussion

Experiment 3 was designed to rule out the possibility that the effect of forming implementation intentions observed in Experiments 1 and 2 could be attributed to additional task information. As in Experiments 1 and 2, a subset of the participants with high levels of social anxiety were instructed to form an implementation intention to focus

their attention on the non-threatening stimuli ("*If I see furniture, then I focus all my attention on it!*"). However, in Experiment 3 we compared the effects of planning instructions with specific goal intention instructions that provided the same information (i.e., to try to focus on furniture), but not in an "if (situation), then (goal-directed response)" format. As expected, high social anxiety participants evidenced an attentional bias for threat-related information that was not observed among low social anxiety participants. This attentional bias was observed even when socially anxious participants received specific instructions to focus on furniture. Only high social anxiety participants who formed implementation intentions were able to overcome this attentional bias. This finding replicates Experiment 1 and provides further evidence to suggest that goal intentions, even when relatively specific, do not suffice to control attentional responses among individuals with high levels of social anxiety.

Experiment 4: Promoting Realistic Appraisals of Performance during a Speech Task

Experiments 1 - 3 used computer-based measures to investigate whether implementation intention formation could prevent the well-documented impact of social anxiety on attention. In Experiment 4 we investigated whether forming implementation intentions can overcome another characteristic outcome of social anxiety, namely, unrealistic appraisals of performance. Rapee and Lim (1992) found that social phobics systematically underestimated their performance on a speech task relative to less anxious participants and similar findings have also been reported among samples with non-clinical levels of social anxiety (e.g., Rapee & Hayman, 1996, Study 2). Thus, the aim of Experiment 4 was to investigate whether forming implementation intentions could reduce the discrepancy between self-ratings and observer-ratings of speech performance. Low and

high social anxiety participants gave a speech and formed a plan specifying how to direct their attention if they felt concerned during the speech. On the basis of Clark and Wells (1995) cognitive model of social phobia and the findings of our first three experiments, we hypothesised that forming implementation intentions would prevent the shift of attention toward physiological cues that are indicative of social anxiety (e.g., an increased heart rate) and, as a consequence, the person would no longer use these cues to make inferences about their performance. Thus, we predicted that the performance appraisals of high social anxiety participants who formed implementation intentions should be less negative than the appraisals of comparably anxious participants who did not form implementation intentions.

Method

Participants

Undergraduate students completed an online version of the SAD and a sample of those scoring less than 4 ($N = 18$, $M_{SAD} = 3.17$, $SD_{SAD} = 1.30$) or greater than 9 ($N = 57$, $M_{SAD} = 14.95$, $SD_{SAD} = 4.95$) comprised the low and high social anxiety groups, respectively. Participants were predominantly female (54.67%), had a mean age of 21.12 years ($SD = 2.45$), and were compensated £5 for their time.

Design and Procedure

The experiment adopted a 4-between (condition: low anxiety-no instruction, high anxiety-no instruction, high anxiety-goal intention, high anxiety-implementation intention) by 2-within (rater: self vs. observer) design. On arrival at the laboratory, all participants completed the SAD a second time along with the FNE, PRCS, and STAI-T. Participants were then informed that they would have to give a 3-minute speech on a topic that would be given to them (for instructions, see Experiment 1). In an effort to raise social evaluative

concerns further, participants watched a video of another participant giving a speech (actually a confederate) and rated the participant's performance on the following items: "How good was the speaker?", "How interesting was the speaker?", "Did the speaker appear confident?", and "How helpful do you think the speech would be to the intended audience?" Finally, participants were asked what they would criticize about the speaker's presentation.

Manipulation of Goal Intention and Implementation Intentions

Next, all participants were reminded that they would have to give their own speech. High social anxiety participants were then randomly allocated to one of three conditions. Participants in the 'no instruction' condition were given no instructions about controlling anxiety. High social anxiety participants in the 'goal intention condition' were told that "*Some people become anxious while speaking because they expect that others will think the worst of them. During the speech you should try to remain calm and not worry about how you appear to others. Research has shown that if you are not focusing your attention on yourself during the speech, it will help you to keep calm.*" High social anxiety participants in the 'implementation intention condition' were given the same instructions, but were also asked to form the following plan; "*If I feel concerned, then I will focus on the back wall of the room!*"

All participants were then told that the topic for their speech would be 'What advice would you would give to someone who was going for an important job interview?' and that they had three minutes to think about what they would say. Once the three minutes were up, participants were asked to stand in front of the video camera and to deliver their speech. They were told that the experimenter would stop them after three minutes.

Self- and Observer-ratings of Speech Performance

Following the speech, participants were asked to rate their performance using 12 items from the Perception of Speech Performance scale (Rapee & Lim, 1992): 'My content was understandable', 'I kept eye contact with the audience', 'I stuttered', 'I fidgeted', 'I "Um"ed and "Ah"ed', 'I had a clear voice', 'My face twitched', 'My voice quivered', 'I appeared confident', 'I appeared nervous', 'I kept the audience interested', and 'I generally spoke well'. Participants were provided with a 5-point scale anchored by 'not at all' and 'very much' with which to respond (Cronbach's alpha = .86). Two independent coders (blind to condition) watched the videos of the speeches and scored each participant's performance on the same 12 items with the same 5-point scale anchored by 'not at all' and 'very much' (Cronbach's alpha = .82). Inter-rater reliability was of medium magnitude (Cohen, 1992; mean Pearson r = .35) and coder ratings were averaged.

Results

Total scores on the Perception of Speech Performance scale were submitted to a 4-between (condition: low anxiety-no instruction, high anxiety-no instruction, high anxiety-goal intention, high anxiety-implementation intention) by 2-within (rater: self vs. observer) repeated measures ANOVA (see Figure 4). There were significant main effects of condition, $F(3, 71) = 4.61$, $p < .01$, eta^2 = .16, and rater, $F(1, 71) = 238.44$, $p < .001$, eta^2 = .77, that were qualified by a significant two-way interaction between condition and rater, $F(3, 71) = 7.30$, $p < .001$, eta^2 = .24. Simple main effects revealed a main effect of condition on self-ratings of performance, $F(3, 71) = 7.21$, $p < .001$, eta^2 = .23, but not on observer-ratings of performance, $F(3, 71) = 1.20$, *ns*, eta^2 = .05. Pairwise comparisons revealed that high social anxiety participants given no instructions rated their performance

as worse ($M = 17.54$, $SD = 7.75$) than did low social anxiety participants ($M = 26.78$, $SD = 7.61$), $F(1, 42) = 15.34$, $p < .001$, eta^2 = .27. To facilitate interpretation we also calculated discrepancy scores by subtracting the sum of the self-ratings from the sum of the observer ratings. The consequence of poor performance ratings was that high social anxiety participants given no instructions showed a greater discrepancy between self- and observer-ratings of performance ($M = 15.52$, $SD = 6.84$) than did low social anxiety participants ($M = 8.08$, $SD = 5.31$).

There was no difference between the self-ratings of high social anxiety participants given no instructions ($M = 17.54$, $SD = 7.75$) and high social anxiety participants who formed goal intentions ($M = 20.88$, $SD = 4.91$), $F(1, 40) = 2.37$, ns, eta^2 = .06, and, as a consequence, both groups of participants showed a comparable discrepancy between self- and observer-ratings of performance (Ms = 15.52 and 13.81, SDs = 6.84 and 6.97, respectively). However, high social anxiety participants who formed implementation intentions rated their performance as better ($M = 24.20$, $SD = 5.96$) than did high social anxiety participants given no instructions ($M = 17.54$, $SD = 7.75$), $F(1, 39) = 8.24$, $p < .01$, eta^2 = .17, and marginally better than did high social anxiety participants who formed goal intentions ($M = 20.88$, $SD = 4.91$), $F(1, 29) = 2.89$, $p < .10$, eta^2 = .09. There was no difference between the self-ratings of high social anxiety participants who formed implementation intentions ($M = 24.20$, $SD = 5.96$) and low social anxiety participants ($M = 26.78$, $SD = 7.61$), $F(1, 31) = 1.14$, ns, eta^2 = .04. Indeed, high social anxiety participants who formed implementation intentions had a similar discrepancy between self- and observer-ratings of performance ($M = 8.27$, $SD = 5.39$) to that observed among low social anxiety participants ($M = 8.08$, $SD = 5.31$).

Discussion

Experiment 4 investigated whether forming implementation intentions that specified how to direct attention if participants felt concerned during a speech task could promote more realistic appraisals of performance. Observer-ratings of performance did not differ between the conditions, yet people with high levels of social anxiety who did not form implementation intentions rated their performance as worse compared to participants with low levels of social anxiety. This finding supports Rapee and Hayman's (1996, Study 2) findings and suggests that, although people with high levels of social anxiety do not perform objectively worse than people with low levels of social anxiety, high anxious people systematically underestimate their performance relative to less anxious people. Forming goal intentions to try to remain calm did not influence appraisals of performance. We therefore asked participants to form implementation intentions to direct their attention in a particular manner when confronted by potential threat (""*If I feel concerned, then I will focus on the back wall of the room!*") Directing attention in this manner should not influence objective ratings of performance (the target is the person's focus of attention during the speech, not facets of their actual performance like content, structure, or speech clarity), but should prevent the shift of attention toward physiological cues that are indicative of social anxiety. Consistent with these ideas, forming an implementation intention promoted more positive (and thus more realistic) performance appraisals among people with high levels of social anxiety. This is an important finding because it speaks to the utility of implementation intentions in helping socially anxious individuals deal effectively with social evaluative situations in the real world; planning in this way not only prevents high levels of social anxiety from influencing attention to threat-related

information, but also helps people with high levels of social anxiety to realistically appraise their performance in social evaluative contexts.

General Discussion

A large body of evidence suggests that people with social anxiety display attentional biases that impair their performance in social situations and, ultimately, maintain their anxiety. Furthermore, these attentional responses are difficult to control. For example, in the present research, participants with high levels of social anxiety who were explicitly instructed that it was important to remain calm still showed biased responses to threat-related information. We hypothesised, however, that forming an implementation intention that specified a good opportunity to control attention (in the if-part of the plan) and a suitable response to execute when that opportunity was encountered (in the then-part of the plan) could help people to strategically direct their attention in social situations. Four experiments investigated this idea.

Experiment 1 replicated Musa et al.'s (2003) findings showing that participants with high levels of social anxiety (relative to participants with low social anxiety) showed an attentional bias toward words representing social threat in the VDP. Experiment 1 also extended the work of Musa et al. by investigating the effect of forming respective goal intentions and implementation intentions on attentional responses. Findings showed that merely forming the goal intention to remain calm did not influence performance on the VDP. However, forming an if-then plan that specified how to remain calm ("If I see a neutral word, then I will focus all my attention on it!") had an important effect on responses: High social anxiety participants who formed implementation intentions no longer exhibited biased responses to social threat information. In fact, attentional responses

were equivalent to those demonstrated by the low social anxiety group.

Experiment 2 used an emotional spatial cuing paradigm based on the work of Fox et al. (2001) to investigate whether implementation intentions could promote rapid disengagement of attention from cues representing social threat. When participants were given no instructions about controlling attention, our findings replicated those obtained in previous research: Socially anxious participants dwelled for longer on social threat words compared to neutral words, even if they were explicitly instructed to remain calm and not to worry about the speech. However, high social anxiety participants who formed an implementation intention either to ignore the meaning of the words or to increase their readiness to switch attention were able to disengage as quickly from social threat words as they were from neutral words. Experiment 3 ruled out the possibility that the effects observed in Experiments 1 and 2 could be attributed simply to participants in the implementation intention conditions receiving more information about the tasks than participants in the other conditions.

Experiment 4 investigated whether forming implementation intentions specifying how to deal with anxiety-related challenges that could occur during a speech task (e.g., how to direct attention if one feels concerned) could promote realistic ratings of performance. Following Rapee and Lim (1992), participants were asked to give a short speech and to rate their performance. Independent observers then rated videos of the speeches on the same performance dimensions. As expected, although observers did not rate speeches made by participants with high levels of social anxiety as any worse than those made by participants with low levels of social anxiety, participants with high levels of social anxiety underestimated their performance compared to participants with low levels of social

anxiety, even when they were told that they could keep calm by not focusing their attention on themselves during the speech. In other words, high levels of social anxiety led participants to underestimate their performance. However, participants who formed implementation intentions were more realistic about their performance (relative to participants who did not form implementation intentions). In summary, Experiments 1-4 indicate that forming if-then plans helps people to direct their attention in social-evaluative contexts. By so doing, people with high levels of social anxiety are able to prevent their anxiety from influencing their responses to attentional tasks and appraisals of their performance.

Implementation intentions are likely to have been effective in preventing social anxiety from influencing responses because this form of planning (a) spells out both a good opportunity in which to act and a response to the opportunity that will be instrumental in reaching one's goal, and (b) makes execution of the response contingent upon the arrival of that opportunity, i.e., if (situation), then (goal-directed response). As a consequence, two processes are engendered that are not associated with merely holding strong goal intentions (Gollwitzer, 1999). First, the mental representation of the specified opportunity becomes highly accessible and this moment is therefore identified swiftly and accurately (Webb & Sheeran, 2004). Second, forming implementation intentions forges a strong association between the specified opportunity and the designated response (Webb & Sheeran, 2007; 2008). This opportunity-response association obviates the need for conscious deliberation about both when to act and precisely how one should act at the critical moment, and means that the intended response is elicited relatively automatically (for a review see Gollwitzer & Sheeran, 2006). In terms of Experiment 3 of the present research then, participants who

formed an implementation intention that specified "If I see furniture…" were likely to have been fast to orient their attention toward furniture words. Once the opportunity (presence of furniture) was detected, the then-response ("then I will focus all my attention on it!") is likely to have been initiated relatively automatically and before the learned anxious response (focus on social threat) could sway responses. In summary, by forming implementation intentions the effect of social anxiety on attention and judgment is attenuated because opportunities for the control of attention are quickly identified and strongly linked to functional responses.

It may be useful to conceptualise the control of attention in social anxiety in terms of models of task performance in other domains. For example, the QUAD model (Conrey, Sherman, Gawronski, Hugenberg, & Groom, 2005) distinguishes between several processes that can influence implicit task performance. The first process concerns the likelihood that an automatic bias is activated by a stimulus. In the context of social anxiety, this process would be reflected in the likelihood that a threat-related stimulus (e.g., the word 'criticise') evokes the automatic tendency to direct attention toward that stimulus. In the present studies, respective implementation intentions were not geared at this process. Rather, we assumed that high social anxiety participants who formed implementation intentions still possessed the tendency to direct their attention toward threat. However, forming implementation intentions is likely to have influenced two other determinants of task performance identified by the QUAD model. The first is the probability that a correct response can be determined. By forming implementation intentions the person has specified, in advance, a suitable response to a particular stimulus (e.g., the presence of word stimuli). As a consequence, the person is better able to select a functional response

(e.g., focus on the neutral stimulus). Second, forming implementation intentions should have influenced the likelihood that the automatic bias can be overcome. This process can be construed in terms of the likelihood that the wanted response (e.g., focus on furniture) replaces the unwanted response (i.e., attend to social threat). Implementation intentions that link the desired response to the specified opportunity ("If I see furniture, then I will focus all my attention on it!") strategically automate the execution of the wanted response (Gollwitzer & Schaal, 1998) and thus increase the likelihood that the individual is able to overcome the effect of social anxiety on responses. In summary, it seems likely that implementation intention formation did not prevent or interfere with the processes that produce biased attentional responses, but rather constituted a self-regulatory tool to prevent social anxiety from influencing attention and judgment. Future research could be directed towards testing these predictions and towards assessing whether implementation intentions can be used to prevent the automatic activation of bias.

Future research might also consider whether and how implementation intentions could be integrated with existing interventions designed to help people experiencing high levels of social anxiety. Implementation intentions are a relatively quick and cost-effective intervention. In the present studies, as in many other implementation intention studies, the intervention was delivered via written instructions that required relatively little time and effort on the part of the participant. Implementation intentions are also flexible (Gollwitzer et al., 2007) and can be tailored to the particular contexts that are problematic (Achtziger et al., 2008). For example, implementation intentions might profitably be targeted at contexts where the person with high levels of social anxiety struggles to initiate goal striving (e.g., to start speaking) or contexts in which goal striving is derailed by threats that originate

within the person (e.g., feelings of concern) or in the social context (e.g., a critical face in the audience). It would also be interesting to investigate whether using implementation intentions to direct attention toward neutral aspects of the environment could influence interpretative biases in social anxiety (Constans, Penn, Ihen, & Hope, 1999). In short, implementation intentions have a number of advantages as an intervention strategy that recommend their use either as a 'stand-alone' intervention or integrated with other interventions.

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Footnotes

[1] In each experiment we checked that low social anxiety participants scored lower on all measures of anxiety (SAD, FNE, PRCS, and STAI-T) than did the high social anxiety participants. As expected, all the comparisons were significant, $F(3, 48) = 12.66$, $p < .001$, eta^2 = .44 (Experiment 1), $F(4, 149) = 33.19$, $p < .001$, eta^2 = .47 (Experiment 2), $F(4, 57) = 23.75$, $p < .001$, eta^2 = .63 (Experiment 3), and $F(4, 68) = 14.57$, $p < .001$, eta^2 = .46 (Experiment 4). We also checked that the low and high social anxiety groups did not differ in either age or the proportion of female participants. Consistent with this idea, in each experiment the comparisons were non significant, $F(2, 55) = 1.31$, ns, eta^2 = .05 (Experiment 1), $F(2, 155) = 1.73$, ns, eta^2 = .02 (Experiment 2), $F(2, 65) = 0.33$, ns, eta^2 = .01 (Experiment 3), $F(2, 72) = 0.77$, ns, eta^2 = .02 (Experiment 4). Finally, we checked whether the high social anxiety groups differed on the anxiety measures on arrival at the laboratory. In each experiment, there was no difference between the high social anxiety groups, $F(6, 68) = 0.88$, ns, eta^2 = .07 (Experiment 1), $F(12, 213) = 0.92$, ns, eta^2 = .05 (Experiment 2), $F(8, 86) = 0.79$, ns, eta^2 = .07 (Experiment 3), and $F(8, 100) = 0.27$, ns, eta^2 = .02 (Experiment 4). Note that the SAD was not given to participants on arrival in Experiment 1 and so the analyses for Experiment 1 are based on the FNE, PRCS, and STAI-T only.

[2] It is worth noting that the threat versus neutral words differ in another respect; syntactic category. Although some of the threat words were nouns (e.g., failure, nausea), most threat words were adjectives whereas most neutral words were nouns. Although it is difficult to see how this potential confound could account for differences between low and high socially anxious participants (high, relative to low, socially anxious participants are

unlikely to show an attentional bias for adjectives rather than nouns), it is possible that participants might have used the syntactic category of the words as an additional means to implement their intentions. Future research should try to construct word lists that systematically match the syntactic category of threat and neutral terms.

Author Notes

Appendix 1

List of Words Used in Experiment 1

Social threat-neutral pairs	Neutral pairs
ashamed-orchard	back-wash
blushing-cupboard	berry-round
breathless-downstream	bicycle-cologne
collapse-aeration	biscuit-lacquer
criticised-ingredient	breeze-pollen
disgraced-warehouse	chalky-flash
dizzy-coral	coconut-tumbler
embarrassed-transformed	creek-salad
failure-balance	dawn-base
faint-honey	desk-bird
foolish-gradual	dollar-castle
gagging-zooming	drum-buoy
gasping-geology	fence-wharf
humiliated-miniatures	fur-pen
inadequate-locomotion	general-gymnast
incompetent-manufacture	heather-pumpkin
inept-purge	icicle-budget
inferior-inventor	import-bakery
lightheaded-subscribing	journal-starlit
mocked-banner	lodge-penny
nausea-layman	manufacture-contraption
nervous-leather	oblong-device
palpitations-amalgamation	package-cushion
pathetic-exterior	patio-flock
ridiculed-pictorial	quadrant-mattress
shaky-tweed	ride-herd
stupid-barrel	satin-swamp
suffocating-periodicals	saw-pet
sweating-armchair	scarf-ruler
tense-onion	sheep-slope
trembling-phenomena	teapot-gallop
worthless-cultivate	texture-formula

Appendix 2

List of Words Used in Experiment 2

Social threat words	Neutral words
ashamed	orchard
blushing	cupboard
breathless	downstream
collapse	aeration
criticised	ingredient
disgraced	warehouse
dizzy	coral
embarassed	transformed
failure	balance
faint	honey
foolish	gradual
gagging	zooming
gasping	geology
humiliated	miniatures
inadequate	locomotion
incompetent	manufacture
inept	purge
inferior	inventor
lightheaded	subscribing
mocked	banner
nausea	layman
nervous	leather
palpitations	amalgamation
pathetic	exterior
ridiculed	pictorial
shaky	tweed
stupid	barrel
suffocating	periodicals
sweating	armchair
tense	onion
trembling	phenomena
worthless	cultivate

Appendix 3

List of Words Used in Experiment 3

Social threat-furniture pairs	Neutral pairs
ashamed-cabinet	abbreviated-contraption
blushing-bookcase	back-wash
dizzy-trunk	berry-round
faint-bench	bicycle-cologne
foolish-dresser	biscuit-lacquer
gasping-console	chalky-flashy
inept-couch	coconut-tumbler
inferior-cupboard	creek-salad
mocked-drawer	dawn-base
pathetic-wardrobe	dollar-castle
shaky-table	drum-buoy
stupid-daybed	fur-tub
sweating-armchair	general-gymnast
tense-shelf	heather-pumpkin
trembling-sideboard	icicle-budget
worthless-footstool	import-bakery
	journal-express
	lodge-penny
	maid-bird
	oblong-device
	package-mustard
	patio-flock
	quadrant-silicate
	rabbit-pollen
	ride-herd
	satin-swamp
	saw-pet
	scarf-ruler
	sheep-slope
	teapot-gallop
	texture-formula
	trail-split

Figure Captions

Figure 1

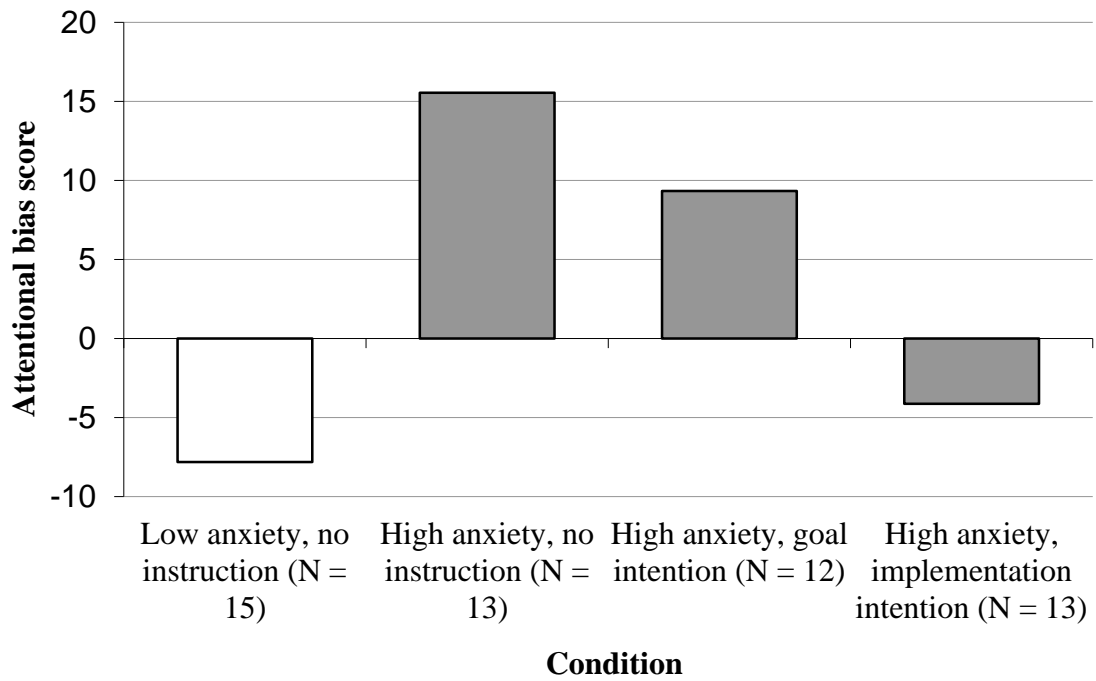*Attentional Bias Scores for Threat Trials by Condition (Experiment 1)*

Figure 2

Response Latencies (ms) by Social Anxiety Group, Condition, and Cue Type (Experiment

2)

Figure 3

Attentional Bias Scores for Threat Trials by Condition (Experiment 3)

Figure 4

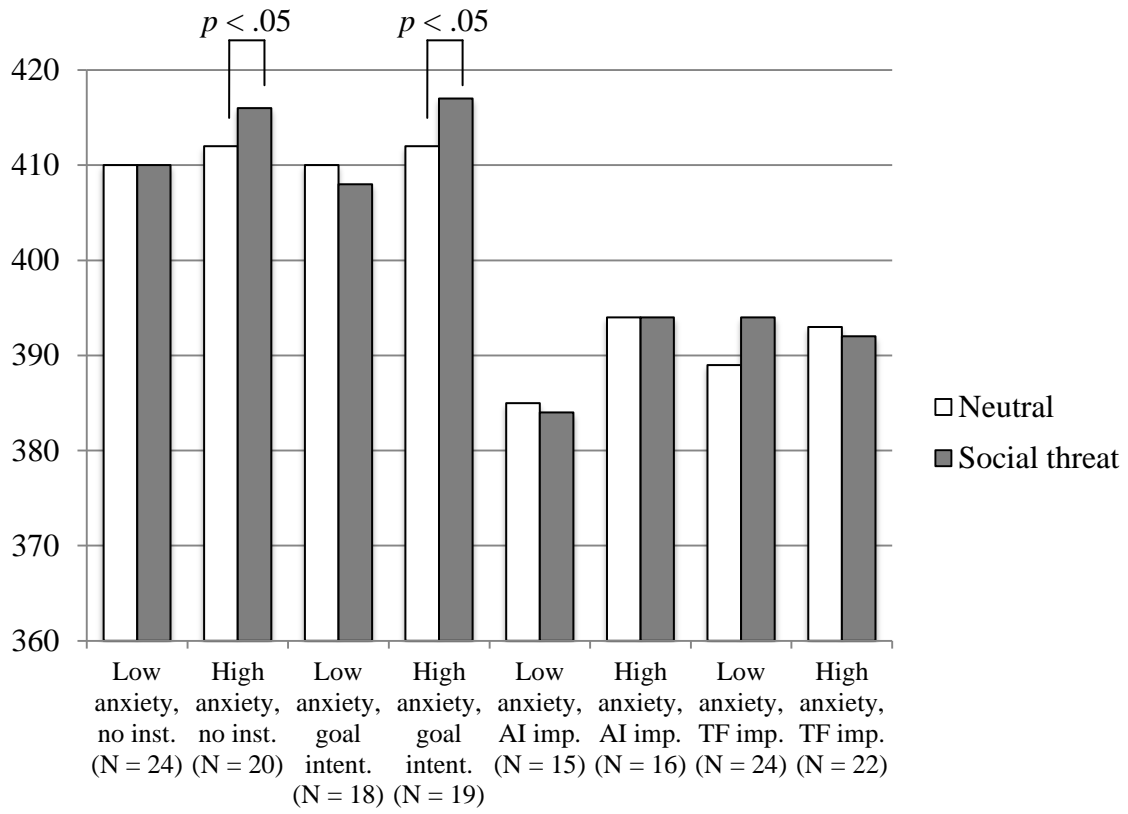*Self- and Observer-Ratings of Performance by Condition (Experiment 4)*

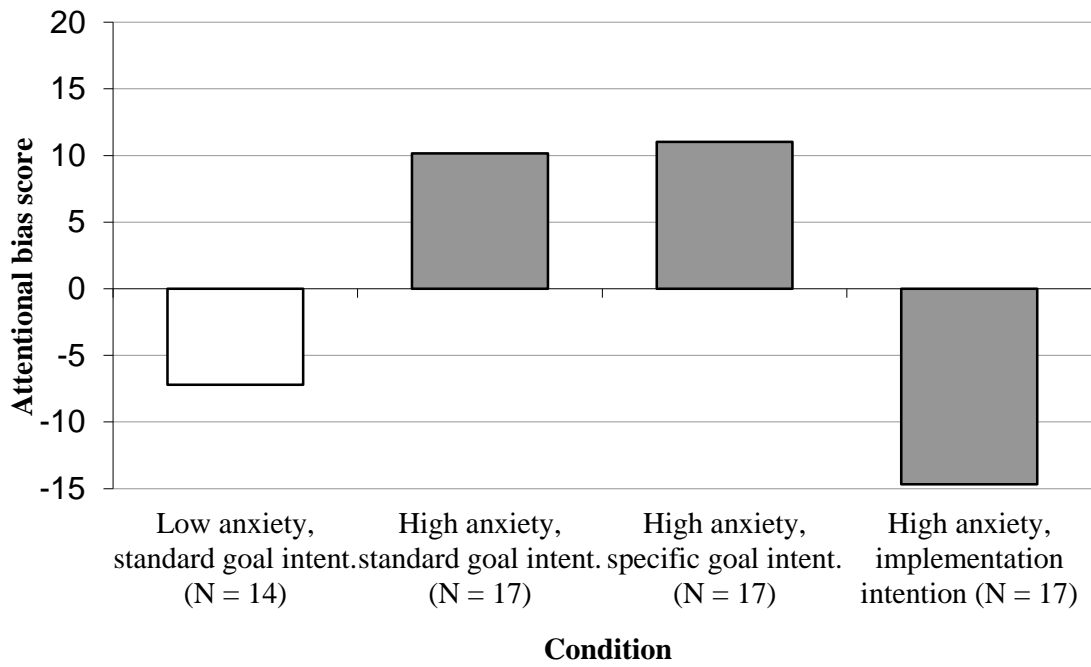Mean response latencies by condition when the probe replaces the threat word

LpLt	556	524	519	542
UpUt	557	524	520	564

Mean response latencies by condition when the probe replaces the neutral word

LpUt	550	544	524	541
UpLt	547	535	533	556

Condition

Mean response latencies by condition when the probe replaces the threat word

LpLt	543	517	552	529
UpUt	542	528	547	554

Mean response latencies by condition when the probe replaces the furniture word

LpUt	536	530	557	526
UpLt	535	535	564	528