Social Anxiety and the Vigilance-Avoidance Pattern of Attentional Processing

Stephanos Ph. Vassilopoulos

University of Patras, Greece

Abstract. A modified version of the probe detection task was used to investigate the time course of attentional biases for emotional words in high and low socially anxious individuals. Word pairs were presented at two exposure durations, 200 and 500 msec, in order to investigate the different components of attentional bias in anxiety (e.g., vigilance or avoidance of threat). There was evidence of an attentional bias favouring initial vigilance towards (social and physical) threat words and subsequent avoidance of the same stimuli in high social anxiety. In contrast, low socially anxious individuals did not exhibit an attentional preference. The interaction of social anxiety and exposure duration for threat words remained when controlling for general negative affect. Theoretical and clinical implications of the results are discussed.

Keywords: Social anxiety, attention bias, vigilance, avoidance.

Introduction

Several cognitive models have proposed that anxiety disorders are associated with selective attentional bias to threat cues (for reviews see Eysenck, 1992, 1997; Williams, Watts, MacLeod and Mathews, 1997). Similarly, as far as social phobia is concerned, both Beck's et al. (1985) and Rapee and Heimberg's (1997) models suggest that social phobic individuals show preferential processing of threat information, i.e. hypervigilance *to* threat. According to the theoretical position of Clark and Wells (1995), the hypervigilance *to* internal threat cues ("self focus") that social phobics show can lead to attention *away* from external threat cues (the social environment). In line with this suggestion, Mansell, Clark, Ehlers and Chen (1999) found that a non-clinical sample with fear of negative evaluation (FNE) showed avoidance of emotional stimuli (i.e. both positive and negative faces) when tested under social evaluative conditions on a probe detection task. Similarly, Chen et al. (2002) tested patients with social phobia and found that, compared to non-patient controls, patients with social phobia also showed an attentional bias away from faces.

But the evidence of attentional biases in social anxiety seems contradictory, as other studies indicate vigilance for social threat words on emotional Stroop and visual probe tasks (e.g. Asmundson and Stein, 1994; Maidenberg, Chen, Craske and Bohn, 1996; Mattia, Heimberg and Hope, 1993). One possible explanation for these mixed findings is that the direction of bias depends on the exposure duration of the threat stimulus. High levels of social anxiety may be associated with automatic vigilance for threat cues at short presentation times as well as

with strategic avoidance of the same stimulus at longer presentation times. Evidence consistent with an automatic, pre-attentive vigilance for threat cues was provided by Mogg and Bradley (2002). In their study, individuals high in social anxiety selectively allocated their attention towards the spatial location of threat faces that are presented under conditions of restricted awareness (masked threat faces).

The study by Amir, Foa and Coles (1998) has already provided preliminary evidence consistent with a "vigilance-avoidance" model of information processing of threat-relevant information in social phobia. In their category decision task social phobics showed initial activation of inappropriate meanings of socially relevant homographs followed by later inhibition of these meanings. The authors conclude (1998, p. 289), "This finding is consistent with the hypothesis that one mechanism by which social phobia may be maintained is a faster detection (i.e. automatic hypervigilance) of threat-relevant information followed by an enhanced strategic avoidance of such information". Returning to the dot-probe studies of Mansell et al. (1999) and Chen et al. (2002), this raises the possibility that the 500 msec exposure duration used in both studies tapped into this second phase and was thus too long to demonstrate initial attention to social stimuli.

The current study investigated whether the "vigilance-avoidance" pattern of processing (Mathews, 1990; Mogg, Mathews and Weinman, 1987) characterizes attentional processes in social anxiety. The dot-probe studies, which showed avoidance of social stimuli in social anxiety (Mansell et al., 1999; Chen et al., 2002), used 500 msec as their presentation time. Therefore, it seems reasonable that vigilance would be easier to find at shorter presentation times. It was decided that 200 msec should be used as the second stimulus exposure duration because it is too short to allow shifts in gaze (e.g. the intersaccadic interval during active visual search is in the region of 200–300 msec; Kowler, 1995).

The task was a modified version of the original probe detection task (MacLeod, Mathews and Tata, 1986), which was developed by Mogg and Bradley (1999) to examine attentional biases for emotional stimuli. It is a "probe position" task (i.e. where is the probe?) that has produced in the past (Mogg and Bradley, 1999) similar results to those obtained from the probe classification task (i.e. what is the type of the probe?) with the additional advantage that the relationship between the stimulus and response is less arbitrary and easier to learn, thus minimizing noise and loss of data.

In the current experiment all the participants were told that they have to give a speech after the task and that their performance will be evaluated. This threat induction was designed to simulate the social evaluation that is present in most feared social situations. First, it was hypothesized that, under threat, high socially anxious participants, but not low anxious controls, will display an overall initial direction of attention to emotional or threat words at 200 msec presentation time followed by a subsequent avoidance of the same stimuli at 500 msec. For that reason, on each trial participants were presented with both an emotional word (social positive word, social or physical threat word) and a neutral word, which was low in imageability and acted as a control. Both stimuli were displayed for either 200 or 500 msec exposure time. Second, we wished to investigate attention to positive, as well as negative, emotional words. Competing predictions can be deduced from the literature. Some studies using the modified stroop task (Mathews and Klug, 1993; Mogg and Marden, 1990) or the modified dot probe task (Chen et al., 2002; Mansell et al., 1999) found a similar attentional bias for negative and positive words or faces (emotionality effect). Alternatively, general cognitive models of anxiety usually assume that anxious individuals will respond in opposite directions to positive

and negative stimuli (valence effect). Third, we wished to explore whether this abnormality in vigilance and avoidance is specific to socially relevant threat cues only or generalizes to other threatening stimuli not directly related to the socially anxious individuals' main concerns, such as physical threat cues (specificity effect).

Finally, a large body of evidence has indicated that general anxiety is associated with attention towards threat words (see Williams et al., 1997). Therefore, measures of trait anxiety and depression were taken in order to determine whether any differences that were observed between high and low social anxiety participants were due to individual differences in propensity to social anxiety or to a more general difference in negative affectivity.

Method

Participants

The participants were students attending the University of Patras, Greece. They were recruited from a larger sample of about 120 students who had filled in the Fear of Negative Evaluation scale (FNE; Watson and Friend, 1969). All students were attending a course in psychology and received partial course credits for their participation in the study. The FNE scale was used to select individuals who had scores in the top 25% and bottom 25% of the student population. These cut-offs were > 23 or above for the high social anxiety group and <15 for the low social anxiety group (for the Greek norms for the FNE see Vassilopoulos, 2004). There were 26 individuals in each group (High: 24 female, 2 male. Low: 17 female, 9 male).

Apart from FNE, all participants completed the following standardized questionnaires: Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, Dancu and Stanley, 1989), State-Trait Anxiety Inventory (STAI-Trait version; Spielberger, Gorsuch, Lushene, Vagg and Jacobs, 1983) and the Beck Depression Inventory (BDI-II; Beck, Steer and Garbin, 1996).

Measures

Anxiety. Self-report ratings of anxiety were measured on an 11-point rating scale ranging from 0 ("not at all anxious") to 100 ("extremely anxious"). This scale was administered after the threat induction.

Fear of Negative Evaluation (FNE). The FNE is a 30-item true-false self-report questionnaire that provides a measure of apprehension about others' evaluations, distress over negative evaluation, and the expectation of negative evaluation. Sample items include "I am afraid that I may look ridiculous and make a fool of myself". The FNE had high internal consistency ($\alpha = 0.94$), good test-retest reliability ($r = 0.78$) and good discriminant validity ($p < .01$) when compared with a measure of social desirability (Crowne-Marlowe Scale; Crowne and Marlowe, 1964) on a sample of undergraduates (Watson and Friend, 1969).

State-Trait Anxiety Inventory (STAI). The STAI 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 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 2 weeks. Research has shown that the BDI has good internal consistency, reliability and validity (Beck, Steer and Garbin, 1988). The convergent validity with clinical evaluation of depression is 0.64 (Salaberria and Echeburua, 1998).

Social Phobia and Anxiety Inventory (SPAI).   The SPAI consists of 45 items; each is rated on a 7-point Likert scale, with higher numbers reflecting greater anxiety. Test-retest reliability was 0.86 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 and Dancu, 1989). In the present study only the social phobia subscale was used.

The word-attention task

Seventy-two words consisting of equal numbers of social-threat words, positive social-words and physical-threat words were selected from previous studies of attentional bias in social anxiety (Asmundson and Stein, 1992; Mansell, 1997; Mogg, Mathews, Bird and MacGregor-Morris, 1990). Each of these emotional words was translated into Greek and was matched with a neutral (Greek) word of approximately equal length. The neutral words were chosen to be low in imageability. The words are reproduced in the Appendix.

A Dell Inspiron 3800 computer connected to a 14″ monitor was used for this task. The probe position task used in this study is a further development of the probe detection task, which has shown similar sensitivity with other versions (Mogg and Bradley, 1999). Each trial started with a black 20×20 mm central fixation cross presented on the screen for 500 msec, which was replaced by the display of a pair of an emotional word – matched neutral word, side by side, either for 200 or 500 msec. The words were displayed in 30 point bold black Times typeface. Immediately after the offset of the word pair, a probe (6×5 mm black triangle) was presented for 5 sec in the position of one of the preceding words. Participants were asked to press one of the two "left" and "right" response buttons as quickly as possible to indicate whether the probe appeared on the left or right side of the screen. The distance between the words' outer edges was 22 cm, between their inner edges was 10 cm, and the distance between the two probe positions was 16.5 cm. The participants sat with their eyes 100 cm from the monitor and level with the centre of the screen.

For each word type, half of the emotional words were presented on the left and half on the right. The attentional task consisted of 144 experimental trials (72 trials for 200 msec and 72 trials for 500 msec) in a different random order for each subject. Each time course block separately consisted of 24 social threat-neutral word pairs, 24 positive social-neutral word pairs, and 24 physical threat-neutral word pairs (each emotional word was combined with the same matched neutral word for both time courses). The main block of trials was preceded by five practice trials to get participants used to the task.

Procedure

Everyone took part in the study individually. On arrival at the experimental room the participants filled in the (screening) FNE and BDI II questionnaires. Next, they were informed that they would take part in a reaction time test, complete some questionnaires

Table 1. Characteristics of participants in each social anxiety group

Variable	Low social anxiety		High social anxiety		
	M	(*SD*)	*M*	(*SD*)	*t*
FNE	9.61	(2.64)	26.50	(1.75)	27.19***
BDI II	7.42	(5.30)	13.85	(7.32)	3.62**
STAI-Trait	39.36	(8.08)	48.24	(9.13)	3.64**
SPAI	43.92	(23.76)	68.48	(20.51)	3.91***
Age	19.73	(1.22)	19.61	(0.57)	0.44

Note: $n = 26$ for the high and low social anxiety groups, with the exception of the STAI-T and SPAI, $n = 25$ for both social anxiety groups.
** $p < .01$, *** $p < .001$.

and make a speech to a live video camera in which they would be evaluated for their performance (threat induction). All the participants used a line scale to report their mood. Next, participants did some practice first and the word-attention task followed with the two exposure durations (200 msec and 500 msec) counterbalanced across the participants. In order to further characterize the amount of anxious symptomatology they were currently experiencing, participants were given after the task the STAI-T and SPAI to complete and return it within one week.

Results

Participants' characteristics

Table 1 shows the mean scores on each measure for each social anxiety group. Independent samples *t* tests were used to compare groups. FNE scores failed Levene's test for equality of variance and so *t* tests assuming unequal variances were employed. The selection criteria guaranteed that the groups would differ in FNE score. In addition, the high social-anxiety group scored higher than the low social-anxiety group on SPAI, STAI-T and BDI measures. The groups did not differ in age, but there was a significant difference in the balance of sexes, $\chi^2(1) = 5.65$, $p < .05$.

Anxiety prior to the dot-probe task

Participants rated their anxiety feelings after they had been informed that they have to give a speech to a camera after the attention task. An independent samples *t* test showed that the high socially anxious participants reported greater anxiety, $M(SD) = 59.0\,(23.6)$ than the low social anxiety group, $M(SD) = 40.2\,(22.8)$, $t\,(50) = 2.93$, $p < .006$.

Selective attention

Detection latencies (DLs) for errors (the average error rate was low at 0.9%) were removed from the data. To remove outliers, DLs less than 200 msec or greater than 650 msec, and then more than three standard deviations beyond each participants mean were discarded (2% of data). Overall mean RT for the 200 msec condition was 390.72 msec and for the 500 msec condition was 415.20 msec.

Table 2. Attentional bias to words for each experimental group

Exposure duration	200 msec				500 msec			
Level of social anxiety	Low		High		Low		High	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Positive social words	−8.1	17.4	−2.4	16.1	−1.6	18.6	0.1	18.2
Negative social words	−1.5	19.4	6.0	19.5	−0.2	19.7	−4.5	28.2
Physical threat words	2.5	23.5	8.6	18.0	1.9	22.0	−1.8	20.5
All emotional words	−7.1	34.0	12.2	29.4	0.0	27.7	−6.2	35.6
All threat words	1.1	33.1	14.6	26.4	1.7	21.3	−6.3	26.3

To summarize the attentional bias, a Threat Bias Score was calculated for each trial. The score represents the speeding in reaction times when the probe occurs in the same position as the threat stimulus, versus trials when it occurs in the opposite position (MacLeod and Mathews, 1988):

$$\text{Threat Bias score} = 0.5 * [(\text{TrPl} - \text{TlPl}) + (\text{TlPr} - \text{TrPr})],$$

where T = threat word, P = probe, r = right position, and l = left position. (TrPl refers to latencies when the threat stimulus was on the right and probe was on the left, and likewise for the other abbreviations). Positive values reflect selective attention towards the threat word (vigilance) and negative values reflect an attentional bias away from the word (avoidance). The bias scores for social and physical words, and all emotional or threat words together, for each experimental group are shown in Table 2.

The data were analysed using a three-way Social Anxiety (high – low) X Exposure Duration (200 msec – 500 msec) X Word Type (positive social words – social threat words – physical threat words) repeated-measures ANOVA. The study predicted a pattern of vigilance followed by avoidance for emotional words. The predicted two-way interaction between social anxiety and exposure duration was found to be significant, $F(1, 50) = 4.87$, $p < .033$. As Figure 1 shows, the high social-anxiety group showed initial vigilance to all emotional words (positive social words, social and physical threat words) at 200 msec exposure time, which was followed by a subsequent avoidance of the same word stimuli at 500 msec exposure time. The low social anxiety group showed only avoidance of the emotional words at 200 msec exposure time. No significant main effect or interaction concerning word type was observed.

Inspection of the threat bias scores in Table 2 revealed that the vigilance-avoidance pattern of attention observed in socially anxious participants was connected mainly with the social and physical threat rather than positive social words. Therefore, the participants' attentional bias towards threat words (social or physical) was investigated separately by carrying out a three-way Social Anxiety (high – low) X Exposure Duration (200 – 500 msec) X Threat Word (social – physical) ANOVA. Again, the two-way interaction between social anxiety and exposure condition was found to be significant, $F(1, 50) = 4.44$, $p < .05$, and reflected the above findings for all the emotional words pooled together. The interaction was broken down by social-anxiety group. It showed that the high social-anxiety group directed their attention towards threat words at 200 msec and then away from threat at 500 msec (see Figure 2), $t(25) = 2.82$, $p < .01$, whereas in the low social-anxiety group there was no significant
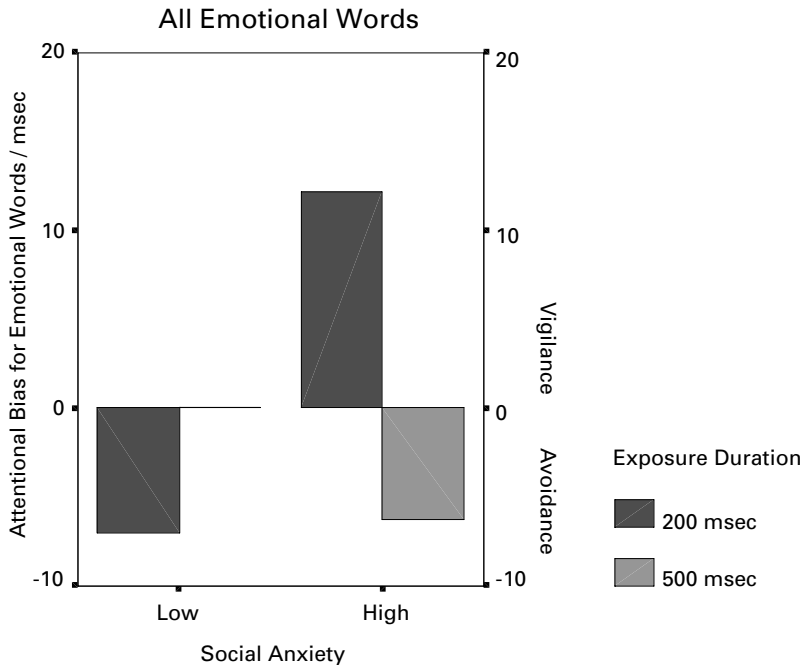
All Emotional Words

Figure 1. Attention bias scores for emotional words in 200 and 500 msec time course. A positive bias score denotes attention directed towards the emotional words (vigilance). A negative score denotes avoidance

difference between the two exposure durations, $t(25) = 0.08$, *ns*. No interaction or main effect concerning threat word was found to be significant.

Errors

The overall error rates were 1.3% and 0.5% for the 200 and 500 msec exposure conditions, respectively. To determine whether the experimental groups differed in error rates, an error bias score was calculated for each participant using the same formula as for probe detection latencies. The error bias scores were subjected to a three-way (Social Anxiety X Exposure Duration X Word Type) ANOVA, but no significant main effects or interactions were observed.

Effects of general trait anxiety and depression on selective attention

The high and low social anxiety groups differed in trait anxiety (STAIT) and depression (BDI) as well as on measures of social anxiety. This raises the possibility that the between-group difference in attentional bias could be due to individual differences in propensity to anxiety in general or depression. To investigate this possibility, the detection latency analysis (threat bias scores) was repeated using STAIT and BDI scores as covariates. The interaction of social anxiety and exposure duration for threat words (social and physical) remained significant with STAIT as covariate, $F(1, 47) = 5.72$, $p < .022$, and with BDI as covariate, $F(1, 49) = 4.06$,
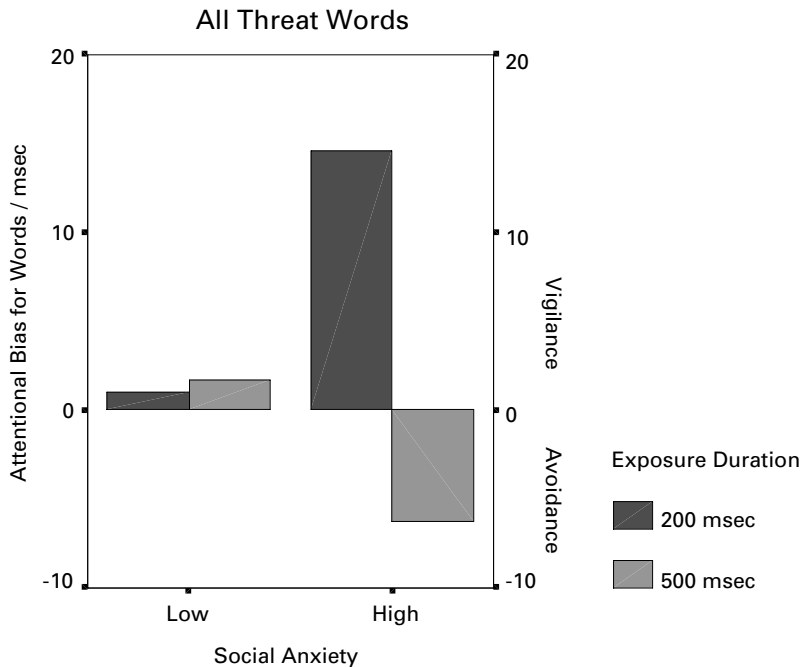
Figure 2. Attention bias scores for social and physical threat words in 200 and 500 msec time course

$p < .05$, and with both STAIT and BDI as covariates, $F(1, 46) = 5.08, p < .030$. These findings indicate that the increased "vigilance-avoidance" of the threat words shown by the high social anxiety group was a function of a heightened propensity to social anxiety, rather than a more general vulnerability to negative affect.

The effects of trait anxiety and depression were also explored with correlational analyses. Depression and trait anxiety were distributed normally in the sample. Over both time-course conditions, there was a significant negative correlation between depression and bias scores for social threat words, $r(52) = -0.31, p < .028$, indicating that high depression was associated with avoidance of social threat words. The participants' relative attention to positive vs. negative social words was also calculated by subtracting their attentional bias score for negative words from their attentional bias for positive words. Over both conditions, the correlations between the relative bias to positive versus negative social words showed a significant positive correlation with trait anxiety, $r(50) = .29, p < .039$. This indicated that high trait anxiety was correlated with avoidance of negative social words and vigilance to positive social words.

Discussion

The main finding of the study is that, compared to the low socially anxious participants, individuals high in social anxiety tended to direct their attention *towards* all emotional words (positive social words, social and physical threat words) at 200 msec presentation time, and then to attend *away* from the same word stimuli presented for 500 msec. When the attentional bias for (social and physical) threat words was investigated, the same interaction between social

anxiety and exposure time was observed, which remained significant when controlling for levels of general anxiety and depression. There was no evidence that these biases are specific for socially threatening stimuli only. Finally, high levels of depression were associated with avoidance of social threat words and high levels of general anxiety were associated with avoidance of negative social words and vigilance to positive social words.

As discussed above, high socially anxious individuals in the present study appear to direct their attention away from the threat words and towards neutral words simultaneously presented for 500 msec. Also, in the first study that used the dot probe paradigm in social phobia, Asmundson and Stein (1994) found that social phobics, but not controls, were faster in detecting the probe after they had read a social threat word presented for 500 msec, *regardless* of probe position. The authors interpreted this finding as indicating an increased vigilance to the environment and enhanced processing of social threat cues. Are the results of the Asmundson and Stein study in sharp contrast with the present study? We believe they are not, because the results cannot be unambiguously interpreted as indicating attentional bias to the threat words presented for 500 msec. Indeed, as suggested by Chen et al. (2002), an alternative interpretation for the Asmundson and Stein's findings may be that patients avoided the detailed processing of social cues and disengaged their attention away from them (i.e. the words) and instead attended quickly to non-threatening cues (i.e. the probes). This alternative explanation is in line with the findings of the present study.

The present results have important implications for recent theories of anxiety and could account for the discrepancy observed in the current literature concerning attentional processes in social anxiety. We mentioned in the introduction that general cognitive models of anxiety (e.g. Beck, Emery and Greenberg, 1985) and studies using words as threat stimuli (e.g. Mattia et al., 1993) emphasized the role of selective attention *towards* social threat cues in social anxiety. On the other hand, recent clinical models of social phobia and, specifically, the Clark and Wells model (Clark and Wells, 1995; Clark, 1999) proposed that social phobia differed from other anxiety conditions because it is associated with a bias to direct attention *away* from social threat cues, such as emotional faces (e.g. Chen et al., 2002; Mansell et al., 1999). However, the present findings strongly suggest that this is the case only when the threat stimuli are presented for longer durations, such as 500 msec. In contrast, at 200 msec presentation time, the opposite pattern of bias emerged: i.e. high levels of social anxiety are associated with an automatic bias to orient attention towards threat cues. These findings indicate the need for cognitive theories of anxiety to take greater account of underlying component processes of selective attention, in particular, the distinction between automatic initial orienting versus maintenance of attention (LaBerge, 1995). Thus, the mixed pattern of findings, noted earlier, may be explained in part by a "vigilant-avoidant" pattern of attentional bias (Mathews, 1990; Mogg et al., 1987). That is, initial orienting to threat may be followed by subsequent avoidance of the threatening stimuli, so that a socially anxious individual might have their attention automatically captured by threat cues, but then direct their attention away from such cues in order to reduce their subjective discomfort. Mogg and Bradley (2002) suggested that this pattern of bias seems unlikely to be unique to social phobia, but may occur whenever the threat stimulus provokes sufficient subjective discomfort to motivate the individual to avoid further processing of it. Indeed, Bradley, Mogg, Miles and Dixon (2001) have recently obtained evidence of a pattern of vigilance followed by avoidance for high threat scenes (including pictures of corpses and mutilated bodies) in individuals with high levels of blood-injury fear.

The results suggest that, given sufficient time, socially anxious individuals are able to suppress initial vigilance to potentially threatening stimulus that has been automatically

activated and follow the opposite pattern of avoidance. How can this vigilance-avoidance model of information processing account for the maintenance of social fears? The vigilance-avoidance pattern of processing may be an important maintaining factor for clinical anxiety states, because faster detection of threat and a subsequent avoidance of strategic processing of such information would prevent habituation to the stimuli. The threat cues would then retain their anxiety-provoking properties. Moreover, from a cognitive perspective, rapid detection of a perceived threat stimulus that is objectively harmless, followed by avoidance, is likely to prevent the individual from learning that the stimulus is less harmful. Such a pattern of processing might thereby contribute to a failure of emotional processing in anxious individuals due to brief, unpredicted exposures to environmental threat stimuli (Foa and Kozak, 1986; Rachman, 1980). Finally, increased self-monitoring is likely to follow reduced attention to external threat in socially anxious individuals. They could then use interoceptive information produced from self-monitoring as evidence they are making a negative impression on others (Papageorgiou and Wells, 2002). This conceptualization of social anxiety is also in line with the cognitive model of Clark and Wells (1995) that emphasizes the role of self-focused attention and reduced processing of external social cues in maintaining social anxiety.

In summary, the present study provides support for the hypothesis that a vigilance-avoidance pattern of attentional processes for threat-relevant cues may underlie the maintenance of social anxiety. No evidence was found that these biases are specific for socially threatening stimuli only. The present study used emotional words than facial expressions as its stimulus material. However, faces may constitute a more ecologically valid set of stimuli than words. Therefore, future studies should attempt to replicate the experiment by using facial expressions presented for both 200 msec and 500 msec. In addition, this was a study on high and low socially anxious undergraduate students. In order to generalize the findings to social phobia, the study needs replication with clinical groups.

Acknowledgments

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Appendix

The word stimuli. Each negative and positive social word or physical threat word is displayed alongside the neutral word that appeared opposite it during the selective attention task

Negative social words	Control	Positive social words	Control	Physical threat words	Control
indecisive	groundless	loved	visible	nausea	tenant
clumsy	eternal	praised	sworn	stroke	order
nervous	north	dignified	arithmetic	vomiting	transfer
worthless	expensive	relaxed	linear	dizzy	mass
inadequate	motionless	approved	mnemonic	cardiac	mixed
boring	neutral	likable	widened	collapse	escalate
incompetent	of today*	leading	nightly	faint	tone
foolish	symbolic	popular	classical	arrhythmia	plasticine
unimportant	intentional	intelligent	agricultural	asphyxiated	comprehensive
timid	relevant	attractive	transitional	gasping	opening
inept	waxy	clever	annual	diarrhoea	printing
coward	pictorial	amiable	piloted	dyspnoea	creature
guilty	corner	friendly	institutional	fatal	flora
vulnerable	immediate	calm	innate	numb	tailor
ridiculed	enhanced	sociable	biological	sickness	trailer
stupid	green	elegant	optical	pressure	console
inferior	parallel	beautiful	linguistic	suffocating	watering
lonely	tropical	admired	shadowy	pain	rank
shy	far	respected	commercial	shivering	prolong
weird	double	dynamic	morning	heart failure*	universe
dull	dry	talented	horizontal	palpitations	metropolis
embarrassed	last year's*	courageous	supervisory	deadly	stuffed
tiresome	seasonal	brave	joint	light-headed*	civilised
paled	axial	graceful	throbbing	hypertension	situation

* One word in Greek.