UNIVERSITY OF SOUTHAMPTON

FACULTY OF MEDICINE, HEALTH AND LIFE SCIENCES

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Post-Event Processing: Its Role in Social Phobia and Social Anxiety

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This thesis is submitted in partial fulfilment of the requirements for the degree of

Doctorate in Clinical Psychology

October 2005

21969 Words

Thesis Abstract

Clark and Wells (1995) suggest that following a social situation, individuals with social phobia engage in post-event processing (PEP), a 'post mortem' where they review the event in detail. The individual's negative self perception influences his or her review of the social encounter and consequently their performance is viewed as worse than it actually was. This results in increased feelings of anxiety and shame. The literature review examines the developing evidence base relating to PEP and as such research is currently limited, the review also draws on evidence from the wider literature. Theoretical perspectives relevant to PEP will therefore also be reviewed including self-focussed attention and attentional bias, imagery and the observer perspective, interpretation bias, memory bias, rumination in depression and emotional processing. The empirical study investigated the effect of manipulating PEP so that participants focussed on either the positive or the negative aspects of a social situation, on imagery, thinking, performance appraisals, and mood in high and low socially anxious individuals. Consistent with Clark and Wells' model, high socially anxious individuals rated their performance as worse, predicted worse performance, had more negatively valenced images, thought more about negative aspects of their performance in PEP and reported higher levels of anxiety in a social situation compared to low socially anxious individuals. This study also provides preliminary evidence to suggest that engaging in positive PEP may have beneficial effects on ratings of performance, future performance, image and impression valence and thoughts during PEP in high socially anxious participants.

Acknowledgements

I would like thank Dr. Lusia Stopa for her enthusiastic supervision during this project. Her guidance and inspiration have been greatly appreciated and have helped to make this a thoroughly rewarding experience. I would also like to thank the participants, who made this research possible. In addition I would like to thank Sam Holland, Liam Holland and Vincent Watts who were kind enough to read and rate the transcripts for this study. I am also eternally grateful to my wonderful family for all their support and understanding throughout this project and the whole of my clinical training.

Finally, I would like to thank Vince for his endless patience and encouragement.

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Post-Event Processing in Social Phobia: A Review of the Literature

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Post-Event Processing

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Abstract

This literature review focuses on post-event processing (PEP), which is one of the maintaining factors in Clark and Wells' (1995) model of social phobia. Clark and Wells suggest that after a social situation, social phobics review the event in detail, and the individuals' negative self-perception influences this review and consequently their performance is viewed as worse than it actually was leading to increased anxiety. Evidence relating to PEP will be explored and as such research is limited, other theoretical perspectives relevant to PEP will also be examined including self-focussed attention, attentional bias, imagery and the observer-perspective, interpretation bias, memory bias, rumination and emotional processing. Future directions for research and clinical practice are considered.

Key words: post-event processing, social phobia, social anxiety

1. Introduction

Social anxiety is a common human experience but in its more extreme form, social phobia, it can cause great distress and significantly interfere with an individual's life (Harvey, Clark, Ehlers & Rapee, 2000) including impairment in occupational, educational and social functioning (Schneier, Johnson, Hornig, Liebowitz & Weissman, 1992; Magee, Eaton, Wittchen, McGonagle & Kessler, 1996; Stein & Kean, 2001; Stein, Torgrud & Walker, 2000). Social phobia is one of the most common anxiety disorders (Chapman, Manuzza & Fyer, 1995) and is characterised by a marked and persistent fear of social situations. Recent research on social phobia has sought to explain the development and persistence of the disorder. Clark and Wells (1995) have been particularly influential in this area with the development of their cognitive model of social phobia which has developed our theoretical understanding of the nature and persistence of social phobia and forms the basis of effective treatment approaches (Clark et al., 2003). The core of social phobia, according to Clark and Wells, is a strong desire to present a favourable impression of the self to others but a marked insecurity about one's ability to do so. They propose that social phobics develop dysfunctional assumptions about themselves and about social situations that affect how they interpret future social encounters. Clark and Wells propose that four processes maintain the disorder; namely, self-focused attention and the construction of an impression of oneself as a social object; in-situation safety behaviours; anxiety induced performance deficits; and anticipatory and post-event processing (PEP).

This review will focus on PEP and its role in Clark and Wells' (1995) model of social phobia. Following a social situation, Clark and Wells suggest that social

phobics engage in a 'post-mortem' where they review the event and their own behaviour in detail. They suggest that the content and associated affect of PEP is guided by the negative thoughts and anxious feelings processed while the individual was in the social situation and also by memories of past social failures. This results in the interaction being viewed as more negative than it actually was, thereby increasing anxiety and increasing the likelihood of such situations being avoided in future.

The review will begin with a definition of social phobia and its prevalence. Next the review will consider current cognitive approaches to social phobia including Rapee and Heimberg (1997) and focussing in particular on Clark and Wells' (1995) model. The following section will review the evidence on the role of PEP in the maintenance of social phobia. Empirical evidence from other theoretical perspectives that are relevant to PEP will also be considered such as rumination, the use of imagery and the observer-perspective (because images from the third person are thought to feature in PEP and tend to reinforce the idea that this is a true picture of the self), memory bias, attentional bias, rumination and emotional processing. The final section considers the implications of these issues for treatment and future research.

1.1 Definition of Social Phobia

The Diagnostic and Statistical Manual of Mental Disorders, (*DSM-IV*; American Psychiatric Association, 1994) describes social phobia as a "marked and persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or possibly scrutiny by others. The individual fears that

he or she may act in a way (or show anxiety symptoms) that will be humiliating or embarrassing" (APA, 1994; p416). In addition, this fear must be associated with significant impairment or distress. Most people with social phobia experience anxiety in more that one social situation. Public speaking is the most commonly feared situation (Holt, Heimberg & Hope, 1992; Holt, Heimberg, Hope & Liebowitz, 1992; Furmark et al., 1999), with parties, meetings, and speaking to authority figures following closely behind (Rapee, Sanderson & Barlow, 1988).

Social anxiety may present as a specific social fear where only one situation is problematic e.g. eating in public. This is often called "nongeneralised" or specific in the literature (Rapee, 1995). In contrast, individuals with generalised social phobia, present with fears in most social situations (Strahan & Conger, 1999). Individuals with generalised social phobia suffer greater distress and life impairment than those with specific social phobia (Erwin, Heimberg, Juster & Mindlin, 2002). The mean age of onset ranged between 13 and 20 years in a review of 15 epidemiological and clinical studies (Hazen & Stein, 1995). Without treatment, social phobia tends to be a chronic condition (Rapee, 1995; Reich, Goldenberg, Vasile, Goisman & Keller, 1994; Hazen & Stein, 1995) and individuals with social phobia rate their quality of life as very low (Safren, Heimberg, Brown & Holle, 1997).

1.2 Prevalence

Epidemiological studies indicate that social phobia is a relatively common disorder with lifetime prevalence rates based on *DSM-IV* diagnostic criteria of 4.9% for males and 9.5% for females (Wittchen, Stein & Kessler, 1999). The frequency of

social fears that do not meet full diagnostic criteria is much higher (Essau, Condradt & Peterman, 1999; Stein et al., 2000). Despite the high prevalence of social phobia, many people do not seek treatment for the disorder (Wittchen et al., 1999). This may be because individuals with social phobia see their problems as part of their character. Often, individuals only seek help from mental heath services when secondary problems develop e.g. depression or when lifestyle changes mean the problem becomes excessively disruptive (Stopa & Clark, 2001).

Social phobia is an anxiety disorder which is highly co-morbid with other psychiatric disorders (Kessler et al., 1994; Schneier et al., 1992), particularly anxiety and mood disorders (Brown & Barlow, 1992). According to Rapee's (1995) estimate, approximately 50% of people with social anxiety also suffer from related disorders, two of the most common being depression (Stein & Kean, 2001) and substance misuse, particularly alcohol dependence (Schuckit et al., 1997). However social phobia is often undetected when it occurs with other psychiatric disorders because it is masked by the other disorder (Lydiard, 2001). Individuals with social phobia and co-morbid diagnoses are at risk of greater distress and impairment than those with social phobia alone (Schneier et al., 1992). Magee et al. (1996) found that while a minority (17.3%) of those with social phobia reported that the disorder interfered with their lives, caused them to seek professional help, or led them to take medication more than once to control their symptoms, this figure rose to 46.8-60% when a co-morbid condition was present. Consideration will now be given to current cognitive conceptualisations of social phobia with particular emphasis on Clark and Wells' (1995) model.

2. Cognitive Theories of Social Phobia

Cognitive theories for anxiety disorders suggest that it is not events *per se* but rather people's expectations and interpretations of events that are responsible for the production of negative emotions such as anxiety (Beck, 1976; Beck, Emery & Greenberg, 1985a). In anxiety, the important interpretations relate to perceived physical or psychosocial danger in a situation, and this danger is systematically overestimated (Beck, 1976; Beck et al., 1985a). Many danger appraisals are linked to dysfunctional beliefs that individuals hold about the dangerousness of certain situations, physical sensations, and/or mental events (Beck et al., 1985a; Beck & Clark, 1988). According to cognitive theory, individuals with social phobia experience anxiety related to social situations because of an overemphasis on perceived threat in social situations (Mattick, Page & Lampe, 1995; Beck, Emery & Greenberg, 1985b; Rapee & Heimberg, 1997; Clark & Wells, 1995). The theory suggests that individuals with social phobia hold dysfunctional beliefs about themselves, they way they should behave in a social situation, and about others, which serve to maintain the disorder.

In general, individuals with social phobia attach great importance to being positively evaluated by other people yet they have a marked lack of confidence about their ability to portray themselves positively (Clark & Wells, 1995). In particular, social phobics tend to believe that they will behave in an unacceptable way in social situations (Clark & Wells, 1995; Rapee & Lim, 1992). Combined with these fears about their own behaviour, they also predict that others will judge them harshly, and that their inept behaviour will have disastrous consequences in terms of loss of worth and rejection (Clark & Wells, 1995; Wilson & Rapee, 2005).

In childhood, social anxiety is often associated with being bullied (Slee, 1994), however, as adults social phobics rarely receive explicit negative evaluation from others about their performance in a social situation (Kenny & DePaulo, 1993). Researchers have therefore looked at why these fears persist in the absence of current negative evaluation. Avoidance of the feared situation is thought to go some way to explaining why social fears are maintained (Butler, Gelder, Hibbert, Cullington & Klimes, 1987). If social situations are avoided, individuals are prevented from learning that they may not perform as badly as they predict or that others may not react in the ways they expect. However many social phobics, are exposed to social encounters in everyday life, yet their fears persist (Clark & McManus, 2002). This has led to the suggestion that information processing biases are partly responsible for the maintenance of social phobia (Beck et al., 1985a; Heimberg & Barlow, 1988; Hartman, 1983).

Examination of information processing biases in socially phobic individuals has demonstrated that they show attentional biases (e.g. Chen, Ehlers, Clark & Mansell, 2002; Amir et al., 1996; Mogg, Philippot & Bradley, 2004); memory biases (Field & Morgan 2004; Lundh & Öst, 1996, Coles & Heimberg, 2005; Edwards, Rapee & Franklin 2003; Mellings & Alden 2000); judgemental biases (Luckock & Salkovskis, 1988; Foa, Franklin, Perry & Herbert, 1996; Alden & Wallace 1995); and interpretation biases (Hirsch & Clark, 2004; Voncken, Bögels & de Vries, 2004; Amir, Foa & Coles, 1998; Hirsch & Mathews, 2000) in relation to threat-relevant information. As a result of these biases socially phobic individuals view social situations in an excessively negative manner and their anxiety about the situation is

maintained. These biases also influence the individuals' behavioural responses to the situation which often leads to the use of safety behaviours. Therefore, despite exposure to the feared situation, these biases help to maintain social anxiety (Clark & McManus, 2002).

In their model to explain the generation and maintenance of social anxiety, Rapee and Heimberg (1997) propose that socially phobic individuals bring certain dysfunctional beliefs and information processing strategies into social situations. They propose that the anticipation of a social situation is sufficient to activate dysfunctional thoughts, physiological arousal, and avoidance behaviour. Once in the social situation, Rapee and Heimberg suggest that the presence of "an audience" elicits the perception of threat. Social phobics then construct a mental representation of how their behaviour and appearance are perceived by the audience. This mental representation is constructed using internal (e.g. memories) and external information (e.g. stammering) and is usually distorted, with any perceived sources of negative evaluation being particularly salient. The model suggests that individuals with social phobia preferentially allocate attentional resources towards detecting social threat in the environment and to monitoring and adjusting their mental representation of how they are perceived by the audience. So the individual must divide attention between monitoring the self and the environment, as well as still attending to the social task. These complex cognitive demands increase the likelihood that performance will suffer. As well as monitoring their mental representation of the self, social phobics also have in mind a perceived standard expected of them by their audience. When behaviour falls short of this expected standard, anxiety increases. Rapee and Heimberg hypothesise that the cognitive processes that occur within a social

situation, together with enhanced memory for past social failures, make it likely that the probability and cost of negative evaluation will be judged as high. Alongside the attentional processes, the individual engages in a negative internal dialogue, with frequent negative automatic thoughts. The focus on these thoughts (e.g. I'm so stupid) can interfere with social performance for example, making it difficult to contribute to a conversation because the individuals quickly reject things they could say (Turk, Lerner, Heimberg & Rapee, 2001). Rapee and Heimberg suggest that if negative evaluation seems the likely outcome, then the individual may flee from the social situation. However, if a similar appraisal is made, but the individual remains in the situation, he or she may engage in behaviours to try and avoid the negative evaluation by others (e.g. avoiding eye contact). Rapee and Heimberg, suggest that the unfortunate consequence of these behaviours is that they can actually impair social performance thereby increasing the likelihood of negative feedback from others. In addition they propose that social phobics overestimate the visibility of their anxiety and how much these signs of anxiety (e.g. blushing) will elicit negative evaluation from others. These symptoms of anxiety provide internal cues that individuals use to update their mental representation of the self. After the situation, Rapee and Heimberg suggest that retrospective rumination both generates and maintains social anxiety. Information drawn from external and internal cues during and after the social situation contributes to retrospective rumination along with recollection of past social failures. They propose that these processes uphold dysfunctional beliefs and assumptions regarding success in social situations, thus maintaining anxiety.

Clark and Wells (1995) have also proposed a cognitive model of social phobia based on biased information processing. It is similar to Rapee and Heimberg's (1997) model in that it emphasises the role of selective attention to negative information within social situations that leads to biased judgements and eventual recollections of the social event. Despite the similarity between the two, Clark and Wells' model has dominated social phobia research and has led to developments in both theoretical understanding and treatment of the disorder. Clark and Wells' model differs from Rapee and Heimberg's model in that it proposes several distinct cognitive mechanisms that contribute to and maintain social anxiety; namely, self-focussed attention, safety behaviours, performance deficits, and anticipatory and post-event processing. Clark and Wells' model will now be reviewed in detail.

3. The Clark and Wells (1995) Model of Social Phobia

Clark and Wells (1995) suggest that as a consequence of previous experiences and innate factors, social phobics develop a series of assumptions about themselves and their social world, which make them prone to believe that they are in danger in social situations. These beliefs lead to anxious anticipation before entering the social situation and also make the individual appraise the situation as dangerous, thereby exacerbating anxiety. Clark and Wells, distinguish three main categories of dysfunctional beliefs: unconditional beliefs about the self (e.g. "I am uninteresting"), conditional beliefs about social evaluation (e.g. "If I look shy they will think I'm an idiot"), and excessively high standards for social performance (e.g. "I must always make amusing conversation"). Symptoms of anxiety become further sources of fear and individuals direct their attention to detailed monitoring of themselves thereby

avoiding external information. Clark and Wells propose that there are four main processes that prevent individuals with social phobia from disconfirming their negative beliefs about the dangerousness of social situations. Three of these processes occur while the individual is in the social situation, i.e. self-focussed attention, the use of safety behaviours, and anxiety induced performance deficits, whereas the fourth, anticipatory and post-event processing take place before entering and after leaving a social situation. These processes will now be discussed in more detail.

3.1 Self-Focussed Attention

According to Clark and Wells (1995), when individuals with social phobia enter a social situation, where they fear they will be negatively evaluated by others, they shift their attention inwards to detailed monitoring of the self. This attentional shift is problematic because it makes individuals more aware of their own anxiety responses. Clark and Wells argue that individuals use this internally generated information to construct an image of the self, or "felt-sense" that is typically negative. They assume that the felt-sense reflects what other people actually see and think about them, when in reality it is often distorted e.g. an individual may feel shaky and assume that others can see his or her hands shaking. This feeling can also be accompanied by images, which may be exaggerated or distorted whilst appearing veridical to the social phobic. Clark and Wells suggest that images tend to be from an observer's point of view, which intensifies the belief that the images represent what an observer actually sees. In the case of a felt-sense, they suggest that it is taken as truth because it fits with a pre-existing belief.

Clark and Wells (1995) hypothesise that self-focussed attention limits attention that socially phobic individuals pay to the outside world. Therefore, they are less aware of the situation around them and of the behaviour of others. This prevents social phobics from noticing information that might help them to see that they are coming across better than they think (Rapee & Lim, 1992; Stopa & Clark, 1993). Clark and Wells' hypothesis is supported by empirical evidence showing that when individuals are self-focussed they are less likely to interact naturally (Carver & Scheier, 1988). Similarly, Spurr and Stopa (2002) manipulated self-focus and found that speeches given using the observer-perspective (seen from an other person's point of view), by high and low socially anxious participants, elicited more negative thoughts, more safety behaviours and lower self-ratings of performance than when they completed the speech using external focus. These findings support Clark and Wells' model because they show that self-focus can increase negative thoughts and anxiety, making individuals more likely to engage in safety behaviours.

3.2 Safety Behaviours

In his work on anxiety, Salkovskis (1991, 1996) identified a variety of safety seeking behaviours that individuals use to prevent or minimise a feared catastrophe. Clark and Wells (1995) have drawn on this work and propose that in an attempt to protect the self from social failure and negative evaluation, an individual with social phobia uses safety behaviours in social situations. These behaviours can be observed by others (e.g. covering the face with hands to hide blushing) or can be unobservable, internal mental processes (e.g. memorising what you are about to say and comparing it with what has already been said to avoid sounding repetitive). Alden and Bieling (1998) compared high and low socially anxious individuals in a conversation with a

stranger and found that high socially anxious individuals engaged in more safety behaviours and received more negative evaluative responses from their conversational partner than low socially anxious participants. Indeed safety behaviours are often unhelpful (Sakovskis, 1991; Wells et al., 1995). Firstly, they prevent an individual with social phobia from, "experiencing an unambiguous disconfirmation of their unrealistic beliefs about feared behaviours (e.g. shaking) or the consequences of these behaviours (e.g. being humiliated and rejected)" (Clark & Wells, 1995 p.73). If all went well in the social interaction the social phobic is likely to think that it only went well because he or she engaged in safety behaviours (Clark, 2001, Clark & McManus, 2002). Secondly while safety behaviours may seem protective, they can make feared behaviours more likely (Salkovskis, 1991). As safety behaviours often take the form of internal behaviours, they can make the individual seem more distant or uninterested in the social interaction. Indeed, people with social phobia can appear less outgoing and warm, are viewed as less likeable at a first meeting, less sympathetic and less easy to talk to compared to others without social anxiety (Stopa & Clark, 1993; Alden & Wallace, 1995).

3.3 Performance Deficits

Social phobics tend to rate their social skills as deficient (Rachman, 2004). There is, however, some debate as to whether people with social phobia actually lack social skills. Some studies have found that social phobics exhibit impairment in social performance and appear less warm compared with controls (Stopa and Clark, 1993; Alden & Wallace, 1995; Jones & Carpenter, 1986; Newton, Kindness & McFadyen, 1983). On the other hand, some studies have found that socially phobic individuals' performance is similar to controls (Edelmann, 1985; Pozo, Carver,

Wellens & Scheier, 1991; Rapee & Lim, 1992; Strahan & Conger, 1999). There appears to be no consensus in the literature at present about what proportion of individuals with social phobia exhibit performance deficits, the extent of these deficits, or the exact role that they play in social anxiety (Rachman, 2004). Some researchers have argued that it is the degree of structure within a situation that impacts upon the performance of individuals with social phobia. The more structured a situation and the clearer the social rules, the more likely someone with social phobia is to perform well (Rapee & Heimberg, 1997).

A consistent finding in the literature, however, is that, individuals with social phobia underestimate the success of their own social performance compared to an external observer (Rapee & Lim, 1992; Mellings & Alden, 2000; Rushbrook, 2003; Stopa & Clark, 1993). This cognitive bias towards negative self-appraisal was not found when participants were asked to rate specific aspects of their performance (Mellings & Alden, 2000), but only in their overall judgement of their performance. Socially phobic participants may place a much higher importance on specific aspects of their performance in influencing people's overall view of them compared with independent observers (Rappe & Lim, 1992).

3.4 Anticipatory Processing

According to Clark and Wells (1995), when individuals with social phobia anticipate a social situation, they become anxious and start thinking about past social failures, seeing negative images of themselves in the situation, and reflecting on their impending poor performance and rejection. Clark and Wells suggest that this 'anticipatory processing' can lead individuals to avoid the situation completely. If

they do enter the situation, they will already be in a state of self-focus and be expecting failure, and will therefore be less likely to notice signs of social acceptance from others. In support of Clark and Wells' hypothesis, Mansell and Clark (1999) found that a key element of anticipatory processing is selective retrieval of negative impressions of one's observable self.

Other characteristics of anticipatory processing were investigated by Hinrichsen and Clark (2003) in a semi-structured interview study. They found that, compared to controls, high socially anxious participants were more likely to report rumination on ways to avoid or escape from the social situation, catastrophisation about what might happen in the situation, anticipatory safety behaviours (e.g. planned what they would say) and generated negative, distorted, observer-perspective images about how they might appear in the situation. They also found that anticipatory processing led to higher levels of anticipatory anxiety and anxiety during the task for both groups of participants.

In an interesting recent study, Alden, Mellings and Laposa (2004) have shed further light on factors that may impact on anticipatory processing. Participants with social phobia and non anxious controls, participated in a social interaction that was constructed to go well. They were then given feedback that framed either the presence of positive social cues or the absence of negative cues during the social interaction. After this feedback, participants predicted their anxiety about a second interaction. Surprisingly, socially anxious participants were more anxious following feedback that framed positive social cues. This positive feedback may have made

socially phobic participants feel that there were high expectations of them, thereby increasing their anxiety for a future interaction.

3.5 Post-Event Processing

In Clark and Wells' (1995) model, PEP is the final cognitive process in the maintenance cycle. For individuals with social phobia, leaving or escaping from the situation does not necessarily bring relief. Although immediate social danger is reduced, they are unlikely to have received unambiguous social approval and so engage in a 'post-mortem' of the event. The event is reviewed in detail and every aspect of behaviour is analysed. Clark and Wells argue that the individual's anxious feelings and negative self-perception are likely to dominate the review because they were processed in detail during the situation and are therefore deeply encoded in memory. This results in the social encounter being viewed as more negative than it actually was (Abbott & Rapee, 2004). Clark and Wells suggest that this may explain why some social phobics experience a sense of shame that persists after their anxiety has subsided, although their model does not specifically address this. During PEP, social phobics are also thought to draw on recollections of perceived past social failures and class the recent event as common with these, thereby enhancing their perception of social inadequacy. Following the brief review of cognitive models of social anxiety given above the main focus of the review will now be on PEP.

4. Post-Event Processing: Empirical Evidence

Several studies have examined PEP using university students as participants. Rachman, Grüter-Andrew and Shafran (2000) and Mellings and Alden (2000) both reported that high socially anxious individuals engage in more prolonged PEP than

low socially anxious individuals. Rachman, et al. (2000) noted that PEP involved recollections of the social event that were recurrent, intrusive, and interfered with concentration. PEP was also associated with greater subsequent avoidance of similar social situations. Interestingly, Rachman et al. found, that some of their participants reported that PEP was helpful, although their study did rely on the participant's subjective recall of social situations. Mellings and Alden utilised an experimental paradigm where participants took part in a social interaction, which helps to overcome this methodological difficulty. They found that frequency of PEP predicted recall of negative self-related information in a memory task performed one day after a stressful social interaction. Wells, Clark and Ahmad (1998) and Wells and Papageorgiou (1999) investigated perspective taking in imagery in recall of past anxiety provoking situations and found that, compared to low socially anxious individuals, high socially anxious individuals and social phobics were more likely to take an observer-perspective in images of past social situations. Unfortunately neither of these studies assessed the content of the image, so it is not known whether they were predominantly negative and distorted, as suggested by the model.

In a study designed to examine the effects of PEP, Edwards et al. (2003) asked participants to give an impromptu speech and then gave each participant half positive and half negative feedback on his or her performance. Participants were tested for recall of the feedback immediately and one week later, and completed a questionnaire on the extent of positive and negative PEP. High socially anxious participants had biased memory recall for negative feedback and spent more time ruminating over the perceived negative aspects of their speech compared to low anxious participants. In a fairly large scale study, Kocovski, Endler, Rector and Flett

(2005), presented 112 participants with vignettes that involved making mistakes in public and instructed them to record their thoughts out loud. Results indicated that high socially anxious participants were more likely to ruminate and less likely to distract themselves when faced with social stressors compared to low socially anxious participants. Uniquely, Abbott and Rapee (2004) investigated PEP in a sample of socially phobic participants and non clinical controls. Participants performed an impromptu speech and were told that their performance would be evaluated, then they appraised their performance after the speech, and one week later. The socially phobic group engaged in more negative rumination about the speech, relative to controls, and maintained a negative view of their performance over the week, whereas the control group became more positive. These results are consistent with the prediction that PEP is determined by processing that occurs at earlier stages. That is, social and performance situations that evoke harsher self-appraisals of performance result in more extensive negative rumination (Abbott & Rapee, 2004). Abbott and Rapee (2004) conceptualise this relationship between social anxiety and negative rumination as a dynamic system where negative rumination may be triggered by negative mental representations of the self, which then reinforce the distorted self-view.

In an unpublished study, Dannahy (2004) investigated the relationship between self-appraisals of performance and PEP in high and low socially anxious individuals. Participants appraised their performance immediately after a conversation with a stranger and prior to an anticipated second conversation one week later. The frequency and valence of PEP during the week following the conversation was also assessed. High socially anxious participants experienced more

anxiety, predicted worse performance, underestimated their actual performance and engaged in more PEP than controls. The degree of negative PEP was linked to the extent of social anxiety and negative appraisals of performance, both immediately after the conversation task and one week later. Uniquely, Dannahy also explored metacognitive beliefs, which are judgements and appraisals about the function and meaning of thinking itself (Papageorgiou & Wells, 2001). High socially anxious participants exhibited more dysfunctional metacognitive beliefs than controls, following a social situation, particularly on measures of cognitive self-consciousness (the tendency to be aware of and monitor thinking) and controllability of thoughts (the belief that one's thoughts are uncontrollable). Dannahy suggests that these processes are significant because they generate and maintain information-processing biases.

In contrast to previous findings (Lundh & Sperling, 2002; Abbott & Rapee, 2004; Kocovski et al., 2005; Rachman et al., 2000; Mellings & Alden, 2000) Field and Morgan's (2004) study, designed to investigate whether PEP affects the retrieval of autobiographical memories, yielded mixed support for Clark and Wells' (1995) conceptualisation of PEP. Field and Morgan found that socially anxious individuals recalled memories that were significantly more negative and shameful compared to controls. However, in contrast to Clark and Wells' predictions, Field and Morgan found that after negative PEP, socially anxious individuals rated their anxious and shameful memories as more calming than after other types of PEP (positive, neutral or distraction). Field and Morgan suggest that PEP may have some adaptive function, which could explain why it persists in social phobia. They suggest that PEP may allow individuals to come to terms with situations that are viewed as negative.

Further research is required to clarify this issue and thought listing during PEP to sample thought content during PEP would help to show whether Field and Morgan's explanation is valid.

Rushbrook's (2003) findings, in an unpublished study, also provided mixed support for Clark and Wells' (1995) conceptualisation of PEP. Rushbrook investigated the impact of PEP on distress following a speech task, anticipation of a second speech task, and on actual and perceived performance after a subsequent speech. Of the 60 high and low socially anxious participants, half engaged in PEP after the first speech and half engaged in a distracter task. High socially anxious participants predicted worse performance, had more negative thoughts, believed these thoughts more, reported more anxiety and recorded more negative and fewer positive self-evaluative thoughts in a think aloud task, compared with controls. In contrast to Clark and Wells' predictions, the distracter condition had a greater impact on negative predictions of performance, negative thoughts and degree of belief in those thoughts than the PEP condition.

While most of these studies have investigated PEP using analogue samples, they do suggest that PEP has several of the characteristics described by Clark and Wells' (1995). However, research into PEP is in its infancy and investigating evidence from other theoretical perspectives and considering related psychological processes may help to further our understanding. Through examination of literature such as the role of self-focussed attention and attentional bias, imagery and the observer-perspective, interpretation bias, memory bias, rumination and emotional processing we may be able to further understand the relationship between these

processes and PEP. These related theoretical areas will now be examined in relation to the concept of PEP as proposed by Clark and Wells.

5. Theoretical Perspectives Relevant to Clark and Wells' (1995) Conceptualisation of PEP

5.1 Self-focussed Attention and Attentional Bias

When in a social situation individuals with social phobia focus their attention on themselves. This shift of attention inwards prevents them from noticing positive social feedback. Clark and Wells (1995) propose that because the individual was self-focussed in the social situation, the thing they remember most about the encounter is the impression of the self, which is typically negative. Several studies have suggested that people with social phobia show a reduction in processing of the external social environment and an increase in self-focussed attention when they are anxious.

Mansell, Clark Ehlers & Chen (1999) used a modified dot-probe task to assess the processing of external social and non social cues. High and low socially anxious participants were presented with pairs of pictures (a face and a household object). Participants were tested under conditions of social-evaluative threat (told they must give a presentation) or no threat. High socially anxious individuals in the social-evaluative condition demonstrated an attentional bias away from faces, which supports Clark and Wells' (1995) proposal that the processing of external social information is reduced when individuals are socially anxious. Similar results were obtained for socially phobic participants (Chen et al., 2002). On the other hand,

Mogg et al. (2004) briefly presented socially phobic participants with photographs of angry, happy, and neutral faces and found that they showed vigilance for angry, relative to happy and neutral faces, compared with controls. In contrast with previous research, Mogg et al.'s findings are consistent with a bias in initial orienting to threat cues, therefore demonstrating vigilance for social threat. Although evidence about the nature of attentional biases is mixed (Bögels & Mansell, 2004), the very existence of attentional biases may affect the content of PEP. If, for example, individuals selectively attend to threatening cues in the environment, this will limit the opportunity they have for processing more benign information during a social interaction. Consequently the content of PEP may reflect this attentional bias, and the success of the interaction will be judged, at least partly, on this biased information.

Some studies have shown that individuals also show attentional biases towards internal information. Mansell & Clark (1999) found that, compared with controls, in high socially anxious individuals there was a significant correlation between perceived bodily sensations and the extent to which they overestimated negative aspects of their appearance (e.g. looking anxious). In a subsequent study Wells & Papageorgiou (2001) found that socially phobic individuals, who were told their heart rate was increasing just before a social task, underestimated how well they came across to their conversation partner compared to controls. Pineles and Mineka (2005) also found that high socially anxious participants showed an attentional bias towards internal rather than external threatening cues. Mellings & Alden (2000) investigated biases in self judgment and asked high and low socially anxious participants to have a conversation with a confederate. Compared to the judgements of an independent assessor, high socially anxious individuals overestimated the

visibility of anxiety-related behaviours and the amount of overestimation was positively correlated with self-focussed attention during the interaction, compared to the low anxious participants. Alden & Mellings (2004) also found evidence of this bias in their study of participants with social phobia. Self-focussed attention within a social situation seems to prevent individuals from accurately processing the event and consequently this seems to affect the content of PEP, which then influences individuals' appraisals of their performance. This possible relationship could be examined further by manipulating self-focus within a social interaction and then investigating the effect on PEP.

5.2 Imagery and The Observer-Perspective

Clark and Wells (1995) suggest that in addition to making inferences about how they appear to others on the basis of their anxiety-related feelings, people with social phobia use spontaneously occurring self-images to erroneously infer that they come across poorly to other people. An image has been defined by Hackmann (1998) as contents of consciousness that possess sensory qualities, in contrast to those that are verbal or abstract alone. While images can present with various sensory qualities, visual images are most common in social phobia (Horowitz, 1970, Hackmann, Clark & McManus 2000).

Hackmann, et al. (2000) explored the nature of social phobic imagery using a semi-structured interview. Many reported images appeared to be recurrent, in that they occurred in similar form across a range of social situations. Also, these images were often related to a time close to the onset of the social phobia and were linked to memories of criticism, humiliation, bullying and other adverse social events.

Hackmann et al. (2000) suggest that a mental image of the patient's observable, social self is laid down after early traumatic social experiences and the image is reactivated in subsequent social encounters without being markedly updated in the light of subsequent, more positive experience. Lack of updating could partly be a consequence of the social phobic's reduced attention to external social cues (Hackmann et al., 2000). Hirsch, Clark, Mathews and Williams (2003) also found that negative self-imagery has a role in maintaining social phobia. Participants with social phobia had a conversation with a stranger, once while holding in mind their typical negative, observer-perspective image, and then with a less negative self-image. In the negative imagery condition participants felt more anxious, believed that they looked more anxious and believed that they performed less well, and an external assessor also rated the performance in the negative image condition as poorer.

Some studies have found that individuals with social phobia experience 'observer-perspective' visual images of the self as described by Clark and Wells (1995). For example, Hackmann, Surawy & Clark (1998) used a semi-structured interview to explore the frequency, content and perspective of spontaneous imagery in social anxiety provoking situations. The majority of patients with social phobia (77%) reported negative, observer-perspective images, which, they believed to be at least partially distorted when they subsequently reflected on them. In contrast, only 10% of controls reported such images. Seeing an image from the observer-perspective can have a powerful impact on the maintenance of social phobia because it gives the impression that this is how the individual appears to others, thus raising anxiety and making avoidance more likely (Hackmann et al., 2000).

Clark and Wells (1995) suggest that in anticipatory and post-event processing, social phobics dwell on memories of past social interactions in order to work out how they will come across (anticipatory processing), or how they did come across (PEP). As the social situation is viewed from an observer-perspective, the individual will have little access to information indicating that other people responded to them better than they feared. Consequently, during PEP, they are likely to view their performance as worse than it actually was (Wells et al., 1998). Anxious feelings experienced during a social situation provide a primary source of information with which to construct the image of the self and therefore the image is likely to be overtly negative. A further problem with the use of the observer-perspective in recollection of social events is that it will heighten self-consciousness when anticipating a future social encounter. Increased self-consciousness produces a processing mode in which attention is directed away from what happens and onto potentially erroneous information, which in turn impacts on the eventual content of PEP. Studies to date have not directly investigated the relationships between the observer-perspective, self-focussed attention and PEP. This could be done by manipulating self-focus within a social situation and examining its effect on PEP or by comparing participants directed to focus on external cues with others directed to focus on internal processes.

5.3 Memory Bias

The research findings in the area of memory bias are mixed, some studies have failed to show any significant memory bias in relation to socially threatening stimuli in socially anxious individuals (e.g. Becker, Roth, Andrich & Margraf, 1999; Cloitre, Cancienne, Heimberg, Holt & Liebowitz 1995; Lundh & Öst 1997; Rapee,

McCallum, Melville, Ravenscroft & Rodney 1994; Perez-Lopez & Woody, 2001; Wenzel & Holt 2002; Heinrichs & Hofmann, 2004; Wenzel, Finstrom, Jordan & Brendle, 2005), whereas others have demonstrated a bias (e.g. Amir Foa & Coles 2000; Edwards et al., 2003; Field & Morgan, 2004; Lundh & Öst 1996; Mansell & Clark 1999; Mellings & Alden 2000; Coles & Heimberg, 2005). Although there is little to distinguish the two sets of studies, the ones that have failed to find a memory bias have tended to use words as the socially threatening stimuli, whereas the ones that have found a memory bias have tended to rely on more ecologically valid paradigms such as the use of photographs of faces (Hirsch & Clark, 2004).

Research into memory processes contributing to the maintenance of social phobia has focussed on retrieval and encoding of information as possible areas where selective processing may occur. Mansell and Clark (1999) demonstrated a retrieval bias in high socially anxious individuals. They invited high and low socially anxious participants to categorise positive and negative personality trait words in relation to someone else (How well does the word describe your next door neighbour at college?), private self-reference (How well does this describe you?), or public self-reference (How well does the word describe how someone who knows you, or had just met you, would think of you?). Half the participants in each group were told that they would have to make a speech later. Immediately after the social-threat manipulation, participants recalled the trait words. High socially anxious participants in the threat condition recalled fewer positive words than low socially anxious participants, but only in the public self-referential encoding condition. They argued that social threat at retrieval is a necessary condition for this memory bias, and that the information encoded must be relevant to the perception of the 'public self'. These

findings are relevant to both anticipatory and post-event processing. Anticipatory processing involves thinking about an impending social situation, a condition in which Mansell and Clark found a memory bias. However, this bias would also mean more negative memories in relation to the public self, and therefore would probably affect the content of PEP. Mellings and Alden (2000) demonstrated biased memory processing in high socially anxious individuals, but they argued that it was an encoding bias. High and low socially anxious participants had a conversation with a stranger and then returned the following day to assess their recall of the interaction and the amount of PEP they had engaged in. Mellings & Alden found that high socially anxious participants recalled less information about the stranger and tended to recall more negative self-related information than low socially anxious participants. A particular finding of note, in relation to understanding PEP, was that the frequency of PEP that participants had engaged in since the conversation with the stranger predicted their recall of negative self-related information. Mellings and Alden hypothesise that PEP may have increased the salience of negative self-related information making this information more likely to come to mind when the participant recalled the event later. The frequency of PEP was also associated with biases in judgement and in factual memory. Mellings and Alden argue that these findings suggest that PEP actually contributes to biased recall of information about the self.

Edwards et al.'s (2003) study, described above, also found that high socially anxious participants demonstrated a memory bias associated with encoding, but this was not associated with PEP. As the bias in memory was demonstrated equally at both time points (immediately after receiving feedback on a social task and one week

later), Edwards et al. suggest that the negative bias in recall reflects an encoding rather than a retrieval bias. There was no significant relationship between the extent of negative rumination and the degree of negative recall bias at either time and consequently Edwards et al. have suggested that negative memory bias and PEP are independent processes. Given that these are preliminary findings, replication with a clinical sample is needed before any firm conclusions can be drawn from this study.

Field and Morgan's (2004) findings, described above, are consistent with Mellings and Alden's (2000) results although, Field and Morgan suggest a bias in the retrieval of past information rather than an encoding bias. PEP may lead socially anxious individuals to generate negative memories about past events and experiences. Unexpectedly high socially anxious participants recalled more negative and shameful memories regardless of the type of PEP engaged in (positive, negative or distraction). Field and Morgan suggest that this may be because positive PEP has no effect on memories recalled. This fits with Hackmann et al.'s (2000) theory that socially phobic individuals develop an enduring negative image of the self that fails to update in response to positive social information. Alternatively, high socially anxious participants may not be able to inhibit negative processing or may be unable to engage in positive PEP. These initial findings suggest that the relationship between PEP and social anxiety is not straightforward and there may be some adaptive elements to PEP. More research using ecologically valid paradigms (e.g. with the use of actors within a controlled naturalistic social scenario) is needed in order to resolve this controversy.

5.4 Interpretation Bias

As discussed so far, theorists have implicated the role of attentional and memory biases in maintaining social phobia. Clark & Wells (1995) suggest that individuals with social phobia also make biased interpretations in their processing of social information. Their theory suggests that social phobics are more likely to interpret ambiguous social events in a negative way and to interpret mildly negative social events as catastrophic.

Some studies have found that high socially anxious individuals interpret ambiguous social events in a negative way. For example, Amir et al. (1998) presented participants with ambiguous scenarios, each followed by three possible interpretations: positive, negative and neutral. Fifteen scenarios were socially relevant and the remaining seven were related to non-social events. Participants rank ordered the three interpretations according to the likelihood that each would come into their minds and into a typical person's mind in similar situations. Compared with controls and people with other anxiety disorders, socially anxious individuals chose negative interpretations for ambiguous social scenarios even when a positive interpretation was available. This bias was specific to self-relevant ratings. These findings support the hypothesis that a specific negative interpretation bias may be involved in the maintenance of social phobia. This seems to be a robust finding and similar results have been obtained by Stopa and Clark (2000), Voncken et al., (2004) and Wenzel et al. (2005). A subsequent study by Wilson and Rapee (2005) investigated the interpretations made by social phobics in relation to negative scenarios and found that compared with controls they were more likely to believe that other people would perceive them in a negative manner following a negative

social event, that such events were an indication of negative characteristics of the self, and would lead to adverse long-term life consequences.

Hirsch & Mathews (2000) considered interpretation bias in relation to PEP and concluded that people with social phobia report anticipatory and retrospective judgements about social situations that appear consistent with a negative interpretation bias. However, this raises the question of whether these interpretation biases occur "on-line" or during slower processing after the event. Hirsch & Mathews, (1997) found that volunteers who were anxious about interviews lacked a positive on-line inferential bias that was characteristic of nonanxious controls, but also failed to show a bias favouring threatening inferences. This finding was confirmed in a subsequent study by Hirsch & Mathews (2000), who conclude that nonanxious individuals are characterised by a benign on-line inferential bias, which is impaired in people with social phobia. Hirsch and Mathews (2000) suggest that a positive on-line interpretive bias helps to protect self-esteem and prevent the development of social anxiety. Socially phobic individuals lack the on-line positive bias and possess a negative bias when reflecting on social behaviour, that may contribute to negatively biased PEP. Hirsch and Mathews (2000) suggest that cognitive behavioural treatment for social phobia should try to help individuals develop positive on-line inferences by directing attention to sources of positive information, which may positively impact on the content of PEP.

5.5 Rumination

Rumination has been described as behaviours and thoughts that focus the attention of an individual on his or her depressive symptoms and on the implications

of these symptoms (Nolen-Hoeksema, 1998). Rumination has been compared to PEP in social phobia. Research into rumination has concentrated on depression, although rumination predicts anxiety as well as mixed depressive and anxiety symptoms (Nolen-Hoeksema, 2000). Hertel (2002) reports that rumination is characterised by recurrent thoughts and images concerning difficulties in the past and present that are associated with negative emotions, which is similar to Clark and Wells' (1995) description of PEP.

Experimental studies that have examined rumination in depression often use a common experimental methodology where a rumination condition (focussing on depressed mood and its causes and consequences) is compared to a distraction condition (thinking about visual images unrelated to emotion; Watkins & Baracaia, 2001). Findings from such studies will be outlined and considered in relation to PEP in social phobia. Compared with distraction, rumination maintains and worsens depressed mood and makes people less likely to engage in activities that may lift their mood (Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema & Morrow 1993). Lyubomirsky and Nolen-Hoeksema, (1995) showed that rumination also leads to reduced effectiveness in problem solving through the impact it has on the individual's capacity to concentrate and to engage in adaptive behavioural strategies (Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky, Tucker, Caldwell & Berg, 1999). In relation to memory, rumination increases the accessibility and enhances retrieval of negative autobiographical memories relative to distraction (Lyubomirsky, Caldwell & Nolen-Hoeksema, 1998), and increases memory for negative events (Pyszczynski, Holt & Greenberg, 1987), which is similar to PEP. Rumination is also similar to PEP, in that it involves repetitive and recurrent self-focussed thinking,

during which individuals negatively appraise their thoughts, feelings, and behaviours (Hertel, 2002).

Despite these disadvantages, rumination persists. Watkins and Baracaia, (2001) suggest that individuals may believe that rumination is helpful. Martin and Tesser (1996) have proposed a goal-discrepancy account to explain why individuals engage in rumination, and other researchers have highlighted the role of metacognitive beliefs (Watkins & Baracaia, 2001). The goal-discrepancy account hypothesises that rumination is initiated when a discrepancy occurs between an important personal goal and the individual's perceived progress towards attaining this goal (Watkins, 2004; Martin & Tesser 1996). Martin and Tesser suggest that individuals engage in rumination to find a way of reaching their goal or of coming to terms with it being unattainable, in order to reduce the discrepancy between these two positions. Anxiety increases if the individual cannot resolve this ruminative thinking process. As social phobia is characterised by excessively high standards for social performance, which individuals consider that they will be unable to attain, the process of rumination described in the goal-discrepancy account may be similar to PEP.

Metacognitive beliefs are also important in the maintenance of rumination. Recurrent negative thinking such as rumination, is thought to be the result of particular appraisals and strategies in response to intrusive thoughts (Langlois, Freeston & Ladouceur, 2000; Wells, 1995). Watkins (2004) argues that the important difference between normal and pathological thinking is the response to intrusive thoughts, which are a common and normal phenomenon within the population

(Rachman & deSilva, 1978; Wells & Morrison, 1994). Watkins and Baracaia (2001) suggest that rumination may be maintained by positive metacognitive beliefs (e.g. "rumination helps me to solve problems" p. 724). Initially rumination may be a strategic response to manage difficult situations, which then becomes automatic with repetition (Watkins & Baracaia, 2001). Rumination may also be exacerbated by negative metacognitive beliefs such as "I can't control rumination". Such appraisals can lead to strategies in response to intrusions e.g. attempting to suppress the intrusions, which may lead to recurrent negative thinking such as in rumination.

People who ruminate share several metacognitive beliefs about rumination e.g. that they will gain insight into their problems and emotions, which would lead to improved problem solving and less chance of making mistakes in future (Lyubomirsky & Nolen-Hoeksema 1993; Watkins 2004; Watkins & Baracaia 2001). Consequently these individuals may avoid distraction because they believe it would interfere with their efforts to understand themselves (Lyubomirsky & Nolen-Hoeksema 1993). Research has shown, however, that if someone is distracted from rumination, their mood improves, and their memories and interpretations of current events are less negative (Lyubomirsky & Nolen-Hoeksema 1995, Blagden & Craske, 1996). Individuals who hold metacognitive beliefs about the necessity of rumination are more likely to ruminate (Lyubomirsky & Nolen-Hoeksema 1993; Watkins 2004; Watkins & Baracaia 2001).

Although the evidence described so far has focused on rumination, there is some indication that metacognitve processes may be involved in PEP. In a unique study that sought to investigate the role of metacognitive processes in PEP in social

anxiety, Dannahy (2004) obtained results that support Watkins and Baracaia's (2001) ideas. Individuals high in social anxiety engaged in higher levels of dysfunctional metacognitions following a social situation compared with controls. Also, Rachman et al., (2000) and Field and Morgan (2004) found indirect evidence that some of their high socially anxious participants reported that engaging in PEP was helpful.

Research to examine the similarities and differences between PEP and rumination are in their infancy. There are indications within the current literature that the two phenomena share some features such as involvement of recurrent, intrusive thoughts concerning events associated with negative emotions, although more research is needed to clarify this possible relationship.

5.6 Post-Event Processing – A Failure in Emotional Processing?

Rumination that persists after an emotional event can be conceptualised as a failure to complete emotional processing (Abbott & Rapee, 2003). Rachman (1980) defines emotional processing as "a process whereby emotional disturbances are absorbed, and decline to the extent that other experiences and behaviour can proceed without disruption" (p51). Rachman (1980) asserted that if an emotional experience is not assimilated and adequately absorbed, psychological indications of this will be evident. According to Rachman (1980) unsatisfactory emotional processing is signified by the existence of powerful phenomena that intrude into consciousness such as intrusive thoughts, flashbacks, and phobic anxiety. In contrast, successful emotional processing is evident if someone is able to talk about, see, or be reminded of distressing emotional events without experiencing distress. Rachman (1980) proposes that fear reduction in anxiety disorders comes about through successful

emotional processing. Given that PEP for social phobics includes feelings of anxiety and negative thoughts about the self and one's performance, this suggests that emotional processing has either not occurred or is incomplete (Baker, Holloway, Thomas, Thomas & Owens, 2004).

In another theory of emotional processing, Foa and Kozak (1986) suggest that successful emotional processing results from the modification of information contained in the memory structures underlying fear emotions. The basis of their theory is that pathological cognitive structures underlie emotional disturbances (Williams, Watts, MacLeod & Mathews, 1988). In developing this idea they drew on Lang's (1979) bio-informational theory of emotion where fear is viewed as a cognitive structure that serves as a program for escaping danger. Fear is represented as a network in memory that includes information about the feared stimulus; verbal, physiological and overt behavioural responses; and interpretive information about the meaning of the stimulus (Foa, Franklin & Kozak, 2001). Foa and Kozak hypothesised that if a fear structure is a program to escape danger, then it must involve information that stimuli or responses are dangerous. They argue that this danger information distinguishes fear structures from other cognitive structures. For successful emotional processing to occur, fear structures have to be accessed and corrective information that is inconsistent with fear, has to be incorporated.

Emotional processing theories (Rachman, 1980; Foa & Kozak, 1986) suggest that experiencing fear is necessary in order to process the emotional experience. In this way, PEP could be an adaptive process that initially evokes feelings of fear and consequently provides the individual with a means of processing this information. In

order for emotional processing to be completed successfully, however, fear incongruent information needs to be incorporated into thoughts about the emotionally distressing event (Foa & Kozak, 1986). Biased information processing in social phobia may mean that there is little, if any, fear incongruent information for the individual to draw on during PEP. Rachman et al. (2000) suggest that the intrusive negative thoughts in PEP interfere with the processing of information and propose that PEP may be conceptualised as a form of emotional processing or a failure to adequately process emotional information, which seems plausible on the basis of current evidence.

A similar point of view is echoed by Abbott and Rapee (2003), who also suggest that PEP may represent inadequate processing of emotion. Psychology undergraduates completed a questionnaire that asked about PEP in response to socially threatening, physically threatening, and depression related events. PEP was a common experience and occurred in response to a broad range of situations that have the potential to elicit a strong emotional response. Abbott and Rapee (2003) report that the best predictors of PEP following an emotional event were the level of emotion experienced during the situation and levels of trait anxiety, which is consistent with theories of emotional processing (Foa & Kozak, 1986; Rachman, 1980). Abbot and Rapee (2003) argue that this has important clinical implications and suggest that clinical resources could be targeted at individuals most at risk of emotional disturbance due to failure to complete emotional processing following an emotional stressor. Furthermore, in order to elicit information about the usual time course of successful emotional processing, longitudinal research may be a useful tool in gathering information about when to target interventions for these identified 'at-

risk' individuals. Such information would provide a valuable means of comparing the course of PEP and emotional processing in order to better establish similarities and differences between the processes.

6. Implications for Future Research and Treatment

Clark and Wells (1995) suggest that PEP is a key maintaining factor in social phobia. PEP is hypothesised to occur after an anxiety provoking social interaction and is thought to confirm and enhance previous appraisals and anxiety. There is an emerging picture within the literature about the effects and content of PEP. High socially anxious individuals are more likely to engage in PEP than low socially anxious individuals, and when they do it is likely to be more frequent, prolonged and negative. PEP is associated with negative appraisals of performance, negative predictions of future performance, and may be determined by what occurs at an earlier stage of processing. PEP tends to involve recollections of the social event that are recurrent, intrusive, negative and shameful and interfere with concentration, and occur from an observer-perspective. There are also some indications that PEP can be helpful.

There is now a need for further investigation of these promising areas using clinical samples and ecologically valid paradigms. Many studies use a speech task. While anxiety provoking, there may be other tasks that evoke more anxiety and approximate a more real life situation, such as engaging in a conversation with someone whom the participant is highly motivated to impress (e.g. a potential romantic partner).

An exciting new avenue of enquiry about the nature of PEP comes from recent findings suggesting that metacognitive processes are important in PEP. We may be able to further our understanding of PEP by directly investigating the metacognitive processes that contribute to PEP. Similarly, studies have indicated that PEP may be helpful. It would be beneficial to investigate whether PEP does serve an adaptive function and in what circumstances. This may have implications for clinical practice as Clark and Wells (1995) suggest that therapy for social phobia should work towards stopping PEP altogether. This is difficult for individuals to achieve and PEP may inevitably occur. It seems that given the necessity and drive to develop more effective treatments for psychological disorders and the need to target resources efficiently it would be useful to generate more knowledge about whether PEP could be utilised within treatment to develop a more positive mental representation of the self following a social situation. More knowledge about PEP could help to improve cognitive behaviour therapy for social phobia. The use of qualitative research methods may be a valuable tool in enabling a more detailed study of the content of PEP.

At present there is a small body of literature that suggests PEP plays a key role in the maintenance of social phobia. However, our knowledge and understanding about the detailed nature of PEP is limited. Nevertheless there is much interest in this area of social phobia research and the knowledge base continues to develop, which should build our understanding of the role of PEP in social phobia and consequently lead to the development of more effective treatments. In particular we need to continue to examine Clark and Wells' (1995) conceptualisation of PEP in social

phobia and to broaden the scope of research to consider possible adaptive function of PEP and the role of metacognition.

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Empirical Paper

The Effect of Positive or Negative Post-Event Processing on Socially Anxious Individuals

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Prepared for submission to Behaviour Research and Therapy

(see Appendix B for Instructions to Authors)

The Effect of Positive or Negative Post-Event Processing on Socially Anxious Individuals

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Running Head

Post-Event Processing

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Abstract

Clark and Wells (1995) propose that after participating in social situations individuals with social phobia engage in post-event processing (PEP) where they review the event in detail. They suggest that the content of PEP is dominated by the negative thoughts and anxious feelings processed while the individual was in the social situation. This results in the interaction being viewed as more negative than it actually was, thereby increasing anxiety. This study manipulated PEP by asking participants to focus on either the positive or the negative aspects of a social situation, and examined the effect on imagery, thinking, performance appraisals, and mood in high and low socially anxious individuals. Consistent with both Clark and Wells' model, and previous research, high socially anxious individuals rated their performance as worse, predicted worse performance, had more negatively valenced images, thought more about negative aspects of their performance in PEP and reported higher levels of anxiety in a social situation compared to low socially anxious individuals. This study also provides preliminary evidence to suggest that engaging in positive PEP may have beneficial effects on ratings of performance, future performance, image and impression valence and thoughts during PEP in high socially anxious participants.

Key words: post-event processing, social phobia, social anxiety

1. Introduction

Social phobia is a common and distressing anxiety disorder (Harvey, Clark, Ehlers & Rapee, 2000; Chapman, Manuzza & Fyer, 1995) that is characterised by a marked and persistent fear of social situations. The central feature of the disorder is the individual's strong desire to present a favourable impression of the self to others, but marked insecurity about his or her ability to do so (Clark and Wells, 1995). Clark and Wells propose that on the basis of early experiences social phobics develop a set of dysfunctional assumptions about themselves and social situations, which affect how they interpret future social encounters. These dysfunctional assumptions drive a number of processes that maintain the disorder. Clark and Wells identify four principal factors: self-focussed attention and the construction of an impression of the self (often experienced as a visual image seen from the observer or third-person perspective), safety behaviours, anxiety induced performance deficits, and anticipatory and post-event processing. The focus of this study will be on, post-event processing.[1]

Clark and Wells (1995) suggest that after leaving a social situation, social phobics engage in post-event processing (PEP), where they review the event in detail and think about their own behaviour. Clark and Wells suggest that the content of PEP is guided by the negative thoughts and anxious feelings that were present while the individual was in the social situation, together with recollections of past social failures. In other words, processing during a social interaction directly influences processing that occurs afterwards. As a result of this negatively biased processing, the original encounter tends to be viewed as more negative than it actually was,

[1] This study is run in conjunction with another study that investigated self-focussed attention in social anxiety (Spence, 2005).

which can result in increased feelings of anxiety and shame and the likelihood that the situation will be avoided in future. Clark and Wells' conceptualisation of PEP is similar to the notion of retrospective rumination proposed by Rapee and Heimberg (1997). In their model of social anxiety, retrospective rumination is thought to both generate and maintain social anxiety. Information drawn from external and internal cues during and after the social situation contributes to retrospective rumination, along with recollection of past social failures.

Several studies have found that high socially anxious individuals engage in PEP after a social interaction and that PEP tends to be more frequent and prolonged for high than for low socially anxious participants (Rachman, Grüter-Andrew & Shafran, 2000; Mellings & Alden, 2000, Edwards, Rapee & Franklin, 2003). Other research has gone on to further investigate the characteristics of PEP. Rachman et al. (2000) found that PEP involves recurrent and intrusive recollections of social events that interfere with concentration. Lundh & Sperling (2002) asked high and low socially anxious students to keep a diary of socially distressing events and to record how much they engaged in negative PEP for one week. Social anxiety was associated with PEP, and the degree of negative PEP reported on the same day as a distressing social event, was strongly predictive of the degree of processing that was reported the following day. These findings support Clark and Wells' (1995) idea that high socially anxious individuals engage in PEP following socially distressing events and also suggests that PEP persists over time.

Clark and Wells (1995) propose that during PEP social phobics retrieve memories of previous social failures, which add to their belief that their social

performance was inadequate. The model proposes that as a result of self-focussed attention within the social interaction, social phobics generate an image of the self that is typically negative and is frequently seen from an observer-perspective. Clark and Wells argue that because the image is seen from an observer-perspective, socially phobic individuals assume that this is how other people view them. This has implications for PEP, because in recalling the situation social phobics are likely to see a negative view of the self from an observer-perspective and believe that this is how they came across to other people. Thus PEP provides additional confirmatory evidence beyond the social encounter itself of the socially phobic individual's distorted view of the self and of his or her performance.

Several studies on perspective taking are relevant to PEP. For example, Wells, Clark and Ahmad (1998), and Wells and Papageorgiou (1999) investigated perspective taking in memories of past anxiety provoking situations and found that high socially anxious and socially phobic individuals were more likely to take an observer-perspective in images of past social situations compared with controls, which is consistent with Clark and Wells' (1995) proposal. However, observer-perspective images are more common in older memories (Coles, Turk & Heimberg, 2002). As most of the studies on perspective taking have relied on the recall of past memories, it is impossible to say whether the reported use of the observer-perspective results from the age of the memory or from self-focussed processing in the original social situation. Furthermore many social phobics report recurrent images that date back to the onset of the disorder (Hackmann, Clark & McManus, 2000), and therefore the increased incidence of observer-perspective memories may be due to the fact that socially phobic individuals are remembering older memories

than their non-anxious counterparts. Another problem is that the content of imagery was not assessed, with the exception of Hackmann et al.'s (2000) study, and therefore we do not know whether all of these observer-perspective images were negative or distorted.

Clark and Wells (1995) suggest that PEP also has implications for an individual's view of his or her performance following a social situation. They propose that following PEP, social performance will be viewed as worse than it actually was, with the consequence that individuals will believe that they will perform poorly in a future social encounter. Edwards et al. (2003) have tried to understand some of these processes by examining the effects of PEP on recall of feedback about a social task. Following a speech task, each participant was given half positive and half negative feedback about his or her performance. Participants were tested for recall of the feedback immediately after they had been given it. One week later they completed a questionnaire that measured how much they had engaged in positive and negative PEP during the week. In support of Clark and Wells' proposals, high socially anxious participants had biased memory recall for negative feedback and spent more time ruminating over the perceived negative aspects of their speech compared to controls. Abbott and Rapee (2004) also investigated the effect of PEP on self-appraisals of performance. Participants performed an impromptu speech and were told that their performance would be evaluated, they appraised their performance after the speech, and one week later. The socially phobic group engaged in more negative rumination about the speech than the non-clinical controls. They also maintained a negative view of their performance over the week, whereas the controls became more positive as the week went on.

These findings support Clark and Wells' prediction that PEP is determined by what occurs at earlier stages of processing.

In an unpublished study, Dannahy (2004) has also developed our understanding about the nature of PEP by examining the relationship between self-appraisals of performance and PEP. Participants appraised their performance immediately after a conversation with a stranger and prior to an anticipated second conversation one week later. The frequency and valence of PEP during the week following the conversation was also assessed. High socially anxious participants experienced more anxiety, predicted worse performance, underestimated their actual performance and engaged in more PEP than low socially anxious participants. The degree of negative PEP was linked to the extent of social anxiety and negative appraisals of performance, both immediately after the conversation and one week later. Metacognitive beliefs are judgements and appraisals about the function and meaning of thinking itself (Papageorgiou & Wells, 2001) and interestingly, Dannahy found that high socially anxious individuals exhibited higher levels of dysfunctional metacognitive beliefs, than controls, following a social interaction, particularly on measures of cognitive self-consciousness (the tendency to be aware of and monitor thinking) and controllability of thoughts (the belief that one's thoughts are uncontrollable). Dannahy suggests that these processes are significant because they generate and maintain information-processing biases.

To date research that supports Clark and Wells' (1995) conceptualisation of social phobia, has found that socially anxious individuals engage in PEP that tends to be frequent and prolonged (Rachman et al., 2000; Mellings & Alden, 2000, Edwards

et al., 2003), involves recurrent and intrusive thoughts about the social event (Rachman et al. 2000), involves recollections of observer-perspective images (Wells et al, 1998; Wells & Papageorgiou, 1999) and is associated with negative appraisals of performance (Edwards et al., 2003; Abbott & Rapee, 2004; Dannahy, 2004). There are also some findings that are inconsistent with the model, which suggest that PEP may be helpful.

Field and Morgan's (2004), study designed to investigate whether PEP affects the retrieval of autobiographical memories, yielded mixed support for Clark and Wells' (1995) conceptualisation of PEP. Field and Morgan found that socially anxious individuals recalled memories that were significantly more negative and shameful compared to controls. However, in contrast to Clark and Wells' predictions, Field and Morgan found that after negative PEP, socially anxious individuals rated their anxious and shameful memories as more calming than after other types of PEP (positive, neutral or distraction). This suggests that PEP may have an adaptive function, which could explain why it persists in social phobia despite its obvious disadvantages.

An unpublished study by Rushbrook (2003) also provides mixed support for Clark and Wells' (1995) conceptualisation. Rushbrook investigated the impact of PEP on distress following a speech task. High and low socially anxious participants gave a speech and after the speech, half of the participants from each group performed PEP, whereas the other half completed a distracter task. High socially anxious participants predicted worse performance, had more negative thoughts, believed their negative thoughts more, reported more anxiety and recorded more

negative and fewer positive self-evaluative thoughts in a think aloud task, compared to controls. In contrast to Clark and Wells' predictions, Rushbrook found that the distracter condition had a greater impact on negative predictions of performance, negative thoughts, and degree of belief in those thoughts compared to the PEP condition. This suggests that preventing participants from carrying out PEP may have been detrimental and that PEP may serve a useful function.

One aim of therapy for social phobia is to stop PEP altogether because of its role in maintaining social anxiety (Clark & Wells, 1995). Rushbrook's (2003) and Field and Morgan's (2004) findings suggest that it may be premature to completely ban PEP because it may serve an adaptive function in some circumstances. What we do not know is whether it is possible to influence the type of processing that social phobics engage in during PEP and whether influencing the type of processing will improve the individual's view of self and appraisals of performance. The current study aimed to investigate the impact of manipulating PEP so that participants were encouraged to focus on either the positive or the negative aspects of a recent social situation, and to see how these manipulations affected imagery, thinking, performance appraisals, and mood in high and low socially anxious individuals. The social task was a dating video, which was chosen because it is an ecologically valid way of making participants speak about themselves in front of a video camera and speaking about the self is the most commonly feared situation for social phobics (Rapee, 1995), and thus likely to activate social-evaluative concerns. As well as testing the immediate effects of experimentally manipulating PEP, a second aim of the study was to see whether any observed effects were maintained over 24 hours.

There were three specific hypotheses that were derived from Clark and Wells' (1995) theoretical model and from the empirical literature reviewed above. First, high socially anxious participants in the negative PEP condition will report more negative self-related thoughts and images, use the observer-perspective more to recall images, rate their performance worse, predict poorer performance on a future task, and report more anxiety and shame than participants in the positive PEP condition. There were no clear predictions for low socially anxious participants but it is reasonable to suppose that they will be affected in a similar way as high anxious participants by positive and negative PEP. Second, in both the positive and negative PEP conditions, high socially anxious participants will report more negative self related thoughts and images, use the observer-perspective more to recall images, rate their performance worse, predict poorer performance on a future task, and report more anxiety and shame than low socially anxious participants. Finally, it was predicted that these effects would be maintained over time in the high socially anxious participants in the negative PEP condition, which is consistent with Abbott and Rapee's (2004) findings. Again, based on Abbott and Rapee's (2004) findings, it was predicted that low socially anxious participants would become more positive in their ratings over 24 hours.

2. Method

2.1 Participants

The Fear of Negative Evaluation Scale (FNES: Watson & Friend, 1969) was used to screen 337 students from the University of Southampton. Individuals scoring 20 or above (high socially anxious) and 8 or below (low socially anxious) were invited to participate based on Stopa and Clark's (2001) normative sample. Ninety participants took part in the study for course credit or £7.50. The high social anxiety

group consisted of 37 females and eight males (mean FNES score = 24.36, *SD* = 3.02; mean age = 20.18 years, *SD* = 3.86). The low social anxiety group consisted of 25 females and 20 males (mean FNES score = 5.29, *SD* = 2.10; mean age = 22.27 years, *SD* = 7.19). There was a significant difference between the gender ratio in the high and low social anxiety group, χ^2 (1) = 7.47, $p < .05$. There was no significant difference in age between the two groups, *t* (67.37) = 1.72, $p > .05$. Participants allocated to the positive PEP condition included 25 females and 19 males (mean age = 20.57 years, *SD* = 3.55). Participants in the negative PEP condition included 37 females and nine males (mean age = 21.85 years, *SD* = 7.38). There was a significant difference between the gender ratio in the positive and negative PEP conditions, χ^2 (1) = 5.85, $p < .05$. There was no significant difference in age between the two conditions, *t* (65.44) = 1.06, $p > .05$.

2.2 Design

The study used a mixed factorial design with two between-subjects variables, social anxiety (high vs low FNES) and type of PEP (positive vs negative). There was one within-subjects variable, time of rating (immediately after the social task, after PEP, and 24 hours later). Dependent variables measured mood, performance, imagery, perspective and content of PEP.

2.3 Measures

See Appendix C for copies of dependent measures used in this study

2.3.1 Fear of Negative Evaluation Scale (FNES: Watson and Friend, 1969)

The FNES is a 30 item questionnaire, with a true or false response, which measures trait social-evaluative anxiety. It shows high internal consistency (a = .94), good test-retest reliability (r = .78) and good discriminative validity (p< .01) when compared with a measure of social desirability (Crowne-Marlowe Scale; Crowne & Marlowe, 1960) on a sample of undergraduates (Watson & Friend, 1969). Items include, "I feel very upset when I commit a social error", "I rarely worry about seeming foolish to others". Research has shown that high and low FNES groups produce similar results to comparisons between clinical and non-clinical control groups (Stopa & Clark, 2001).

2.3.2 Marlowe-Crowne Social Desirability Scale - Short Form (MC-1: Strahan & Gerbasi, 1972)

The MC-1 is a 10 item questionnaire, with a true or false response, which measures socially desirable responding. It has high internal consistency (a = .79) and is highly correlated with the standard version of the scale (Fischer & Fick, 1993). Items include, "I like to gossip at times", "I always try to practise what I preach".

2.3.3 Beck Depression Inventory (BDI-II) (Beck, Steer & Garbin, 1996)

A 21-item inventory that measures the severity of depressive symptoms over the past two weeks. It has good internal consistency (a = .86), reliability and validity (Beck et al. 1996). As depressed mood is associated with anxiety (Nolen-Hoeksema, 2000) and may have an impact on PEP (Abbott & Rapee, 2003), the BDI-II was included to investigate whether any effects of this experiment were due to depression rather than social anxiety.

2.3.4 Content of PEP

Following PEP, participants were instructed to speak their thoughts out loud and these thoughts were recorded on a tape recorder. Verbatim transcripts were made for each participant and the transcripts were divided into discrete idea units using a similar method to Davison, Robins and Johnson (1983). The experimenter divided all the transcripts into idea units and an independent rater, blind to the study, divided 40% of transcripts into idea units. Once both raters had established the boundaries of each idea unit, the number of boundaries on which both raters agreed were divided by the number of boundaries employed by the experimenter. The mean proportion agreement was 0.87 (SD = 0.11, range = 0.6 – 1.0). The between rater Pearson product-moment correlation was calculated for the number of idea units per section and showed good inter-rater reliability, r = 0.98, p< .001.

Thoughts were subsequently categorised into one of six possible categories in a process similar to that used by Hofmann, Moscovitch, Kim and Taylor (2004). Thoughts were classified as "self-focussed" if the main focus of the thought was directed towards the self. Thoughts that did not focus on the self, were classified as "other-focussed". Thoughts were also classified as either positive, negative or neutral. Examples of these thought categorisations included: "I would have seemed quite attractive" (positive self-related), "I thought about going home for Christmas and how good it would be" (positive other-related), "I was thinking about how I looked, physically" (neutral self-focussed), "I was thinking about the computer next to me" (neutral other-focussed), "I just felt really, really anxious which probably came across in the video" (negative self-related). "If they were standing there a bit effortlessly, it might look like they're not really that bothered" (negative other-

focussed). Inter-rater reliability was calculated on 20% of the transcripts. The kappa coefficient of .89 indicated good agreement between the experimenter and an independent rater. The independent rater, who was blind to the study's hypotheses and to the participant's group membership, rated the remaining 80% of the transcripts.

2.3.5 Performance

Participants rated their overall performance on the dating video on a 0 (not at all good) to 100 (extremely good) scale and how well they would likely perform in a future dating video on a 0 (not at all well) to 100 (extremely well) scale. Participants rated these aspects of performance after completing the video, after PEP and after 24 hours.

2.3.6 Image and sense/impression of the self

Participants were asked if they had experienced any image or sense/impression of the self during the social task, after completing the video, after PEP, after 24 hours, and if so, to describe it. Participants were asked to rate the vividness of the image on a 0 (not at all vivid) to 100 (extremely vivid) scale.

Participants were also asked to rate the valence of the image and sense/impression using a bipolar scale ranging from +3 (extremely positive) to -3 (extremely negative) scale where the mid point of the scale, 0 = no more positive than negative. The descriptions given by participants after the social task and after PEP were audio taped and verbatim transcripts were made. After 24 hours, participants were asked to write down their descriptions of any image or

sense/impression they had. The descriptions were shown to two independent raters, who were blind to the hypotheses of the study and to the anxiety group of the participant, and they rated the valence of the image and sense/impression descriptions using the same scale as the participants. Inter-rater reliability, which was calculated on 40% of the transcripts from each group, was high ($r = 0.88, p < 0.01$).

2.3.7 Mood

Participants completed ratings of the following moods: happy, angry, anxious, depressed and ashamed. They were asked to rate how they felt during the dating video, before completing PEP, after PEP and after 24 hours using a 0 (not at all) to 100 (extremely) scale. Anxiety and shame were emotions of interest and the other moods were included to disguise the fact that anxiety and shame were the target measures.

2.3.8 Perspective

Participants rated the perspective from which they remembered the social task, immediately after the video, after PEP and after 24 hours using a seven point bipolar scale. The scale ranged from +3 (entirely observing myself from and observer's point of view) to -3 (entirely looking out from my own eyes). Other studies examining perspective in social anxiety have successfully utilised this method of measurement (Spurr & Stopa, 2003; Wells et al., 1998).

2.3.9 Amount of time spent focussing on positive/negative aspects of performance in PEP (manipulation check)

Following PEP, participants rated how much of the time they focussed on positive or negative aspects of their performance on the dating task, during PEP, on a 0% to 100% scale. Participants also rated the amount of time they had thought about positive or negative aspects of their performance, on the same 0-100% scale, after 24 hours

2.4 Materials

The dating video was recorded on a VHS video camera and was timed using a stop watch. Participants' thoughts were recorded on an audio tape recorder.

2.5 Procedure

The experiment was run as part of a larger study (Spence, 2005) and therefore there were aspects of the procedure that were not relevant to the current study. Spence asked participants to do a social (dating video) and non social (jigsaw puzzle) task, consequently for 50% of participants the jigsaw puzzle preceded the dating video and for 50% it followed the dating video. The order in which tasks were administered to participants was counterbalanced to control for order effects. This study asked people to focus on the social task only and all references from now on look only at the social task. The University of Southampton Department of Psychology Ethics Committee granted ethical approval for both studies (see Appendix D for approval letter).

Participants were approached by email and invited to participate in a study of memory, attention and task performance. The true topic of the research was not revealed to participants in order to reduce demand characteristics. Participants were presented with an information sheet and consent form (see Appendix E) after which they completed all standardised questionnaires. Participants were then given the following instructions:

> In a few minutes I am going to ask you to make a short videotape of yourself and imagine that you are making it for a dating agency. You will have 5 minutes to prepare what you are going to say. I would like you to concentrate on creating a good impression of yourself and the sort of person you are. Think about what you are like as a person, and what your hobbies and interests are. Consider your various personal qualities and think about the best way to present yourself to someone else. Please focus just on presenting yourself in the best light possible and don't talk about the kind of person you want to meet. We will be asking expert raters to watch your videotape and rate how well you have succeeded in presenting yourself.

The experimenter left the room while the participant prepared. On returning to the room the video camera was switched on and placed in front of the participant. The dating video lasted for 4 minutes during which time the experimenter left the room. Immediately after the speech, participants rated the perspective they saw the situation from, their performance, mood and described any image/impression of the self.

Participants were then given the following instructions, which are similar to those employed by Field and Morgan (2004):

> A few minutes ago you made a videotape of yourself and imagined that you were making it for a dating agency. I would now like you to spend 5 minutes thinking about the positive aspects of the video you have just made and focus your attention on why it was a good performance. Try to keep thinking about the positive aspects of your performance until I come back.

For 50% of participants the word "negative" replaced positive and "bad" replaced good in these instructions and this was counterbalanced across participants to control for order effects. After 5 minutes the experimenter returned to the room and participants were given these instructions:

> I am going to leave you in the room for three more minutes and I would like you to say out loud all the thoughts that were going through your mind when you were thinking about your dating video performance. I am not looking for any thoughts in particular I'm just interested to know what was going through your mind.

A think aloud task was chosen to enable as much information as possible to be obtained about the content of PEP. Such methods are useful in accessing thought processes and ideas that may not be easily accessible via questionnaires or written descriptions (Davison et al., 1983; Rushbrook, 2003). Immediately after thinking

aloud, participants completed the dependent measures and rated the amount of time spent focussing on positive/negative aspects of performance in PEP.

Participants were given a sealed envelope, containing the dependent measures: ratings of perspective, performance, mood, image/impression description and amount of time spent thinking about positive/negative aspects of performance, to take away and complete 24 hours after PEP. An appointment was made for them to return their questionnaire and to be fully debriefed (see Appendix F).

2.6 Data Analysis

Kolmogorov-Smirnov one sample tests were conducted on all data to test normality of the distributions. The data for participants' ratings of their performance were transformed for the analyses using a square root transformation, which improved most variables although did not completely normalise all of them. Howell (2002) however reports that analysis of variance (ANOVA) is a very robust statistical procedure, with variations in normality having little effect on the analysis.

All analyses utilised the complete sample of 90 participants except in the case of variables associated with images and impressions reported by participants. Not all participants reported an image or impression therefore the number of participants contributing to these analyses were less than 90. Wherever the analyses have deviated from the full data set this is indicated.

3. Results

3.1 Group Characteristics

Table 1 shows the mean scores for the standardised questionnaires. The high socially anxious group had higher scores on all of the questionnaires except for the MC-1. As there was a significant difference in the BDI-II scores between groups, the BDI-II score was included in all of the following analyses as a covariate. In some analyses there was no main effect of BDI-II and no interactions between BDI-II and the dependent variable. In the cases where this covariate did have an effect, it was kept in the analyses and this is indicated in each case.

3.2 Amount of Time Participants Focussed on Positive/Negative Aspects of Their Performance

Means and standard deviations are shown in Table 2. A two-way ANOVA (FNES group x PEP condition) was used to compare the amount of time participants focussed on either positive or negative aspects of their performance as instructed. BDI-II score was included as a covariate. There was a main effect of PEP, F (1, 90) = 19.40, p< .001, overall, individuals who focussed on negative aspects of their performance (M = 69.78; SD = 16.40) did so for longer than participants who focussed on positive aspects of their performance (M = 52.05; SD = 22.40). There was an FNES x PEP interaction, F (1, 90) = 6.60, p< .05. High socially anxious participants who focussed on negative aspects of their performance did so for longer than participants who thought about positive aspects of their performance, t (38.30) = 4.80, p< .001. They also spent more time focussing on negative aspects of their performance than low socially anxious participants, t (44) = 2.15, p< .05. However there was no difference between high and low socially anxious participants in the

positive PEP condition. Due to these differences in the ability of the high and low FNES groups to focus on positive or negative aspects of performance, all of the following statistical analyses included amount of time spent thinking about positive or negative aspects of performance during PEP as a covariate (this variable is referred to as "manipulation check" in the analyses). All of the analyses used mixed analysis of covariance (ANCOVA) with two between-subjects factors (FNES group x PEP condition) and one within-subjects factor (time) to compare participants on several of the dependent variables immediately after making the dating video, after PEP, and after 24 hours. Comparisons between self and independent ratings of image and impression valence used mixed ANCOVAs with two between-subjects factors (FNES group x PEP condition) and two within-subjects factors (rater and time). If Mauchly's Test of Sphericity was significant, Greenhouse-Geisser corrected results were reported. Post-hoc analyses were investigated using *t*-tests. If Levene's Test for Equality of Variances was significant, tests for unequal variances were reported.

Table 1. Means and standard deviations of standardised questionnaires

	High Social Anxiety		**Low Social Anxiety**		
Variable	*M*	*SD*	*M*	*SD*	*t*
FNES	24.36	3.02	5.29	2.10	34.77**
BDI-II	11.11	8.55	4.29	3.92	4.86**
MC-1	4.67	2.29	4.73	1.88	0.15

**$p < .01$

Table 2. Means and standard deviations for amount of time participants focussed on positive/negative aspects of their performance during PEP and performance ratings

	High Social Anxiety				**Low Social Anxiety**			
	Positive PEP		Negative PEP		Positive PEP		Negative PEP	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Amount of time	46.96	23.25	75.00	15.35	57.62	20.47	65.00	16.15
T1 Performance	27.39	18.39	33.18	19.85	48.10	17.50	35.00	19.78
T2	39.13	21.72	35.00	16.83	50.00	20.49	38.33	20.78
T3	36.52	20.80	33.64	23.41	48.57	20.56	39.58	20.53
T1 Future performance	39.57	20.56	46.82	19.85	55.24	15.69	56.67	15.79
T2	43.91	24.45	42.27	20.92	58.10	16.91	56.67	17.36
T3	43.48	22.89	43.64	22.79	58.57	15.90	56.67	17.36

Note: T1 = immediately after dating video, T2 = After PEP, T3 = After 24 hours.

3.3 Performance

3.3.1 Performance

A mixed ANCOVA with two between-subjects factors (FNES group x PEP condition) and one within-subjects factor (time) was conducted to compare the performance ratings of participants immediately after making the dating video, after PEP, and after 24 hours, with manipulation check as a covariate. Means and standard deviations are shown in Table 2. There was a main effect of PEP, $F(1, 85) = 4.00$, $p < .05$, which showed that participants in the negative condition rated performance worse than participants in the positive condition. There was also a main effect of FNES, $F(1, 85) = 4.43$, $p < .001$; high socially anxious participants rated their

performance worse overall than low socially anxious participants. There was a time x FNES x PEP interaction, F (1, 85) = 3.74, p< .05. High socially anxious participants in the positive PEP condition rated their performance significantly better after positive PEP compared with their initial ratings, t (22) = 4.06, p< .01, and this improvement was maintained over 24 hours, t (22)= 3.01, p< .01. In contrast, there was no significant difference over time between the performance ratings of low socially anxious participants in the positive PEP condition. There were no significant differences in performance ratings between participants in the negative PEP condition. In considering these analyses it is important to note that there was a significant difference between the performance ratings of low socially anxious participants at baseline (T1). Low socially anxious participants in the positive PEP condition rated their performance better at baseline than low socially anxious participants in the negative PEP condition, t (43) = 2.32, p< .05.

3.3.2 Future Performance

A mixed ANCOVA with two between-subjects factors (FNES group x PEP condition) and one within-subjects factor (time) was conducted to compare the predictions of future performance ratings of participants immediately after making the dating video, after PEP, and after 24 hours, with manipulation check and BDI-II score as covariates. Means and standard deviations are shown in Table 2. There was a main effect of FNES, F (1, 84) = 4.32, p< .05; high socially anxious participants predicted their performance on another dating video as worse than low socially anxious participants. There was a trend towards a main effect of time, F (2, 168) = 2.90, p= .058 indicating a trend towards participants' ratings of future performance increasing over time. There was also a time x PEP interaction, F (2, 168) = 8.60, p<

.001. Participants in the positive PEP condition rated their likely future performance as significantly better following PEP compared with immediately after the dating video, t (43) = 2.07, p< .05. This was maintained over 24 hours, t (43) = 2.33, p< .05. There were no significant differences in future performance ratings in the negative PEP condition between the three different time points. With regard to the covariates, BDI-II was significant, F (1, 84) = 5.99, p< .05 indicating that levels of depression were significantly related to predications of future performance (there was a negative relationship between these two variables). There was also a time x manipulation check interaction, F (2, 168) = 5.15, p< .05.

3.4 Imagery

3.4.1 Image Vividness

A mixed ANCOVA with two between-subjects factors (FNES group x PEP condition) and one within-subjects factor (time) was conducted to compare the ratings of the vividness of images reported by 36 participants immediately after making the dating video, after PEP, and after 24 hours, with manipulation check and BDI-II score as covariates. Means and standard deviations for participants' ratings of the vividness of their images over time are shown in Table 3. There was an FNES x PEP interaction, F (1, 30) = 9.59, p< .05, which indicated a trend for high socially anxious participants in the negative PEP condition to rate their images as more vivid that those in the positive PEP condition, t (37) = 1.85, p =.072. However, there were no differences between positive and negative PEP in the low FNES group, and no differences between high and low socially anxious individuals in either the positive or the negative PEP condition. With regard to the covariates, BDI-II was significant, F (1, 30) = 5.07, p< .05 indicating that levels of depression were significantly related

to ratings of image vividness (there was a positive relationship between these two variables).

Table 3. Means and standard deviations of image variables over time

	High Social Anxiety				**Low Social Anxiety**			
	Positive PEP		Negative PEP		Positive PEP		Negative PEP	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
T1 Vividness	61.76	20.38	74.17	16.21	62.22	23.33	63.57	21.34
T2	57.50	16.53	74.29	21.38	68.18	17.22	62.50	19.83
T3	54.12	21.52	64.37	18.61	58.00	19.71	58.13	19.05
T1 Valence (P)	-0.71	1.21	-0.83	1.12	0.33	1.50	-0.21	1.32
T2	-0.13	1.59	-1.36	1.15	0.82	1.33	-0.50	1.10
T3	-0.47	1.42	-0.88	1.15	0.27	1.58	-0.63	1.09
T1 Valence (IR)	-1.18	0.73	-1.00	1.28	-1.22	1.39	-1.29	1.44
T2	-0.81	0.98	-1.57	0.65	-0.09	1.38	-1.13	0.89
T3	-1.00	0.94	-1.06	1.18	-0.13	1.41	-0.81	1.17
T1 Perspective	0.17	1.64	0.05	1.96	-0.19	1.91	-0.17	1.88
T2	0.48	2.00	0.23	1.95	-0.57	2.14	-0.46	1.98
T3	0.57	1.59	0.18	1.82	-0.19	1.81	0.33	1.71

Note: T1 = immediately after dating video, T2 = After PEP, T3 = After 24 hours, P = participant, IR = independent-rater.

3.4.2 Image Valence – Comparison Between Self and Independent-Ratings

A mixed ANCOVA with two between-subjects factors (FNES group x PEP condition) and two within-subjects factors (rater and time) was used to compare self and independent ratings of image valence, from 36 participants, immediately after making the dating video, after PEP, and after 24 hours, with manipulation check as a covariate. Means and standard deviations are displayed in Table 3. There was a time x PEP interaction, F (1.52, 47.11) = 5.88, p< .05. Images described after positive PEP were rated as more positive than images described after negative PEP, t (46.89) = 3.61, p< .01. There was no significant difference between the two PEP conditions after 24 hours. There was also a rater x time x FNES interaction, F (1.93, 59.85) = 4.72, p< .05. Overall self-ratings of images of high socially anxious participants were more positive than independent-ratings, t (38) = 2.97, p< .01. For low socially anxious participants, the independent-ratings after 24 hours were more positive for all participants than immediately after the video, t (20) = 2.21, p< .05. Immediately after completing the dating video, low socially anxious participants rated their images as more positive overall than high socially anxious participants, t (50) = 2.16, p< .05. Independent-ratings of low socially anxious participants' images were more negative than self-ratings, both immediately after completing the video, t (22) = 6.61, p< .001, and after PEP, t (26) = 3.06, p< .01, but not after 24 hours, t (30) = 1.79, p=.083.

3.4.3 Perspective

A mixed ANCOVA with two between-subjects factors (FNES group x PEP condition) and one within-subjects factor (time) was conducted to compare the perspective ratings reported by participants immediately after making the dating

video, after PEP, and after 24 hours, with manipulation check as a covariate. There were no main effects or interactions (highest p =.07) indicating that there were no significant differences between the mean perspective ratings of each group. Means and standard deviations are displayed in Table 3.

Table 4. Means and standard deviations of impression variables over time

	High Social Anxiety				**Low Social Anxiety**			
	Positive PEP		Negative PEP		Positive PEP		Negative PEP	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
T1 Valence (P)	-0.68	1.36	-0.52	1.44	0.20	1.51	-0.29	1.37
T2	0.05	1.75	-1.20	1.28	0.33	1.18	-0.48	1.40
T3	-0.67	1.68	-1.00	1.25	-0.50	1.21	-0.26	1.37
T1 Valence (IR)	-1.55	0.80	-1.52	1.03	-1.05	1.15	-1.38	1.06
T2	-0.71	1.42	-1.20	1.01	0.13	1.46	-1.33	1.11
T3	-0.83	1.30	-1.42	1.42	-0.50	1.46	-1.26	1.20

Note: T1 = immediately after dating video, T2 = After PEP, T3 = After 24 hours, P = participant, IR = independent-rater.

3.4.4 Impression Valence – Comparisons Between Self and Independent-Ratings

A mixed ANCOVA with two between-subjects factors (FNES group x PEP condition) and two within-subjects factors (rater and time) was used to compare self and independent ratings of impression valence, from 66 participants, immediately after making the dating video, after PEP, and after 24 hours, with manipulation check and BDI-II score as covariates. Means and standard deviations are displayed in Table

4. There was a time x PEP interaction, F (2, 120) = 11.95, p< .001. The self-ratings of impressions in the positive PEP condition were more positive following PEP compared with immediately after the video, t (34) = 3.27, p< .01, but this was not maintained over 24 hours, t (32) = 1.34, p =.19. Following PEP the impressions described by participants in the positive PEP condition were rated as more positive than the impressions of participants in the negative PEP condition at this time point, t (65.29) = 3.27, p < .01, but not after 24 hours, t (70) = 1.19, p =.24. There was no effect of FNES or of rater and no interactions between these factors. With regard to the covariates there was a rater x BDI interaction, F (1, 60) = 5.49, p< .05 and a time x manipulation check interaction, F (2, 120) = 4.06, p< .05.

3.5 Content of PEP

Thoughts listed by participants during a think aloud task can be dealt with in more than one way, for example it is possible to sum the number of thoughts in each category for each participant or to divide the number of thoughts in each category by the total number of thoughts reported by each participant (Hofmann et al., 2004). Hofmann et al. suggest that the benefit of calculating the relative frequencies of thoughts for each participant is that it controls for differences in the total number of thoughts listed by participants. However they argue that one single negative self-related thought is an important statement that reflects a significant view of the self, regardless of whether it is stated with two or ten other thoughts. The following analysis uses Hofmann et al.'s method and analyses the absolute frequencies of each type of thought per participant, which is consistent with previous studies using thought listing techniques (Cacioppo, Glass, Merluzzi, 1979; Hofmann et al., 2004). However, total number of thoughts and amount of time spent focussing on positive

or negative aspects of performance during PEP, were included as covariates in order to control for differences between participants. Means and standard deviations are displayed in Table 5. A mixed ANCOVA with two between-subjects factors (FNES group x PEP condition) and one within-subjects factor, thought category, which had six levels (positive self, positive other, neutral self, neutral other, negative self, negative other) was used to compare the frequencies of different thoughts listed by all participants during PEP with manipulation check and total number of thoughts as covariates.

Table 5. Means and standard deviations of total frequency in each thought category reported during PEP

	High Social Anxiety				**Low Social Anxiety**			
	Positive PEP		Negative PEP		Positive PEP		Negative PEP	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
positive self	4.74	3.71	0.82	1.47	7.38	5.38	0.88	1.26
positive other	0.39	0.89	0.05	0.21	0.43	0.98	0.25	0.68
neutral self	4.78	3.16	3.64	2.80	4.14	3.17	4.71	3.93
neutral other	1.65	1.64	1.36	3.02	1.33	2.06	1.63	3.63
negative self	2.57	2.37	11.41	5.92	1.62	2.50	9.83	5.16
negative other	0.43	0.73	1.91	2.43	0.86	1.53	1.42	1.53

There was a thought category x PEP interaction, $F(3.15, 264.23) = 47.42$, $p < .001$, which is illustrated in Figure 1. Participants in the negative PEP condition categorised fewer thoughts as positive self-related, $t(49.70) = 6.97$, $p < .001$, and

more thoughts as negative self-related, t (62.61) = 9.46, p< .001, compared with participants in the positive PEP condition. With regard to the covariates, total number of thoughts was significant, F (1,84) = 424490.22, p< .001 indicating that the total number of thoughts were significantly related to the type of thought reported (there was a positive relationship between these two variables). There was also a thought category x total number of thoughts interaction, F (5, 420) = 8.40, p< .001.

Figure 1. Interaction between thought category and PEP condition on the mean number of each type of thought as categorised by an independent-rater

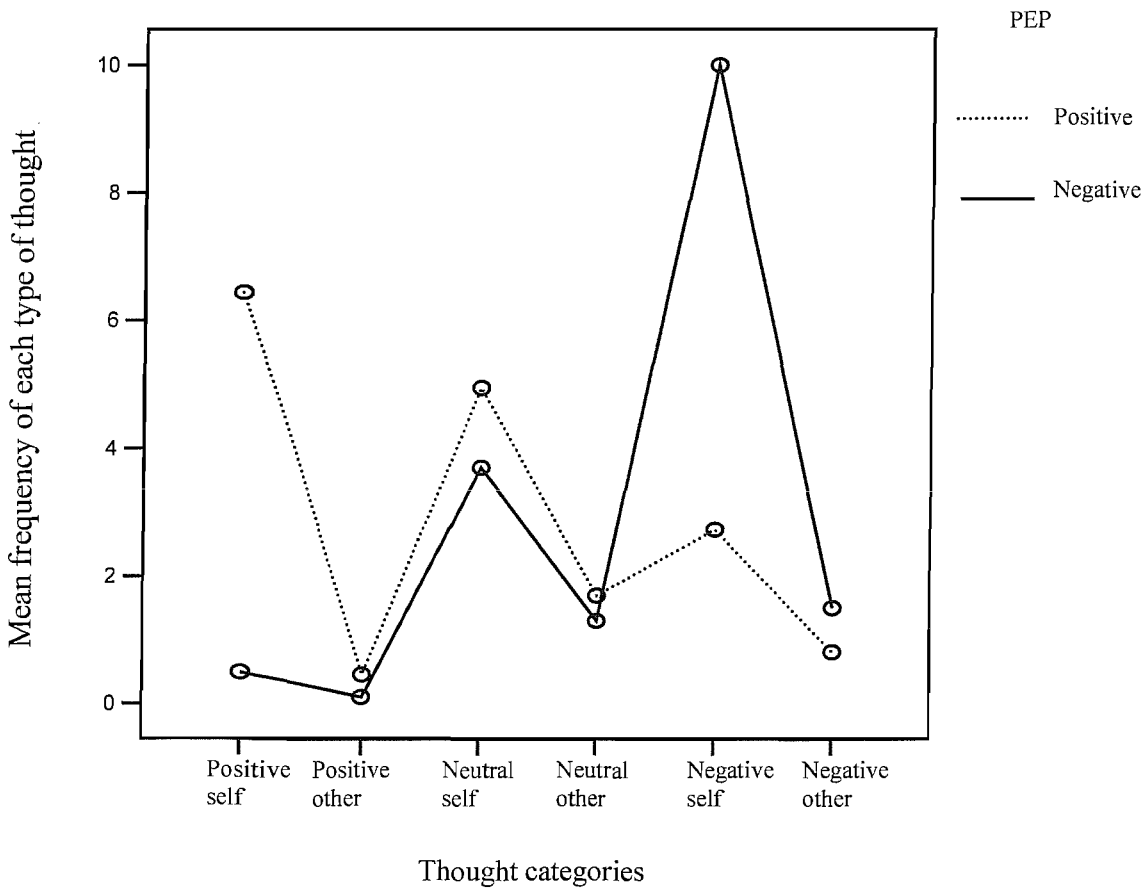

Table 6. Means and standard deviations of participants' mood ratings over time

	High Social Anxiety				**Low Social Anxiety**			
	Positive PEP		Negative PEP		Positive PEP		Negative PEP	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
T1 Anxiety	70.87	24.11	74.55	24.05	55.71	25.41	55.42	28.13
T2	25.65	25.73	21.36	21.89	7.62	15.78	10.83	15.01
T3	22.61	24.16	19.09	21.14	6.67	15.60	7.08	10.83
T4	24.78	25.02	6.82	8.94	3.81	9.21	7.08	11.97
T1 Shame	32.17	26.62	30.45	28.03	12.38	21.89	22.92	27.58
T2	16.52	20.14	11.36	20.07	4.76	15.69	5.00	9.33
T3	14.78	20.64	14.55	21.10	5.24	15.37	6.25	14.98
T4	19.57	27.38	7.73	11.52	5.71	14.69	7.92	17.19

Note: T1 = immediately after dating video, T2 = Before PEP, T3 = After PEP, T4 = After 24 hours.

3.6 Mood

3.6.1 Anxiety

A mixed ANCOVA with two between-subjects factors (FNES group x PEP condition) and one within-subjects factor (time) was conducted to compare the anxiety ratings of participants immediately after making the dating video, before completing PEP, after PEP, and after 24 hours, with manipulation check and BDI-II score as covariates. Means and standard deviations are shown in Table 6. There was a main effect of time, F (2.16, 181.01) = 12.01, p< .001, with anxiety reducing from immediately after completing the video to just before PEP. There was also a main effect of FNES, F (1, 84) = 7.22, p< .05, with high socially anxious participants

rating their anxiety as higher overall than low socially anxious participants. There were no interactions. With regard to the covariates, BDI-II was significant, F (1, 84) = 16.37, p< .001 indicating that levels of depression were significantly related to ratings of anxiety (there was a positive relationship between these two variables). Manipulation check was also significant, F (1, 84) = 4.50, p< .05 indicating that the amount of time spent thinking about positive or negative aspects of performance during PEP was significantly related to ratings of anxiety (there was a negative relationship between these variables). There was also a time x BDI-II interaction, F (3, 252) = 3.27, p< .05.

3.6.2 Shame

A mixed ANCOVA with two between-subjects factors (FNES group x PEP condition) and one within-subjects factor (time) was conducted to compare the ratings of shame made by participants immediately after making the dating video, before completing PEP, after PEP, and after 24 hours, with manipulation check and BDI-II score as covariates. Means and standard deviations are shown in Table 6. There was a main effect of time, F (2.06, 172.86) = 4.12, p< .05, with shame reducing from immediately after completing the video to just before PEP. There were no interactions. With regard to the covariates, BDI-II was significant, F (1, 84) = 35.36, p< .001 indicating that levels of depression were significantly related to ratings of shame (there was a positive relationship between these two variables). Manipulation check was also significant, F (1, 84) = 4.43, p< .05 indicating that the amount of time spent thinking about positive or negative aspects of performance during PEP was significantly related to ratings of shame (there was a negative relationship between these two variables).

3.7 The use of ANCOVA

While the strategy chosen to analyse these results utilised ANCOVA, as discussed in Kinnear and Gray (2004), there is controversy within the psychological literature about whether this is a legitimate approach (Miller & Chapman, 2001). Analyses were re-run using ANOVA in order to take account of this criticism. In the main the results from ANOVAs and the results from ANCOVAs were very similar. In the case of future performance, image vividness, perspective and anxiety the ANOVA results corresponded neatly with the ANCOVA results. For the variables: image valence, impression valence, content of PEP and shame the ANOVA results also corresponded with the ANCOVA results but also included some additional effects. For image valence there was an additional main effect of rater, $F(1, 64) = 12.65$, $p < .01$ and a time x rater interaction, $F(2,64) = 3.23$, $p < .05$. For impression valence there were additional main effects of time, $F(2,124) = 5.09$, $p < .05$ and rater, $F(1, 62) = 45.50$, $p < .001$ as well as the following interactions: time x rater, $F(2, 124) = 7.25$, $p < .01$, time x rater x PEP, $F(2, 124) = 3.4723$, $p < .05$, time x rater x FNES x PEP, $F(2,124) = 3.29$, $p < .05$. For content of PEP there were additional main effects of thought category, $F(5, 430) = 56.16$, $p < .001$, and PEP, $F(1, 86) = 5.68$, $p < .05$. For shame there was an additional main effect of FNES, $F(1, 86) = 8.05$, $p < .01$. The ANOVA for performance corresponded to the ANCOVA but one effect was lost (no main effect of PEP) and there was an additional main effect of time, $F(2, 172) = 5.61$, $p < .01$.

4. Discussion

The aim of this study was to examine the impact of manipulating PEP on high and low socially anxious individuals and to investigate whether any observed effects were maintained over 24 hours. The study found that all participants were able to think for longer about negative than about positive aspects of their performance. There were no differences between participants in the amount of time they were able to focus on positive aspects of their performance. An interesting finding of this study was that despite instructions to focus on negative aspects of performance, high socially anxious participants thought about negative aspects of their performance for more time than low socially anxious participants. This is consistent with previous research, which shows that in naturalistic situations high socially anxious individuals engage in more negative PEP than low socially anxious individuals (Abbott & Rapee, 2003; Abbott & Rapee, 2004; Edwards et al., 2003; Mellings & Alden, 2000; Rachman et al., 2000). High socially anxious participants' increased negative focus is also consistent with theoretical models, which suggest that they engage in negatively valenced processing after social interactions (Clark &Wells, 1995; Rapee & Heimberg, 1997).

The study also found that high socially anxious participants in the negative PEP condition thought about the negative aspects of their performance more than participants in the positive PEP condition. This suggests that, even when they were given explicit instructions to focus on positive aspects of their performance, it was much harder for the high socially anxious participants to think about positive aspects of their performance, compared to negative aspects. Clark and Wells (1995) suggest that during a social interaction, social phobics focus their attention inwards on the

self, which limits their opportunity to process information about other people. Consequently, during PEP the individual's anxious feelings and negative self-perceptions are likely to be the most salient information because they were processed in detail within the social situation. This may explain why it was easier for high socially anxious participants to think more about negative aspects of their performance during PEP, because negative features of performance are the most salient in the social situation. In this study instructions to focus on positive or negative aspects of the situation were given after the dating video and therefore the content of PEP may already have been strongly influenced by processing that occurred during the video. Rachman et al. (2000) noted that PEP involved recollections of a social event that were recurrent and intrusive. In the current study, even though high socially anxious participants were trying to think about positive aspects of their performance, their negative thoughts may have intruded. Even though participants differed in the amount of time they were able to focus on positive or negative aspect of their performance, this was controlled for in statistical analyses and there were still some interesting findings about the effects of manipulating PEP. These findings will now be discussed.

Two aspects of performance were examined in the study, firstly, participants were asked to rate how well they thought they had done on the dating video. These judgements, which were made immediately after completing the dating video represent the view of performance that would be included in more naturalistic PEP. Secondly participants were asked to rate how well they would perform on a similar task in the future. Predictions of future performance are relevant to Clark and Wells (1995) conceptualisation of both PEP and anticipatory processing. For example,

Clark and Wells propose that, during anticipatory processing, social phobics think about past social failures, negative images of themselves in social situations and about their impending poor performance and rejection. Thus the content of PEP can influence anticipatory processing because judgements at the post-event stage will inform subsequent judgements made during the anticipatory stage.

This study found that high socially anxious participants rated their performance worse than their low socially anxious counterparts, which is consistent with previous studies (Rapee & Lim, 1992; Mellings & Alden, 2000; Rushbrook, 2003; Stopa & Clark, 1993; Abbott & Rapee, 2004; Dannahy, 2004). Interestingly, high socially anxious participants' performance ratings improved after positive PEP, whereas low socially anxious participants' ratings did not change. This suggests that if you instruct high socially anxious individuals to attend to positive aspects of their performance during PEP, it improves the way they view their social performance in the situation. This effect was not observed in low socially anxious participants, which may be because they usually focus on the positive aspects of their performance and therefore positive PEP simply rehearses what they already believed. Also there was an unfortunate difference in the baseline performance ratings of low socially anxious participants with those in the positive PEP condition rating their performance higher at baseline than those in the negative PEP condition. Thus it may be that for this group of low anxious participants those allocated to the positive PEP condition had a generally more positive view of their performance from the outset and this may have obscured any possible effects of PEP. A further limitation of this study is that it did not establish whether the participants' ratings of their performance were accurate or whether they represented a positive (low anxious) or negative (high

anxious) bias. A future study could resolve this issue by obtaining independent ratings of performance and comparing these with the participants' rating.

Participants in the negative PEP condition rated their performance worse overall than participants in the positive PEP condition, which indicated that negative PEP after the social task had a detrimental effect on everyone. As low socially anxious participants do not usually dwell on negative aspects of their performance, it is possible that encouraging them to do this made them behave more like high socially anxious participants and induced a mildly negative, or at least less positive bias in their performance ratings. If this was the case, then it would be similar to the effect observed by Hirsch, Clark, Mathews and Williams (2003), who found that asking low socially anxious participants to hold a negative self image in mind during a social task produced more anxiety, and worse ratings of performance.

In predicting their future likely performance, high socially anxious participants made worse predictions than low socially anxious participants, which is also consistent with current literature (Rapee & Lim, 1992; Mellings & Alden, 2000; Rushbrook, 2003; Stopa & Clark, 1993; Abbott & Rapee, 2004; Dannahy, 2004). However, in the positive PEP condition high and low socially anxious participants rated future performance more positively following positive PEP, and this was maintained over 24 hours. This suggests that positive processing during PEP improved confidence and assessments of future performance. However, what we cannot say from this study is whether this more positive view of future performance would be maintained, if high socially anxious participants were then asked to perform another social task. Future research could assess this question by asking

participants to do a second similar social task and comparing ratings of future performance at this point.

Surprisingly negative PEP did not affect future performance ratings. According to Clark and Wells (1995), PEP focuses on negative aspects of the self and performance and therefore the situation is likely to be viewed as worse than it actually was. This negative view is taken as veridical by the social phobic and is perceived as another instance of inadequate social performance, thus confirming the individual's negative self-view. Anticipation of social events is similar in that individuals perform a detailed review of what they think might happen; however in anticipatory processing the focus is on the future rather than the past. This illustrates the close link between PEP and anticipatory processing because the judgement about whether an interaction was successful is derived from, and then feeds into anticipatory processing, where individuals recall previously unsuccessful social encounters. As a result PEP forms part of anticipatory processing and affects the individual's future view as well as being a reflection on past events. Abbott and Rapee (2004) have suggested that the relationship between social anxiety and negative rumination can be conceptualised as a dynamic system where negative rumination may be triggered by negative mental representations of the self while at the same time reinforcing that negative representation. It is appropriate to consider anticipatory processing within this system because PEP feeds into anticipatory processing and anticipatory processing then affects how individuals will view a future situation. The findings of this study suggest that positive PEP may have a beneficial effect on how people view future situations.

Clark and Wells (1995) suggest that social phobics direct their attention inwards to a detailed monitoring of the self when they are in a social situations. The information obtained from this self-focus (e.g. thoughts, feelings, physical sensations) is used to construct an impression of the self or "felt sense" that they think represents how other people view them. This is important because social phobics assume that they are coming across in the way that they imagine, which increases anxiety. Clark and Wells suggest that in addition to an impression of the self social phobics sometimes have an image where they see themselves as though from another person's point of view and, due to this observer-perspective, infer that this is how they actually appear to other people. Such images are often distorted and therefore further increase anxiety. To date, research on imagery in social phobia has relied on retrospective recollections of images experienced in social situations (Wells, et al., 1998; Wells & Papageorgiou, 1999; Hackmann et al., 2000; Hackmann, Surawy & Clark, 1998) or has manipulated images held in mind by participants in a social situation (Hirsch et al., 2003). A unique contribution of the current study is that it examined images and impressions of the self experienced by participants immediately after a social task.

The current study examined the vividness of images that participants experienced during the social situation and found that there was a trend for high socially anxious participants in the positive PEP condition to have less vivid images than those in the negative PEP condition. If this finding was replicated, it suggests that thinking about positive aspects of performance reduces the vividness of high socially anxious individuals' self-images. This is interesting because Clark and Wells (1995) suggest that the negative images generated by socially anxious individuals in

social situations are used to infer how they think that they performed in a situation, and also how they think they will perform in future. If positive PEP reduces the vividness of any perceived images, this may mean that self-images become less influential on such judgements.

Hackmann et al. (1998) found that high socially anxious participants reported negative images in socially anxiety provoking encounters. The current study found that immediately after completing the dating video, low socially anxious participants rated their images as more positive overall than high socially anxious participants, which is consistent with Hackmann et al's (1998) findings and with Clark and Wells' (1995) theoretical model. However, images described after positive PEP were rated as more positive than images described by participants in the negative PEP condition. This suggests that if you instruct people to think about the positive aspects of their performance, it improves the image that they have of the self regardless of their level of social anxiety, although this difference is not maintained over 24 hours. The self-ratings of image valence were compared with independent-ratings and surprisingly, high socially anxious participants' self-ratings of images were more positive overall than independent-ratings. Similarly independent ratings of low socially anxious participants' images were also more negative than self-ratings, both immediately after completing the video, and after completing PEP, but not after 24 hours. Hirsch and Mathews (2000) suggest that people who are not socially anxious have a positive bias in social situations that protects their self-esteem and prevents the development of the levels of anxiety involved in social phobia. In this study, a positive bias in rating self-images may represent another type of protective bias. It was surprising to find this positive bias in high as well as low socially anxious participants. However,

this may indicate that some positive biases are preserved in non clinical samples of high socially anxious individuals. Of course it is possible that the ratings made by the independent rater may have been unreliable as it may have been difficult to accurately rate the valence of each image description without a full description of the context. However there was a high level of inter-rater reliability.

For low socially anxious participants, the independent-ratings after 24 hours were more positive than immediately after the video irrespective of the participant's PEP condition. This suggests that over time, independent-ratings of images of participants low in social anxiety became more positive. Hirsch and Mathews (2000) suggest that non-anxious individuals are more attuned within the situation, to noticing and interpreting things in a positive way. Conversely low socially anxious participants may have had further positive experiences after the situation that helped to increase their positive view of the self and this was reflected in the independent ratings.

As some people do not have an image of the self in social situations, but do have a sense or impression of the self, this study also examined the effect of manipulating PEP on the valence of any impression of the self experienced by the participants. The study found that participants' ratings of impressions in the positive PEP condition were more positive after PEP compared to immediately after the video. Also the impressions described by participants in the positive PEP condition were rated as more positive overall than the impressions of participants in the negative PEP condition immediately after PEP. This suggests that encouraging

people to attend to positive aspects of their performance in their review of the situation may have a beneficial effect on their view of the self.

An impression of the self is similar to an image in that both are used to infer how the individual is coming across to other people and thus both can increase anxiety and increase the perception of negative evaluation (Clark and Wells, 1995). Impressions tend to be based on a feeling about the self and how one may be coming across in comparison with images where individuals often report a clear, detailed picture. For people who experience both an image and an impression of the self, there may be an interaction between the two. Thus an impression of the self may inform the development of an image of the self and an image may also contribute to a sense of how the individual may be coming across to others. Alternatively it may be possible to hold in mind an impression which is different to the image. To date there has been little research to investigate the role that impressions of the self have in the maintenance of social phobia or how they interact with images. Future research in this area would be beneficial and utilising qualitative methodologies may allow further knowledge about these processes to be elucidated.

According to Clark and Wells (1995), PEP is dominated by the social phobic's negative self-view, anxious feelings that were processed during the social interaction and recollections of past social failures with the result being that the situation is often viewed as more negative than it actually was. The current study found that participants in the positive PEP condition had more thoughts categorised as positive self-related and fewer thoughts categorised as negative self-related, compared with those in the negative PEP condition. This suggests that if you

encourage participants to think about positive aspects of their performance during PEP then this improves the way they think about the self when they review their social performance. Self-focussed attention and the cognitive biases that operate when social phobics are in a social situation are thought to result in the content of PEP being negative and to date, studies that have investigated the content of PEP have confirmed that high socially anxious participants engage in more negative PEP and report fewer positive thoughts than controls (Abbott & Rapee, 2004; Dannahy, 2004, Rushbrook, 2003). The findings of the current study suggest that encouraging people to think about positive aspects of performance even in the absence of any manipulation of their attentional focus within the situation may have a beneficial effect on the content of PEP. These preliminary findings, raise the question of whether this effect could be enhanced by manipulating some other aspect of the individual's attention earlier on in the social encounter? This question could be addressed by comparing the effect of positive and negative PEP in conditions of high and low self-focussed attention.

There was no difference in the current study between high and low socially anxious participants in the type of thoughts they had during PEP. As low socially anxious individuals do not usually engage in PEP, asking them to do PEP, may have made them behave more like socially anxious individuals and hence eliminated the effect of social anxiety group (Hirsch et al., 2003). Alternatively although there were 90 participants in total, the design required four groups and therefore it is possible that certain effects were not observed due to small numbers of participants. Perhaps in future this limitation could be addressed by boosting the numbers within each group or by focussing on high socially anxious participants only.

Clark and Wells (1995) suggest that when social phobics leave a social situation their anxiety may decrease but their distress continues because they believe that their social performance was inadequate, which can result in feelings of shame. The current study found that all participants reported a reduction in their level of anxiety and shame following the social task. This suggests that following completion of the social task there was a reduction in the level of distress for all participants. Indeed many participants reported that they felt relieved to have completed the social task. The current study also replicated previous research showing that high socially anxious individuals experienced more anxiety overall than low socially anxious participants (Dannahy, 2004; Rushbrook, 2003). While the current finding, that anxiety reduced for participants after the dating video is consistent with Clark and Wells' prediction, contrary to prediction, PEP did not lead to an increase in shame, in this group of participants. It is possible that the social situation did not elicit enough anxiety to result in elevated feeling of shame during PEP. However, anxiety ratings during the social task were similar to other studies (Dannahy, 2004; Rushbrook, 2003). The relationship between the cognitive processes that maintain social anxiety and the experience of shame reported by some social phobics after a social situation has yet to be explored. Complex, naturalistic social situations are difficult to simulate in the laboratory and it may be that qualitative methodologies may elicit more insight into the role shame plays in social phobia.

A limitation of the current study is its use of ANCOVA. Although ANCOVA is used within psychological research when there is a variable which co-varies with the dependent variable (Kinnear & Gray, 2004), Miller and Chapman (2001) argue

that the use of ANCOVA to control for the effects of such a variable when groups differ on this variable is inappropriate. They suggest that this is of particular relevance with research on psychological disorders where the covariate (e.g. depression) may be an important part of the clinical picture (e.g. of social anxiety) and therefore it would not make theoretical sense to try and examine the effects of anxiety alone, having controlled for depression. While acknowledging these limitations it was thought that it would be useful to make some attempt to recognise the differences in levels of depression and the amount of time participants spent focussing on positive or negative aspects of their performance in PEP in the analyses and ANCOVA was chosen for this reason. Given the differences between the groups on these covariates (levels of depression or the amount of time participants were able to focus on positive or negative aspects of their performance in PEP) it is not possible to say whether the observed effects are due to social anxiety or one of the covariates. Indeed for ratings of image vividness, anxiety and shame there was a positive relationship between these variables and depression scores suggesting that the higher the level of depression experienced by the participant, the more vivid the images they experienced and the higher the level of anxiety and shame they reported. With predictions of future performance there was a negative relationship between the two variables, suggesting that higher depression scores were associated with worse predictions of future performance. Given that depression and social anxiety often coexist and that socially anxious individuals are likely to engage in PEP and dwell on negative aspects of their performance in the real world, it seems important to consider these elements and social anxiety as a whole.

Another limitation of the current study is that it relied on an analogue sample to study PEP in social phobia. There may be differences between individuals with social phobia and analogue samples that affect the way they process social situations. For example Mellings and Alden (2000), suggest that individuals with social phobia may experience more anxiety in a social situation than analogue samples and this could lead to more frequent and intense PEP. However, Stopa and Clark (2001), report that dividing participants into high and low social anxiety groups according to their FNES score, enables the examination of processes in social phobia, as the psychological processes that distinguish these high and low groups are similar to those that differentiate people with social phobia from controls. Stopa & Clark (2001) also outlined some advantages in using an analogous sample which are relevant to a preliminary study of this nature. In particular, an analogue sample allows the use of complex experimental designs that require large numbers of participants and it enables novel tasks to be piloted before their use with a clinical sample.

An additional issue with the sample utilised in this study is the over representation of women in the sample and difference in the distribution of males and females between groups and conditions. The majority of students studying psychology are female which explains the gender bias in the sample. Social fears tend to be more prevalent in women than men which may explain why there were more men than women in the low social anxiety group (Wittchen, Stein & Kessler, 1999). The allocation of participants to either the positive or negative PEP condition was counterbalanced across participants which led to there being more men in the positive PEP condition than in the negative PEP condition. These factors constitute a

limitation of the current study as gender may have acted as a confounding variable, with the possibility that observed effects may be attributable to gender differences between groups or conditions. This also poses an interesting area of study for future research. Given the difference in prevalence of social phobia between males and females, it would be useful to examine any gender differences in the disorder and also to consider how far Clark and Wells' (1995) model can be applied equally to men and women as is the current conceptualisation.

Consistent with Clark and Wells' (1995) model, and in line with previous research, this study found that high socially anxious individuals rated performance as worse, predicted worse performance in the future, had more negatively valenced images, thought more about negative aspects of their performance in PEP, and reported higher levels of anxiety in a social situation compared to low socially anxious individuals. This study also provides preliminary evidence to suggest that engaging in positive PEP may have beneficial effects on ratings of performance, future performance, image and impression valence, and on thoughts during PEP in high socially anxious participants. At present therapy for social phobia, advises individuals to stop PEP altogether. The current study raises the question of whether, it would be better to facilitate more adaptive PEP by teaching individuals to notice and focus on positive aspects of performance rather than banning it overall. Future research is required to understand the circumstances in which PEP may be helpful and also to understand more about the relationship between PEP and the processes that occur at earlier stages in the social situation.

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Appendices

Appendix A

Psychological Bulletin – Instructions to Authors

Psychological Bulletin

Editor: Harris Cooper
ISSN: 0033-2909
Published Bimonthly, beginning in January

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Submit manuscripts electronically and send three printed copies to

Harris Cooper, Editor
Psychological Bulletin
213 West Duke Building
Duke University
Durham, NC 27708

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according to the instructions provided below.

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Gallo, L. C., & Matthews, K. A. (2003). Understanding the association between socioeconomic status and physical health: Do negative emotions play a role? *Psychological Bulletin, 129,* 10–51.

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Appendix B

Behaviour Research and Therapy – Instructions to Authors

Guide for Authors

Behaviour Research and Therapy For full instructions, please visit http://ees.elsevier.com/brat

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Online submission is strongly preferred but authors can, in special cases, also submit via mail. Four copies of the manuscript, including one set of high-quality original illustrations, suitable for direct reproduction, should be submitted to **Professor G. T. Wilson, Psychological Clinic at Gordon Road, Rutgers, The State University of New Jersey, 41C Gordon Road, Piscataway, New Jersey, 08854-8067, USA**. Email: brat@rci.rutgers.edu. (Copies of the illustrations are acceptable for the other sets of manuscripts, as long as the quality permits refereeing.)

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Appendix C i)

Performance rating scale

Please rate how good you think your performance was on the dating video using the following scale

0	10	20	30	40	50	60	70	80	90	100

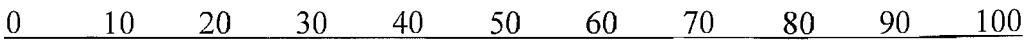
Not at all good

Extremely good

Appendix C ii)

Future performance rating scale

If you were asked to make another video now, how well do you think you would perform?



Not at all well

Extremely well

Appendix C iii)

Image ratings scales

While you were making your dating video, were you ever aware of an image of yourself?

Yes / No (please circle)

If Yes, please can you describe that image in as much detail as possible. It may help you to close your eyes while you do this.

Please rate how vivid the image you have just described was

0 10 20 30 40 50 60 70 80 90 100

Not at all vivid Extremely vivid

Please rate on the following scale how positive or negative the image you have just described is.

-3	-2	-1	0	+1	+2	+3
Extremely negative			No more positive than negative			Extremely positive

Appendix C iv)

Impression/sense rating scales

While you were making your dating video, were you ever aware of a sense/impression of yourself?

Yes / No (please circle)

If Yes, please can you describe that sense/impression in as much detail as possible. It may help you to close your eyes while you do this.

Please rate on the following scale how positive or negative the sense/impression you have just described is.

-3	-2	-1	0	+1	+2	+3
Extremely negative			No more positive than negative			Extremely positive

Appendix C v)

Mood rating scales (Time 1)

Please think about how you felt while you were making the video. Please circle the number that best describes how you felt during the task.

0 10 20 30 40 50 60 70 80 90 100

I did not feel at all happy — I felt extremely happy

0 10 20 30 40 50 60 70 80 90 100

I did not feel at all angry — I felt extremely angry

0 10 20 30 40 50 60 70 80 90 100

I did not feel at all anxious — I felt extremely anxious

0 10 20 30 40 50 60 70 80 90 100

I did not feel at all depressed — I felt extremely depressed

0 10 20 30 40 50 60 70 80 90 100

I did not feel at all ashamed — I felt extremely ashamed

Appendix C vi)

Mood rating scales (Time 2, 3, and 4.)

Please think about how you feel now. Please circle the number that best describes how you feel now.

0 10 20 30 40 50 60 70 80 90 100

I do not feel at all happy — I feel extremely happy

0 10 20 30 40 50 60 70 80 90 100

I do not feel at all angry — I feel extremely angry

0 10 20 30 40 50 60 70 80 90 100

I do not feel at all anxious — I feel extremely anxious

0 10 20 30 40 50 60 70 80 90 100

I do not feel at all depressed — I feel extremely depressed

0 10 20 30 40 50 60 70 80 90 100

I do not feel at all ashamed — I feel extremely ashamed

Appendix C vii)

Perspective rating scale

It is possible to experience situations from different perspectives. For example, if you are in a situation looking out at it from behind your own eyes, this is sometimes called a field perspective.

On the other hand, if you are in a situation and you feel as if you are watching yourself from the outside, this is called an observer-perspective. In the observer-perspective, you might be aware of yourself and the situation around you, as if you were an observer watching yourself.

Please think about your experience while you were making the video and use this scale to rate the perspective that you were using during the task.

-3	-2	-1	0	+1	+2	+3

Entirely looking out from my own eyes

Entirely observing myself from an observer's point of view

Appendix C viii)

Measure of amount of time spent focussing on positive/negative aspects of performance in PEP

Thinking about your dating video experience

While you were thinking about your performance on the dating video how much of the time were you focussing on the negative aspects of your performance?

0% 10 20 30 40 50 60 70 80 90 100%

Appendix D

Confirmation of ethical approval

Rankin L.

From: Smith K.M.
Sent: 07 October 2004 14:37
To: 'mj602@soton.ac.uk'
Cc: Rankin L.
Subject: Ethics Application

Dear Michelle

Re: **The Effect of Positive or Negative Post Event Processing on Socially Anxious Individuals**

The above titled application was approved by the School of Psychology Ethics Committee on 6 October 2004.

Should you require any further information, please do not hesitate in contacting me. Please quote reference CLIN/03/58.

Apologies for the delay!

Yours sincerely

Kathryn
Secretary to the Ethics Committee

Appendix E

Participant information sheet and consent form

Attention, Task Performance and Memory

Consent Form for Research Participants

Information Sheet for Participants

We are Michelle James and Kiran Spence, Trainee Clinical Psychologists, at the University of Southampton. We are requesting your participation in a study examining the relationship between attention, task performance and memory.

If you agree to take part in the study, you will be asked to perform two tasks, answer some questions about your performance, and fill in some questionnaires.

In one of the tasks, you will try to put a complex jigsaw puzzle together as quickly as possible. In the other task you will make a short videotape that describes the sort of person you are and says a bit about your interests and hobbies. Both of the tasks will be videotaped and your performance on each task will be rated by expert assessors. However, in the case of the puzzle task, only your hands will be videotaped, as we are interested in the strategies that people use to solve the puzzle. Once you have done these two tasks we will be asking you a series of questions about them. You will be asked to reflect on your experience and answer some questions, some of your answers will be audio taped. You will then be asked to take some questionnaires home with you to fill in tomorrow. We would then like you to return them to us here when you will be provided with 6 course credits or £7.50.

Personal information will not be released to, or viewed by, anyone other than researchers involved in this project. Results of this study will not include your name or any other identifying characteristics.

Your participation is voluntary and you may withdraw your participation at any time. If you choose not to participate there will be no consequences to your grade or to your treatment as a student in the psychology (or any other) department.

A debriefing statement will be supplied at the end of the experiment

If you have any questions please contact us, Michelle James mj602@soton.ac.uk or Kiran Spence at ks602@soton.ac.uk

---

Statement of Consent

I ..... have read the above consent form
[participants name]

I understand that I may withdraw my consent and discontinue participation at any time without penalty or loss of benefit to myself. I understand that data collected as part of this research project will be treated confidentiality, and that published results of this research project will maintain my confidentiality. In signing this consent form, I am not waiving my legal claims, rights or remedies.

I give my consent to participate in the above study

Yes ☐

No ☐

[please tick]

Signature .....
[participants name]

Name .....
[participants name]

Date
.....

I understand that if I have questions about my rights as a participant in this research, or if I feel that I have been placed at risk, I can contact:

The Chair of the Ethics Committee
Department of Psychology
University of Southampton
Southampton
SO17 1BJ
Telephone: 02380 593 995

Appendix F

Debriefing information sheet

Attention, Task Performance and Memory - Debriefing Statement

Social anxiety is a common experience. In its more extreme form, social phobia, it can cause great distress and significantly interfere in a person's life. A recent model of social phobia (Clark & Wells, 1995) proposes that when people with a high level of social anxiety go into a social situation, they focus their attention on themselves. This shift of attention inwards, prevents a person who is socially anxious from noticing positive social feedback. Once attention is focussed inward, some people also generate a negative image of how they appear to others that is constructed from their own thoughts, feelings and internal sensations. This impression can occur in the form of a visual image that is seen from an external, or "observer" perspective. Clark and Wells argue that the constructed image maintains social anxiety because the person believes that other people are seeing the same image, whereas in reality the image is often extremely distorted.

Clark and Wells also suggest that when people leave a situation where they have experienced social anxiety they mull-over aspects of the encounter and their own behaviour. This process is referred to as, post-event processing. Clark and Wells' propose that because an individual was self-focused in the social situation, the thing they remember most about the encounter is an image of the self which is typically negative. Post-event processing is thought to maintain social anxiety as it involves an overemphasis on the perceived negative aspects of the situation and does not provide the individual with any new information that may challenge their ideas about how they performed in the social encounter (Rachman, Grüter -Andrew & Shafran, 2000).

The aim of this experiment was to examine elements of the Clark and Wells (1995) model of social phobia by testing individuals with different levels of social anxiety rather than individuals with social phobia. We were examining whether self-focussed attention in a social (the dating video) and a non-social (the jigsaw puzzle) task produced an increase in the use of the observer perspective in high and low socially anxious individuals. The Clark and Wells (1995) model would predict an increase in the use of the observer perspective in the social task but only for high socially anxious individuals. We were also interested in whether a high degree of self-focus would interfere with your evaluation of your performance in either task and that is why you were asked to rate how well you thought you had done. In the case of the dating video, we will also be asking independent raters to rate your performance using the same scale that you completed as there is evidence that socially anxious people underestimate their social performance compared to an independent observer (Stopa & Clark, 1993; Rapee & Lim, 1992).

We were also examining whether spending time thinking about either positive or negative aspects of the social task (dating video) produced a difference in ratings of performance and mood in high and low socially anxious individuals. The Clark and Wells (1995) model would predict that thinking about negative aspects of a social situation during post event processing increases anxiety and leads to negative ratings of performance in individuals with a high level of social anxiety.

Once again results of this study will not include your name or any other identifying characteristics. If you have any further questions please contact us Michelle James at mj602@soton.ac.uk or Kiran Spence at ks602@soton.ac.uk

Thank you for your participation in this research

If you have any questions about your rights as a participant in this research, or if you feel that you have been placed at risk, you may contact: The Chair of the Ethics Committee, Department of Psychology, University of Southampton, Southampton, SO17 1BJ, Telephone: 02380 593 995

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