

UNIVERSITY OF SOUTHAMPTON
FACULTY OF MEDICINE, HEALTH AND LIFE SCIENCES
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Cognitive Biases in Social Anxiety

by

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ABSTRACT
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Recent cognitive models of social phobia (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997) suggest several cognitive biases, which are considered to play a key role in the maintenance of the disorder. This thesis examined socially anxious individuals' biases in anticipatory processing, perspective-taking, self-focused attention, intensifying danger or threat, which may be construed as 'loomingness', and metacognitive knowledge or beliefs.

Experiment 1 examined the effects of anticipatory processing on a subsequent speech in high and low socially anxious individuals ($N = 40$). In anticipation, high socially anxious individuals were more anxious and experienced more negative and unhelpful self-images than low socially anxious individuals. They also tended to use the observer perspective more in an anticipated speech, while in an unanticipated speech, they may have been switching between observer and field perspectives. Low socially anxious individuals tended to use the field perspective in both speeches.

Experiment 2 explored, using a qualitative approach, the phenomenology of anticipatory processing in high socially anxious individuals ($N = 11$). Thematic analysis of coded interviews revealed seven broad *deductive themes*: (1) prior preparation; (2) catastrophic thoughts; (3) recollection of past similar social events; (4) impressions; (5) self-images; (6) avoidance of social situations; and (7) physical symptoms of anxiety; and three *inductive themes*: (1) bad dreams and nightmares; (2) biased estimates in intensifying threat; and (3) metacognitions.

Experiment's 3 and 4 used the same sample of volunteers ($n = 152$) to explore the relationship between looming vulnerability and metacognition, respectively, and social anxiety. In Experiment 3, volunteers completed the Looming Maladaptive Style Questionnaire-Two, which assessed social and physical looming. Results showed that social looming uniquely predicted fear of negative evaluation, social interaction anxiety, and public scrutiny fears, accounting for 7%, 4%, and 3% of the variance, respectively. However, social looming did not predict depression.

In Experiment 4, volunteers completed the Thought Control Questionnaire, the Metacognitions Questionnaire-30 (MCQ-30), and the Cognitive Self-Consciousness Scale-Expanded. Results showed that the MCQ-30 subscale negative beliefs about the uncontrollability and danger of thoughts uniquely predicted fear of negative evaluation and social interaction anxiety, accounting for 3% of the variance in each scale. However, the latter MCQ-30 subscale did not predict public scrutiny fears or depression.

Experiment 5 used two concepts developed in social psychology, that is, the spotlight effect and the illusion of transparency, to help explain the types of processes that might contribute to the construction of the self as a social object in social anxiety. Participants ($N = 60$) performed a memory task under either a high or a low social-evaluative condition. In the high social-evaluative condition, participants reported higher levels of the spotlight effect, compared to participants in the low social-evaluative condition. There were no differences between the two conditions in levels of the illusion of transparency. However, surprisingly, in the low social-evaluative condition, participants reported higher levels of the illusion of transparency than the spotlight effect, whereas in the high social-evaluative condition, they reported the opposite.

These findings provide some support for current cognitive models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997) and suggest the need for an understanding of both the content of cognition and the different kinds of dynamic, cognitive processing styles, namely, metacognitive and looming, that give the content of cognition its significance or salience.

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Abbreviations

1. APA: American Psychiatric Association.
2. ANOVA: analysis of variance.
3. BAI: Beck Anxiety Inventory.
4. BDI-II: Beck Depression Inventory-Two.
5. BFNE: Brief Fear of Negative Evaluation scale.
6. BFNES-II: Brief Fear of Negative Evaluation scale-Two.
7. CSCS-E: Cognitive Self-Consciousness Scale-Expanded.
8. DSM-III: Third Edition of the Diagnostic and Statistical Manual of Mental Disorders.
9. DSM-IV-TR: Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision.
10. FNE: Fear of Negative Evaluation scale.
11. GAD: generalized anxiety disorder.
12. HSE: high social-evaluative.
13. LMSQ-II: Looming Maladaptive Style Questionnaire-Two.
14. LSE: low social-evaluative.
15. MANOVA: multivariate analysis of variance.
16. MASQ: Mood and Anxiety Symptoms Questionnaire.
17. MCQ: Metacognitions Questionnaire.
18. MCQ-30 Metacognitions Questionnaire-30.
19. MMAPs: Measure of Mental Anticipatory Processes.
20. NTC: Negative Thoughts Checklist.
21. SATP-Q: Self-Awareness and Task Performance Questionnaire.
22. SD: standard deviation.
23. SIAS: Social Interaction Anxiety Scale.
24. SPR: themes of superstition, punishment, and responsibility.
25. S-REF: Self-Regulatory Executive Function.
26. SPS: Social Phobia Scale.
27. SSAS: Situational Self-Awareness Scale.
28. TCQ: Thought Control Questionnaire.

Chapter 1

Theoretical Models of Social Anxiety and Social Phobia

Overview

Social phobia is a prevalent and debilitating disorder that is typically characterized by early onset. The disorder has been noted and recorded throughout history, however, the definition of social phobia as we know it today dates back to 1966, when Marks and Gelder described patients with ‘social anxieties’ as having “phobias of social situations, expressed variably as shyness, fears of blushing in public...or of shaking when the centre of attention” (p. 218).

Whereas several recent cognitive models have provided detailed descriptions of maladaptive processing during and after social situations (e.g., Clark & Wells, 1995; Leary & Kowalski, 1995; Rapee & Heimberg, 1997), few have focused on anticipation. An exception is Clark and Wells’ model of social phobia, which has perhaps provided the most detailed theoretical understanding of the disorder and improved the success of its treatment. On this basis, I have selected Clark and Wells’ model as the key focus for my own research work.

In this review, I start with an examination of empirical evidence on the descriptive, demographic, and risk and protective factors in social phobia. Next, I outline and scrutinize theoretical perspectives on social anxiety and on social phobia.

Descriptive Features of Social Phobia

Diagnostic Threshold

Social phobia was first recognized as a separate entity in the Third Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III: American Psychiatric Association [APA], 1980). Currently, in DSM, Fourth Edition, Text Revision (DSM-IV-TR: APA, 2000) social phobia is defined as “a marked and persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or possible scrutiny by others. The individual fears that he or she will act in a way (or show anxiety symptoms) that will be humiliating or embarrassing” (p.416). However, this DSM-IV-TR definition has been criticized for not acknowledging the considerable degree of variance among socially phobic individuals in the number and type of situations they fear (Hofmann, Heinrichs, & Moscovitch, 2004). For example, Baker, Heinrichs, Kim, and Hofmann (2002) identified five situational subtypes of social phobia: assertiveness anxiety; ingestion anxiety; nonverbal performance anxiety; social interaction anxiety; and public performance anxiety. Thus, the nature of social phobia may be more varied than the current DSM-IV-TR categorical system suggests.

In contrast, Hofmann, Heinrichs, & Moscovitch (2004) proposed a new *dimensional* classification system, which they argue captures the varied nature of social phobia more adequately than the DSM-IV-TR categorical system. Hofmann et al. (2004) identified fearfulness, anxiety, shyness, self-consciousness, submissiveness, and anger as dimensions of social phobia. Hofmann and colleagues argue that a dimensional approach to classifying interpersonal characteristics of social phobia is more compatible with existing empirical literature, and less restrictive than a categorical system.

In sum, there is a significant degree of variance among individuals with social phobia in the number and type of situations they fear; variance that the DSM-IV-TR may not adequately reflect. There also appears to be a growing consensus among researchers (e.g., Clark & Wells, 1995; Hofmann & DiBartolo, 2001; Rapee & Spence, 2004; Vriends, Becker, Meyer, Michael, & Margraf, 2007) that a dimensional description of social phobia is more appropriate than a categorical description, for example, generalized versus specific social phobia, as the former appears to be more conceptually clear and empirically supported than the latter. For instance, Vriends et al.'s (2007) investigation of the existence of DSM-IV social phobia subtype models in a community sample of 1877 German women, aged 18-24 years, found that the number of feared social situations was distributed continuously without a precise delineation of subtypes, with a greater number of social fears associated with greater functional, social, and emotional disability. However, for clinical reasons, it might be useful to distinguish subtypes with operationalized criteria, and other variables, not considered by Vriends et al., might reveal valid subtypes of social phobia, such as social skill subtypes (Hofmann, Gerlach, Wender, & Roth, 1997).

Demographic Features of Social Phobia

Prevalence

Over the past 20 years, the prevalence of social phobia has been studied in several community studies throughout the world. The majority of these studies were based on DSM-III criteria, assessed with the Diagnostic Interview Schedule (DIS; Robins, Helzer, Croughan, & Ratcliff, 1981). In the Epidemiological Catchment Area Programme, lifetime prevalence of DSM-III social phobia was 2.8% (Regier, Narrow, & Rae, 1990). Similar DSM-III estimates were obtained in community surveys carried out in New Zealand (3.9%; Wells, Bushnell, Hornblow, Joyce, & Oakley-Browne, 1989), Zurich (3.2%; Angst & Dobler-Mikola, 1985), Munich (2.5%; Wittchen, Essau, Zerssen, Krieger, & Hecht, 1992), and Edmonton (1.7%; Bland, Orn, & Newman, 1988). These prevalence rates can be regarded as conservative estimates because the version of

the DIS used in these studies covered only a limited range of specific social-evaluative concerns (Walker & Stein, 1995).

Epidemiological studies based on DSM-III-R criteria, which includes more of a focus on social-evaluative concerns, suggest that social phobia might more prevalent than the above community studies suggest. For example, lifetime prevalence rates of 13.3% have been reported in the United States (Kessler et al., 1994), 14.4% in France (Weiller, Bisserbe, Boyer, Lepine, & Lecrubier, 1996), and 14.4% in Germany (Wittchen, Stein, & Kessler, 1999). A recent survey of 43 epidemiological studies from 1980 to the present, found a lifetime prevalence of social phobia in Western countries ranging from 7% to 13% (Furmark, 2002).

Whereas DSM-III-R criteria for social phobia were revised profoundly, only minor differences exist between DSM-III-R and DSM-IV-TR definitions (Fehm, Pelissolo, Furmark, & Wittchen, 2005). Lifetime prevalence in adult samples, based on DSM-IV-TR criteria, ranges from 3.9% in Belgium (Anseau, Reggers, Nickles, & Magerus, 1999), to 4.5% in Israel (Iancu et al., 2006), to 13.7% in Norway (Kringlen, Torgersen, & Cramer, 2001). Twelve-month prevalence ranges from 0.6% (Spain) to 7.9% (Norway). Fehm et al. (2005) found a European median lifetime prevalence of social phobia of 6.65% and a high 12-month prevalence of 2-3% when modern diagnostic criteria were applied. The latter difference between lifetime and 12-month risk suggest a substantial variability in the natural course of social phobia.

Risk and Protective Factors in Social Phobia

Internal Factors

Genetics. A growing body of evidence suggests that genetic factors play a modest, but significant role in the development of social phobia. Family studies have found a significantly elevated risk of social phobia in relatives of individuals with social phobia (Fyer, Mannuzza, Chapman, Liebowitz, & Klein, 1993; Stein et al., 1998). A number of methodologically sound twin studies with large sample sizes also highlight the relative contributions of genes and the environment to the risk of developing social phobia. Kendler, Neale, Kessler, Heath, and Eaves (1992) examined the genetic epidemiology of phobias in 2,163 female twins. Fifty-seven per cent of the variance was attributable to genetic (21%) and environmental factors (36%) specific to social phobia. A recent meta-analysis of twin studies found a heritability estimate of around 0.65 for social anxiety (Beatty, Heisel, Hall, Levine, & La France, 2002), although others report more modest estimates between 0.4-0.5 (e.g., Albano & Detweiler, 2001).

Environmental Factors

Familial factors. One consistent familial factor identified as a significant risk for developing social phobia is harmful parenting practices. For example, Bruch, Heimberg, Berger, and Collins (1989) compared socially phobic individuals' perceptions of their parents' child rearing practices with agoraphobic individuals. Individuals with social phobia judged their mothers as significantly more avoidant of social situations than did agoraphobics. They also reported that their parents kept them away more from social situations and placed less emphasis on family activities.

Investigation of more detailed parental practices has found that individuals with social phobia rate their parents as more overprotective and rejecting and more lacking in emotional warmth, compared to non-patient controls (Arrindell et al., 1989). Rapee and Melville (1997) found that socially phobic persons and their mothers reported low parental socialization and high parental control. Parents have also been observed to encourage social avoidance in their anxiety-disordered children (Barrett, Rapee, Dadds, & Ryan, 1996). Consequently, these overprotected children may be more prone to disengaging from social situations or avoiding them altogether. Taylor and Alden (2006) examined the association between generalized social phobia patients' retrospective reports of parental overprotection and their current interpersonal behaviour. Patients and controls completed a measure of parental overprotection and then participated in a social interaction with a stooge whose behaviour was either friendly or ambiguous. After the interaction, stooges rated patients' behaviour and their desire to interact with their partner again. Results showed that patients who reported greater overprotection in childhood were less likely to display pro-social behaviours across both conditions, compared to controls. They were also liked less by the friendly partners because they displayed fewer pro-social behaviours. These findings remained significant even after controlling for social anxiety and depression, and suggest that the relationship between parental control and social non-responsiveness may extend to adulthood.

In sum, a history of aversive parent-child interactions may exert a powerful influence on the early social learning experiences of children, such as not actively encouraging social interaction and promoting emotional bluntness. Parental methods of control, such as disciplining and physical punishment may also instil fear, while, parental criticism and shaming may reduce confidence. These features might create vulnerability towards developing adult social phobia; however, a causal role has yet to be determined. Indeed, only a handful of studies have explicitly examined parent-child interactions in social phobia; therefore, if causality is to be determined, then replication and extension of the aforementioned studies is required.

Rapee and Spence's (2004) Aetiological Model of Social Phobia

This model attempts to integrate empirical evidence pertaining to descriptive, demographic, and risk and protective factors implicated in the development of social phobia. The model views social anxiety as lying on a continuum of social-evaluative concern, with a diagnosis of social phobia lying at the upper end of the continuum. Rapee and Spence (2004) consider that social phobia has its beginnings in two genetic factors - general emotionality (negative affectivity and neuroticism) and low extraversion or socialability. Rapee and Spence also propose that this genetically mediated level acts like an individual's *set point*. That is, it represents an individual's level of social anxiety that is moderately stable and consistent. Numerous factors can potentially move the individual up or down from this set point, but movement, that is, a different level of social anxiety, will be increasingly difficult the further the individual deviates from his or her point.

The set point can also be modified (Rapee & Spence, 2004). This happens when environmental factors are strong enough to produce *movement*. The strength of environmental factors might be due to their impact (intensity of the factor), timing (happening at crucial stages of vulnerability, for example, during early adolescence), or chronicity (length of an individual's life over which the factor is influential). For instance, an individual may be born with a high genetic predisposition to develop social anxiety, but due to a supportive family and peer environment that fosters social interaction and independence, he or she moves to a consistently low level of social anxiety. Conversely, an individual might begin with a low genetic predisposition to develop social anxiety, but due to traumatic events, for example, persistent sexual abuse or school bullying, he or she could move significantly up the continuum; eventually developing social phobia.

Strength of Rapee and Spence's (2004) model lies in its comprehensive examination of a wide variety of information relevant to social phobia. However, Rapee and Spence's idea of a 'set point' is unclear. What exactly do they mean by an individual's level of social anxiety that is moderately stable or constant? Are they describing a level of social anxiety that is present in all situations or just in social or performance situations? Moreover, does this set point reflect a genetic influence on the expression of social anxiety, an actual expression of social anxiety symptomatology, or a combination of both? Future research could aim to address these questions.

In addition, the model highlights the *presence* of those factors associated with the development of social phobia, however, it is also important for aetiological models to consider the *absence* of factors; for example, the absence of parents. Would an individual born with a high genetic predisposition to develop social anxiety, who was brought up in a children's home from a

very young age, be particularly vulnerable to shifts in his or her set point? Other potential factors implicated in the development of social phobia include the importance of early childhood language impairment, low socioeconomic status, and birth order (Voci, Beitchman, Brownlie, & Wilson, 2006), cannabis use (Buckner, Mallott, Schmidt, & Taylor, 2006), and Internet interactions (Erwin, Turk, Heimberg, Fresco, & Hantula, 2003). For example, Voci et al. (2006) found that individuals who had language impairment at age 5, had 2.7 times the odds of having social phobia by age 19, compared to normal language controls. Thus, it is not just the presence of environmental factors that are important in determining the expression of social phobia, but also the absence of them or the degree to which they deviate from the norm.

The preceding sections covered descriptive, demographic, and risk and protective factors of social phobia. The review will now turn to the broad base of related literature that has emerged in terms of theoretical debate as to social anxiety and social phobia's underlying dynamics. The following section concentrates on those theories developed to explain social anxiety and social phobia.

Theoretical Models of Social Anxiety and Social Phobia

Social anxiety has been the focus of a number of theories developed from the perspective of social psychology or personality. These theories are referred to as social anxiety theories. They compare with theories developed from a more clinical perspective, namely, theories of social phobia. One distinction between theories of social anxiety and social phobia is that they developed from intellectual traditions that have different views of the self. Next, two interpersonal theories on social anxiety are reviewed in detail.

Theoretical Models of Social Anxiety

Interpersonal Theories

The relational self (Baldwin & Ferguson, 2001). Social anxiety necessarily occurs in the context of the self in relation to another individual or individuals (Vertue, 2003). At the core of social anxiety is the compelling expectation and fear of negative interpersonal evaluation (Baldwin & Ferguson, 2001). Baldwin and Ferguson's social-cognitive model of social anxiety emphasizes the importance of *relational schemas*, cognitive structures that represent regularities in past interactions with others. Relational schemas are postulated to consist of a self-schema signifying a particular view of the self (e.g., embarrassed self) and other-schema signifying a certain type of interaction partner (e.g., critical partner). Baldwin and Ferguson propose three basic elements of relational schemas that apply to social anxiety: self-schemas that include a self-

image as incompetent, boring, or unworthy and schemas of other people who are critical, disapproving, and rejecting.

Additionally, these relational schemas consist of interpersonal scripts that represent a typical pattern of interaction. Part of the interpersonal script involves expectations about the thoughts, feelings and goals, and likely behaviours of self and other. Baldwin and Ferguson (2001) frame these interpersonal scripts in terms of a collection of *if ... then* outcome expectancies (e.g., “If I get close to others, then I will be hurt”). Moreover, via over-learned patterns of negative interpersonal experiences, for example, aversive parenting styles, individuals with social phobia develop global relational schemas that guide them through their social world and shape their social perceptions, interpretations, and expectations. Baldwin and Ferguson also stress that a crucial factor determining the influence of relational schemas is the extent to which each schema is activated at a particular moment. The relational schemas of socially anxious individuals cause harm, not because they represent the only schemas available to them, but because they are the ones chronically available to them, that is, the schemas most easily activated in a variety of interpersonal contexts.

Research supports the idea that socially anxious individuals access relational schemas representing expectations of being socially embarrassed. Baldwin and Regehr (1998b) showed that, when primed to activate relational schemas representing either social acceptance or social rejection, participants primed with a rejecting relationship viewed the relationship in a negative fashion. This finding illustrates that biases are guided not solely by relational schemas available in memory, but also by relational schemas activated in a particular context. This begs the question as to whether chronic, global relational schemas can be overridden. In another priming study, Baldwin, Keelan, Fehr, Enns, & Koh-Rangarajoo (1996) found that, when primed to activate relational schemas representing secure, avoidant, or anxious-ambivalent relationships, participants primed to feel secure, avoidant, or anxious-ambivalent were most willing to meet a secure, avoidant, or anxious-ambivalent dating partner, respectively. Thus, activated relational schemas influence not only self and social-evaluative perceptions, but have behavioural and motivational implications.

Baldwin and Ferguson’s (2001) relational schema model is strengthened by its integration of a number of research findings. The model also represents a shift from understanding the ‘content’ of interpersonal components - the domain of cognitive-behavioural models - to the ‘process’ of mapping out the mechanisms by which interpersonal expectations operate and are maintained via the activation and application of relational schemas.

The strategic self (Leary, 1995). Interpersonal expectations are associated with a range of

interpersonal motives and affective reactions. According to the self-presentation theory of social anxiety (Leary; Leary, 2001a, 2001b), people experience social anxiety in social situations when they are motivated to make a particular impression on others, but doubt their ability to do so. Leary paints a picture of the self as a multidimensional entity consisting of both public and private aspects. By including the public self, Leary includes a representation of others' expectations within the self-schema. This information is important to the experience of social anxiety, because it is when the public self is on show that social anxiety is most likely to surface. Regarding the private self, Leary accounts for individual differences in the tendency to feel socially anxious.

Leary's (1995) self-presentation theory has received empirical support. Studies have showed that experimental manipulations that raise and lower participants' self-presentational concerns cause related changes in their experience of social anxiety (Leary, 1986), that people's ratings of their self-presentation effectiveness correlate negatively with how anxious they feel in both real and imagined conversations (Maddux, Norton, & Leary, 1988), and that people who are particularly concerned with how they are perceived by others score high on measures of trait social anxiety (Hope & Heimberg, 1988; Leary & Kowalski, 1993). Socially anxious individuals also benefit when released from the pressure to make a positive impression (Leary).

In a refinement and extension of the self-presentation theory of social anxiety (Leary, 2001b), Leary highlighted the fact that not all failures to make desired impressions result in social anxiety. To account for situations in which self-presentation concerns do and do not cause people to feel socially anxious, Leary forwarded the idea of *relational devaluation*. That is, the fear that others will not regard a relationship with the individual "to be as close, as valuable, or as important as the individual desires" (Leary, p. 325). The threat of relational devaluation is that, if others do not value the relationship with the individual, they are unlikely to be involved in the attainment of the individual's goals and may undermine or sabotage them.

Given Leary's (2001b) extension of the self-presentation theory, it appears that social anxiety happens when three conditions are met: (a) an individual desires to make a particular impression on others; but (b) doubts his or her ability to do so; and (c) believes that failure will result in relational devaluation, with the added failure to realize interpersonal goals.

The theories of Leary (1995; Leary, 2001a, 2001b) and Baldwin and Ferguson (2001) suggest that the information central to social anxiety is interpersonal; that is, the self is entwined with others. However, whereas Leary portrays the public self as containing internalized perceptions of other people's impressions of the self, Baldwin and Ferguson view relational schemas as memories of past relationships. These two theories also have in common the idea of

multiple selves, namely, that the self-schema consists of substructures containing different types of self-knowledge that can be triggered by different public and private sources. The self is therefore viewed as flexible, and the individual's sense of self alters as situational cues and private drives increase the salience of different dimensions of it.

Recently, Alden and Taylor (2004) conducted a comprehensive review of interpersonal processes in social anxiety. They forwarded the idea of the *self-perpetuating interpersonal cycle*, in which people who anticipate positive responses from others engage in social behaviours that tend to elicit positive responses, whereas people who anticipate negative responses adopt self-protective strategies that increase the likelihood of negative responses from others. Alden and Taylor also highlighted the role that dysfunctional relationships play in the lives of social phobic individuals. They cited evidence suggesting that individuals with social phobia have fewer friends, date less and have fewer sexual relationships, and are more likely to be single (e.g., Hart, Turk, Heimberg, & Liebowitz, 1999; Sanderson, DiNardo, Rapee, & Barlow, 1990).

Concluding, Alden and Taylor (2004) suggested that individuals may become socially anxious at various life stages, but once initiated, social anxiety appears to be maintained by a self-perpetuating interpersonal cycle of events. I turn now to the second domain, social phobia, which has been explicitly driven by the search for clinical applications.

Theoretical Models of Social Phobia

Other researchers and practitioners have advocated a cognitive approach to social anxiety and social phobia (e.g., Beck, Emery, & Greenberg, 1985; Hartman, 1983). Current cognitive theories of social phobia incorporate factors such as cognitive schemas, selective attention, and retrieval of information, and distorted processing of the self before, during, and after social situations. Two highly influential contemporary cognitive theories of social phobia are those developed by Clark and Wells (1995; also see Clark, 2001 and Clark & McManus, 2002) and Rapee and Heimberg (1997; Turk, Lerner, Heimberg, & Rapee, 2001). These two theories were developed to explain why social phobia is maintained despite repeated exposure to social situations. In these two theories, cognitive biases are the core features that maintain social phobia.

Clark and Wells (1995) Cognitive Model of Social Phobia

This model draws heavily on Beck, Emery, and Greenberg's (1985) cognitive model of anxiety, where situations are appraised as threatening and coping resources are underestimated, resulting in high levels of anxiety. Clark and Wells' (1995) model proposes that, due to early learning experiences, socially phobic individuals develop a number of assumptions about

themselves and their social environment. The assumptions can be divided into three categories: Excessively high standards for social performance (e.g., ‘my speech must be fluent at all times’), conditional beliefs about the consequences of acting in a particular way (e.g., ‘if I stammer, people will think that I am stupid and weak’), and unconditional negative beliefs about the self (e.g., ‘I’m unintelligent,’ ‘I’m different’). Such assumptions result in individuals fearing negative evaluation from others when they enter social situations. Once this appraisal process begins, social anxiety is experienced, with a number of maintenance cycles that prevent disconfirmation of the individual’s negative appraisals and beliefs (see Figure 1 below).

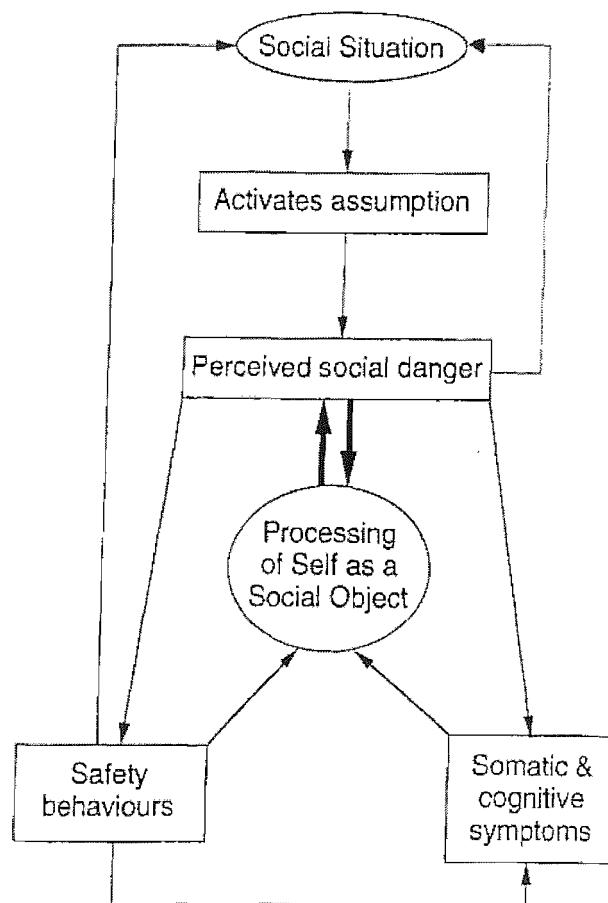


Figure 1. A model of the processes that happen when a socially phobic individual enters a feared social situation. *Note.* From *Social phobia: Diagnosis, assessment, and treatment*, (p. 72), by R. G. Heimberg, M. R. Liebowitz, D. A. Hope, & F. R. Schneier, 1995, New York: Guilford Press. Copyright 1995 by Guilford Press. Reprinted with permission.

Clark and Wells' (1995) model suggests five key maintenance cycles that are responsible

for maintaining anxiety in social phobia: (1) Reduced processing of external social cues; (2) somatic and cognitive symptoms; (3) safety behaviours; (4) self-focused attention, including the observer perspective; and (5) anticipatory and post-event processing. Each one of these cycles is described below.

The model proposes that socially phobic individuals show reduced processing of external social cues when anxious in social situations. This is due to their attention being predominantly self-focused, instead of task-focused. Moreover, task-focused attention tends to be biased in a negative direction. For example, individuals are more likely to notice responses from others that they interpret as signs of rejection or disapproval.

In addition, Clark and Wells (1995) highlight the importance of somatic and cognitive symptoms in social phobia. In particular, socially phobic individuals are worried that the somatic and cognitive symptoms of anxiety, for example, stammering or blushing, will be noticed by others and interpreted as signs of failing to perform well in social situations. In an attempt to avoid social failures, they become hypervigilant for such symptoms, so they can prevent or minimize them from occurring; however, this hypervigilance tends to increase the subjective intensity of the somatic and cognitive symptoms.

Another key factor is the shifting of socially phobic individuals' attention onto detailed monitoring of themselves, that is, self-focused attention, because of fearing negative social evaluation by others. They then use internal information made accessible by self-monitoring to work out how well they are appearing to others. Clark (2001) summarizes this process as "processing of the self as a social object" (p. 407).

Three types of internal information are used by socially phobic individuals to generate a negative self-impression. One, feeling anxious is associated with looking anxious. For instance, individuals who feel shaky might think that they look as if they are shaking uncontrollably to others. Thus, how they think others perceive them is often distorted or exaggerated. Two, they might experience spontaneously occurring images in which they see themselves as if viewed from an external *observer's perspective*. That is, from outside of the self, looking in at the self, or from the same perspective as an observer. Unfortunately, what the individual sees in the image is not what the observer would see, but rather his or her own fears visualized (Clark, 2001). The alternative to the observer perspective is the field perspective (observing the details of the world through your own eyes). Three, while some people see actual images of themselves in social situations, others have an impression or sense of how they are coming across. This is described by Clark as a "felt sense" (p. 408).

Safety behaviours also play a key role in maintaining social phobia (Clark & Wells

1995). Clark (2001) suggests that socially phobic individuals engage in a number of safety-seeking behaviours in order to reduce or prevent feared catastrophes from happening. Rapee and Heimberg (1997) refer to these as “subtle behaviours” (p. 750). The difficulty with these safety behaviours is that they prevent people from experiencing the unambiguous disconfirmation of their unrealistic fears or beliefs. Instead, the non-occurrence of the feared outcome is attributed to the safety behaviour. Clark describes several features of safety behaviours used by socially phobic patients: safety behaviours can be internal mental processes. For example, a socially phobic individual might mentally rehearse what he or she is going to say to an individual before the meeting and then attribute a successful social interaction to this rehearsal. They can also be specific. For instance, regarding a fear of stammering, a socially phobic individual’s feared outcome might be ‘I will choke up,’ and the associated safety behaviour might be drinking lots of water to keep his or her throat clear. The individual might also think ‘If I do stammer, people will notice me,’ and the safety behaviour could be saying as little as possible in order to avoid stammering. Safety behaviours can also manifest some of the symptoms that socially phobic individuals fear. During a conversation, for example, an individual might try to avoid stammering by substituting other words that are easier to articulate; however, this strategy takes up attentional resources, thus, making it harder for him or her to attend to the conversation. Thus, for the individual, who wishes to be seen as socialable and interesting, he or she may appear to others as uninterested, distant, or unsocialable; because the substitution process interferes with the normal flow of cognitive processing that allows people to engage in a fluid conversation.

Lastly, Clark and Wells (1995) suggest the kinds of processing that are characteristic of social phobia before and after social situations. Typically, socially phobic individuals experience significant anxiety when anticipating what they think might happen during a social situation. When they begin to think about the situation, they become anxious and their thoughts tend to be dominated by negative images of themselves during the situation, expectations of performing poorly, and memories of past social failures. Thinking in this manner may lead the phobic to avoid the situation altogether, or if they do enter the situation, it is endured with great distress.

After a social situation, socially phobic individuals may carry out a ‘post-mortem’, which usually involves reviewing in detail what went wrong. It is not uncommon for them to ‘beat themselves up’ over the embarrassments they experienced during the situation. Another aspect of the post-mortems is the retrieval of other instances of past social failures. The latest perceived ‘social failure’ is then added to the list of previous failures, with the effect that, an interaction, which may have appeared neutral from the audience’s perspective, will have reinforced the individual’s beliefs in his or her social ineptitude.

Rapee and Heimberg's (1997) Cognitive Model of Social Phobia

This model suggests that socially phobic individuals assume that they are going to be negatively evaluated by other people. In addition, they are concerned with being positively appraised by others. Within this framework, several processes can occur that produce and maintain social anxiety (see Figure 2 below).

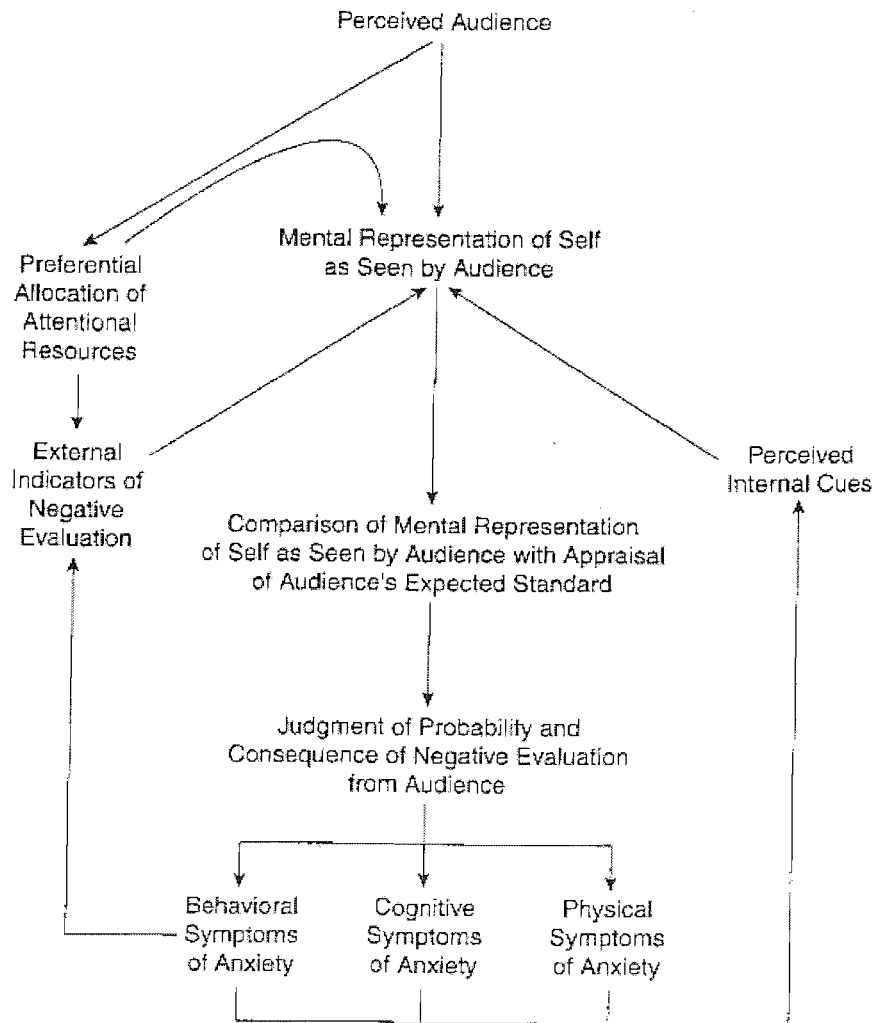


Figure 2. A model of the generation and maintenance of anxiety in social/evaluative situations.

Note. From "A Cognitive-Behavioural Model of Anxiety in Social Phobia," by R. M. Rapee & R. G. Heimberg, 1997, *Behaviour Research and Therapy*, 35, p. 743. Copyright 1997 by Elsevier Science Ltd. Reprinted with permission.

According to Rapee and Heimberg (1997), the threat that socially phobic individuals perceive varies from one situation to the next. For some individuals, the feared audience may be

social gatherings such as weddings and barbecues, whereas, for others, it may be giving a presentation in front of work colleagues or sitting on a bus. The common feature behind all these situations is the presence of an actual or a 'perceived' audience. Features of the audience such as attractiveness and status may also influence the level of anxiety experienced.

Furthermore, when socially phobic individuals anticipate, encounter, or ruminate about social situations, they form a mental representation of how their appearance and behaviour are seen by an audience. This 'mental self' is similar to Clark and Wells' (1995) observer perspective concept, in that both involve a representation of self as seen by an audience. This mental representation might be distorted in a number of ways and is constructed using internal (e.g., physical symptoms) and external sources of information (e.g., audience feedback). Mental images of past social experiences, feedback from others about one's physical appearance such as posture and clothes and behaviour, for instance, stammering, come together into an ongoing mental and negative representation of self that the individual believes is viewed by others. This mental self is also malleable, that is, constantly modifying itself via exaggerated internal feedback (e.g., 'my face feels hot, so it must be bright red') and perceived external feedback from others (e.g., 'that person's expression means I must look anxious').

The models of Clark and Wells (1995) and Rapee and Heimberg (1997) share a number of similarities. Both models argue that socially phobic individuals preferentially allocate attentional resources to threatening stimuli that relate specifically to concerns about negative social evaluation. Clark and Wells state that, when the danger is more imagined than real, anxiety responses tend to be inappropriate, and instead of protecting against danger, they often become further sources of danger; thus, adding to a number of vicious cycles that maintain social anxiety. Similarly, Rapee and Heimberg propose that socially phobic individuals are frequently trapped in the equivalent of a "multi-task paradigm" (p. 746), in which he or she must closely check for possible threat, whilst simultaneously monitoring the possible threatening aspects of his or her supposed external appearance or behaviour, as well allocating some attention on the task at hand. Consequently, the socially phobic individual's performance on tasks that need extensive processing may be poor, particularly in high social-evaluative situations (e.g., giving a speech).

In addition, both models agree that the 'mental self' is constructed from multiple inputs. That is, mental-representations draw on images stored in long term memory that are modified on-line in response to internal feedback, such as data about posture and external feedback from others, for instance, verbal and nonverbal signals from others. Mental representations will also be in a constant state of flux, depending on the on-line input. Clark (2001) suggests three types of input: information derived from anxiety symptoms, for example, feeling anxious is associated

with looking anxious, spontaneously occurring observer perspective images, and more diffuse types of felt sense.

Although similar in thinking, some differences between the two models can be noted. Rapee and Heimberg's (1997) model focuses largely on anxiety experienced by an individual during social interaction, whereas, Clark and Wells's (1995) model extends this experience of anxiety to before and after social interaction. Rapee and Heimberg also consider the role of aetiology on the mental representation of self, for instance, genetics, modelling, and dysfunctional parenting styles, while, Clark and Wells only say that, "As a consequence of previous experience interacting with innate behavioural predispositions..." (p. 69). Moreover, the models make different predictions regarding the share of attention to checking for signs of external social threat. Rapee and Heimberg predict that pre-attentive and attentional biases for external social threat play a major role in the maintenance of social phobia while, Clark and Wells expect reduced allocation of attention and induced avoidance of external social cues to play a key role in sustaining socially phobic individuals' social-evaluative concerns. Lastly, Clark and Wells' model is especially concerned with the role of negative assumptions in social phobia, while, Rapee and Heimberg's model does not appear to state the need for activation of assumptions.

Chapter 2

Cognitive Biases in Social Phobia and Social Anxiety: An Empirical Review

Overview

Chapter 1 provided a detailed review of the different theoretical approaches to the understanding of social anxiety and social phobia. Modern knowledge of social phobia has been significantly improved by several cognitive-behavioural models that detail a variety of cognitive-behavioural biases considered to play a key role in the development and maintenance of the disorder (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997). The aim of this chapter is to provide a critical review and evaluation of the many studies relevant to several of Clark and Wells' and Rapee and Heimberg's key hypotheses, considered to characterize social phobia and social anxiety. In particular, I focus on those studies relevant to Clark and Wells' proposed maintaining factors of self-focused attention and anticipatory processing. There is significant overlap between the two models and much of the research supporting Clark and Wells' model supports Rapee and Heimberg's model.

Cognitive Biases

The models of Clark and Wells (1995) and Rapee and Heimberg (1997) are supported by a growing body of empirical evidence. However, there is also evidence that is not consistent with the two models. Both supporting and contradicting evidence will be reviewed. Several of the key hypotheses have received empirical support. Both models highlight the influence that cognitive biases have on the outcome of social situations. Clark and Wells argue that socially phobic individuals believe that "(1) they are in danger of behaving in an inept and unacceptable fashion, and (2) that such behaviour will have disastrous consequences in terms of loss of status, loss of worth, and rejection" (pp. 69-70). Similarly, Rapee and Heimberg suggest that judgmental biases about the possible consequences of negative evaluation by others are a key feature of social phobia.

Supporting evidence for the idea that exaggerated social cost, that is, exaggerating the consequences of a negative social interaction is a key feature of social phobia comes from a study by Foa, Franklin, Perry, and Herbert (1996). Foa et al. (1996) reported that patients with generalized social phobia showed specific judgmental biases, that is, rated negative social events as more probable and costly, compared to non-anxious controls. Similar results were reported by Gilboa-Schechtman, Franklin, and Foa (2000). Uren, Szabó, and Lovibond (2004) reported that patients with social phobia made significantly higher probability and cost estimates for social events, but not for physical events, compared to the non-anxious group. In addition, patients'

perceived cost of negative social events was the strongest unique predictor of fear of negative evaluation symptoms. However, it is noteworthy that both patients with social phobia and patients with panic disorder overestimated the probability and cost of social events, compared to non-anxious people. These data indicate that higher probability and cost estimates for social events are not restricted to social phobia, but may spread across the anxiety disorder spectrum. Nevertheless, collectively, the above findings suggest that social cost may be an important cause of anxiety in social phobia.

Memory Biases

Both models (Clark & Wells, 1995; Rapee & Heimberg, 1997) propose that individuals with social phobia exhibit a memory bias for threatening social information; however, research is mixed. Several studies have failed to find a memory bias for threatening information in individuals with social phobia (Becker, Roth, Anderich, & Margraf, 1999; Cloitre et al., 1995; Wenzel & Holt, 2002). Rapee, McCallum, Melville, Ravenscroft, and Rodney (1994) found no differences in incidental recall and recognition memory for social threat, physical threat, and positive and negative words between patients with social phobia and non-clinical controls. However, other research has provided results that are more positive. Breck and Smith (1983) required low and high socially anxious individuals to rate personality words on self-referential, semantic, or structural characteristics. The social threat group was led to believe that they would have to speak with a stranger later on in the experiment. In anticipation of a speech, high socially anxious individuals recalled fewer positive and more negative self-descriptions than low socially anxious individuals did. Therefore, high socially anxious individuals demonstrated a negative and anticipatory self-referential memory bias.

Researchers have also looked at autobiographical memories (i.e., memory biases for social events experienced in daily life) in social phobia. Field and Morgan (2004) examined whether positive or negative post-event processing affects the retrieval of autobiographical memories in social anxiety. The type of post-event processing did not impact on retrieval, but after negative post-event processing, socially anxious individuals recalled more 'calmer' memories, even though they were also rated as negative, shameful, and anxious. Wenzel and Cochran (2006) investigated the retrieval of autobiographical memories in response to social phobia-related, panic-related, and control automatic thoughts in participants with social phobia, panic disorder, and controls. Panic participants retrieved memories cued with panic thoughts more quickly than socially phobic participants and controls, and socially phobic participants retrieved memories cued with social phobia thoughts more quickly than controls. D'Argembeau,

Van der Linden, d'Acremont, and Mayers (2006) looked at the subjective experience associated with memories for social and non-social events in socially phobic people and non-anxious controls. Socially phobic individuals' memories for both positive and negative social events contained fewer sensorial information and more self-referential information than non-anxious controls' memories. They also remembered more self-than-other-referential information for social events and remembered those events more from an observer perspective than the controls. The two groups did not differ in their recall of non-social events. Finally, Stopa and Jenkins (in press) examined whether holding a positive or negative image in mind during a speech would affect the retrieval of autobiographical memories to positive, negative, or neutral word cues using the Autobiographical Memory Task (Williams & Broadbent, 1986). Results showed that holding a negative image in mind during a speech had an inhibitory effect on the retrieval of autobiographical memories cued by positive words after the speech; indicating that socially anxious participants may have a tendency to retrieving negative autobiographical information. In the positive image condition, memories retrieved in response to negative words took longer to retrieve than neutral words, but participants did not take significantly longer than positive words.

Overall, the above research suggests that autobiographical/memory biases in social phobia are most likely to be present only under certain conditions, such as anticipating or during social events, and/or whether or not information is encoded self-referentially, particularly in relation to the public/observer self. Additionally, the majority of research cited above used analogue populations, so caution needs to be exercised when generalizing findings to patients with social phobia. Hence, it is important to include clinical groups in any future investigations. Moreover, it is not clear if 'anticipated' memory biases are unique to social phobia, or whether they exist in other anxiety disorders. It is also not clear if anticipatory memory biases are partially determined by the social context, for instance, performance related versus non-performance related, or social phobia subtype (generalized vs. specific). Additional research is needed to clarify these issues.

Reduced Processing of External Social Cues

Clark and Wells' (1995) model of social phobia suggests that a memory bias for threatening social information results in the reduced processing of external social cues. Mansell, Clark, Ehlers, and Chen (1999) used a modified dot-probe task to investigate attention to faces. High and low socially anxious individuals were briefly presented pairs of pictures, consisting of a face (positive, negative, or neutral) and a household object, under conditions of social-evaluative threat (giving a speech) or no threat. Mansell et al. (1999) found that high socially anxious

individuals showed an attentional bias away from both positive and negative faces, compared to low socially anxious individuals, but only when anticipating giving a speech. Garner, Mogg, and Bradley (2006) examined attentional biases in social anxiety under both no-stress and social-evaluative stress conditions, by monitoring eye-movements to pictures of faces and objects in high and low socially anxious individuals. Garner et al. (2006) found that, under no-stress conditions, high socially anxious participants directed their gaze more frequently at faces, rather than objects, compared with low socially anxious participants. By comparison, under social-evaluative stress conditions (giving a speech), this bias was significantly reduced in high, compared with low socially anxious participants. High socially anxious participants also fixated on neutral faces for less time than low socially anxious participants did. These findings provide support for Clark and Wells' proposal that social anxiety is associated with the reduced processing of external social cues.

Several memory studies also provide findings consistent with the above hypothesis. Hope, Heimberg, and Klein (1990) found that socially anxious individuals recalled less information (e.g., interests and appearance) about a male conversation partner than their non-anxious counterparts did. Similarly, Kimble and Zeher (1982) showed that socially anxious individuals recalled less information about the person they met, compared to low socially anxious individuals. However, Stopa and Clark (1993) found no differences in memory for conversation content and visual and auditory aspects of the environment among individuals with social phobia, another anxiety disorder, and no disorder. Although these findings are interesting, they are not conclusive, and more investigation is needed to determine whether social anxiety disrupts memory for information about the social environment.

Cognitive and Physical Symptoms

Clark and Wells (1995) and Rapee and Heimberg (1997) argue that physical and cognitive symptoms play a key role in the maintenance of social phobia. That is, patients worry about the physical and cognitive symptoms of anxiety that they think others might notice, for example, sweating and mental blanks, and take them as signs of imminent or real failure to meet their preferred standards of social performance. They also use somatic sensations to form negative impressions of how they appear to others. Mellings and Alden (2000) found that high socially anxious individuals overestimated the visibility of several anxiety related behaviours, compared to low socially anxious individuals and to the judgments of an independent assessor. Stopa and Clark (1993) found that individuals with social phobia reported more negative self-evaluative thoughts (e.g., "I'm boring") than anxious or non-patient controls, but did not describe

more negative thoughts that openly stated evaluation by the conversational partner (e.g., “she thinks I’m boring”). This suggests that socially phobic participants were self-focused on these negative thoughts, which is likely to interfere with the task in hand. Similarly, Mansell and Clark (1999) found that high socially anxious individuals’ somatic sensations significantly correlated with self-ratings of anxious appearance and global negative behaviours (e.g., appearing uncomfortable). In addition, the more somatic sensations high socially anxious individuals were aware of, the more they exaggerated how nervous they looked. Clark and Wells also argue that socially anxious individuals use their own anxious feelings to exaggerate how they appear to others.

Other researchers have examined how observable attributes such as physical attractiveness can influence socially phobic individuals’ self-concept. Rapee and Abbott (2006) argued that a low perception of physical attractiveness has a negative effect on socially phobic patients’ self-concept. Patients and non-clinical controls performed a speech and completed a number of measures of self-attribution, including speech performance and physical attractiveness. Independent observers also rated participants’ self-attributes. Results showed that socially phobic individuals rated their attractiveness more poorly than controls. These ratings also appeared to be accurate, as they did not differ from independent observers’ ratings. Furthermore, patients underestimated their performance relative to the observer and rated their appearance (e.g., “I look attractive”) and performance related (e.g., “I am a good speaker”) attributes more negatively than controls. These results concur with Clark and Wells’ (1995) and Rapee and Heimberg’s (1997) proposals that social phobia is characterized by distorted and negative biases in the perception of self-attributes and hence in the perceived likelihood of negative evaluation. Nevertheless, Rapee and Abbott’s study lacked a non-social phobia comparison group. Therefore, poor perceptions of self-attributes may be common to any form of anxiety disorder or general psychopathology, in which case their theoretical relevance to social phobia is limited.

Safety Behaviours

Both models (Clark & Wells, 1995; Rapee & Heimberg, 1997) propose that during social situations, socially anxious individuals engage in a variety of safety behaviours, aimed at avoiding negative evaluation by others. These behaviours may include saying little, avoiding eye contact, standing on the outside of a group, or minimizing participation in a conversation. Unfortunately, these safety behaviours can have the effect of making individuals with social phobia appear less appealing to others. For example, Alden and Wallace (1995) found that conversational partners in first meeting situations liked socially phobic individuals less than

controls. In a single case series of eight socially phobic individuals, Wells et al. (1995) established that one session of exposure therapy with decreased safety behaviours was significantly more effective, as evidenced by a reduction in anxiety, than exposure with no change in safety behaviours and an extinction rationale. Morgan and Raffle (1999) reported that patients in a CBT group treatment for social phobia benefited significantly more when instructed to drop safety behaviours in addition to the standard exposure. These results support Clark and Wells' suggestion that anxiety and negative beliefs are partly maintained by engaging in safety behaviours.

However, there were some limitations to Wells et al.'s (1995) study. Although the study demonstrated the effect of decreased safety behaviours, Wells et al. were unable to identify its mechanism. Moreover, no manipulation check was used, in order to determine patients' actual use of safety behaviours during the intervention. Furthermore, the decreased safety behaviours exposure condition and exposure only condition were designed as a within subject's variable; thus, possible carry over effects from one condition to the other cannot be ruled out.

Kim (2005) sought to re-confirm the effects of safety behaviours on negative thoughts and social phobia using a between subjects design. Forty-five socially phobic individuals were randomly assigned to one of three exposure groups: exposure with decreased safety behaviours under cognitive rationale (i.e., disconfirmation of catastrophic thoughts), exposure with decreased safety behaviours under extinction rationale (i.e., no disconfirmation of catastrophic thoughts), and exposure with no change in safety behaviour. Kim's aim was to see whether disconfirmation of catastrophic thoughts is central in making exposure with decreased safety behaviours successful. Exposure with decreased safety behaviours under cognitive rationale produced a significant decrease in belief ratings and anxiety for feared outcomes, compared to exposure with decreased safety behaviours under extinction rationale and exposure with no change in safety behaviours. Kim identified the cognitive process of 'disconfirmation of negative automatic thoughts' as the crucial process in determining the effectiveness of decreased safety behaviours; supporting Clark and Wells' (1995) proposal that safety behaviours maintain social anxiety by preventing disconfirmation of negative thoughts.

Nevertheless, Kim's (2005) findings should be interpreted with caution. First, from inspecting the instructions and explanations pertaining to the cognitive, extinction and exposure only rationales, it could be argued that all three rationales disconfirmed participants' negative beliefs, albeit, to varying degrees. Indeed, the decreased safety behaviours group with cognitive rationale rated the experience of being exposed as more effective in overcoming fears than their exposure only counterpart; however, the decreased safety behaviours group with extinction

rationale did not significantly differ from the other two groups in their rating of the effectiveness of the exposure. Second, the three groups did not differ in their ratings of the credibility of the exposure rationale; that is, how helpful they thought actually giving the presentation would be in overcoming their fears. Therefore, it is unclear whether decreasing safety behaviours alone or decreasing safety behaviours with disconfirmation (cognitive vs. extinction) accounted for the effect of safety behaviours. This problem could be addressed by having two conditions: decreased safety behaviour with cognitive rationale and exposure only, but without any explanation or instruction; thus, minimizing the potential for rationale bias.

Voncken, Alden, and Bögels (2006) investigated (1) how socially anxious people themselves view safety behaviours in social interactions, (2) the social consequences of the opposite behaviour, that is, acknowledging one's anxiety, and (3) 'double standards' in social phobia (i.e., having more strict rules for oneself than for others). Participants were shown vignettes in which a target person experiences social anxiety-related symptoms (e.g., sweating, shaking) and either uses safety behaviours to conceal the anxiety, acknowledges the anxiety, or neither hides or acknowledges the anxiety (ongoing behaviour). Participants then predicted likely social outcomes in the situation concerning themselves as target individuals or others. Results showed that, across self-and-other-ratings, participants believed that hiding anxiety, by use of overt safety behaviours, would have a more negative social outcome than acknowledging anxiety or ongoing behaviour. Thus, it appears that, safety behaviour use has a rebound effect, in that, it induces the negative interpersonal reactions the individual is trying to avoid (Alden & Taylor, 2004; Clark, 2001; Clark & Wells, 1995). In addition, higher levels of social anxiety, measured by the Social Interaction and Anxiety Scale (Mattick & Clarke, 1998), were associated with more negative ratings across all three types of safety behaviour and both target people (i.e., self, other), and larger double standards; the more socially anxious the subjects, the more negative their predicted self-outcomes, compared to their predictions for others. Socially anxious people therefore expected others to be more critical toward them than they would be toward other people. They also believed that others would negatively judge them, if they revealed that they felt anxious. In sum, Voncken et al.'s (2006) results suggest that safety behaviours contribute to the self-perpetuating and negative interpersonal cycle's characteristic of social phobia (Alden & Taylor, 2004; Clark, 2001; Clark & Wells, 1995).

McManus, Sacadura, and Clark's (in press) first semi-structured interview assessed the use of safety behaviours in high and low socially anxious participants. High socially anxious participants reported a greater number of different safety behaviours, more frequent use of, and in a greater number of social-evaluative situations than low socially anxious participants. In

addition, both high and low social anxiety groups believed their safety behaviours to be helpful in terms of reducing anticipatory and 'in situ' anxiety, the likelihood of their negative predictions happening and other people seeing those predictions happening, improving their performance, and making others view them in a more positive light. Using the same participants, a second study by McManus et al. (in press) experimentally manipulated the use of safety behaviours and self-focus in two five-minute conversations (i.e., one 'with' and one 'without' safety behaviours and self-focus) to assess their impact on perceived and actual performance, levels of anxiety, and belief in negative predictions. As expected, the high social anxiety group reported greater belief in their negative predictions, greater levels of anxiety, and that they appeared more anxious during both conversations, compared to the low social anxiety group. In addition, for both groups, the use of safety behaviours and self-focus increased their levels of anxiety, belief in negative predictions and anxious appearance, and perceived overall performance as poorer. A conversational partner also rated participants as less likeable, more anxious and the conversation as less interesting when they were engaging in safety behaviours and self-focus.

Overall, there is a small, but growing body of evidence to support the hypothesis that socially phobic individuals use safety behaviours to avoid or minimize the physical and/or cognitive symptoms of anxiety (Clark & Wells, 1995). However, the current methodology for investigating safety behaviour in social anxiety is limited, for instance, by its reliance on retrospective ratings (e.g., Voncken, Alden, and Bögels, 2006). The challenge is therefore to develop methods of measuring safety behaviour *in vivo*, for example, by covert videoing of individuals' overt safety behaviour during social interaction. Future work could also explore other potential factors that might contribute to safety behaviour use. Spurr and Stopa (2003), for instance, found that high and low socially anxious participants reported more safety behaviours when taking an observer, compared to a field perspective, during a speech. According to Clark and Wells, the observer perspective represents distorted, negative information about the self that maintains anxiety in social situations, which may in part explain socially phobic individuals' increased safety behaviour use, irrespective of levels of anxiety. Lastly, in a recent article discussing different aspects of safety behaviour, Thwaites and Freeston (2005) highlighted the difficulty in distinguishing between helpful coping strategies (e.g., calming tactics) and counter-productive safety behaviours (e.g., over preparation). They suggest that typology can only be a guide to categorizing between the two types of responses and that they can be only fully distinguished by taking into account the intention of the individual and their perceived function to that individual in the specific context (Thwaites & Freeston). Next, I focus on empirical evidence for the role of self-focused attention as a maintenance factor in social anxiety and social phobia.

Self-Focused Attention

Ingram (1990) defined self-focused attention as, “An awareness of self-referent, internally generated information” (p. 156), for example, recollections of previous events, attitudes, or feelings that influence the individual’s present self-concept. Ingram also suggested that self-focus only becomes limiting when it is inflexible, prolonged, and extreme, so that it removes attention from the immediate environment.

A substantial body of evidence highlights the importance of self-focused attention in social anxiety and social phobia. Research shows that social-evaluative situations increase self-focus in socially anxious and socially phobic individuals (Buss, 1980; Perowne & Mansell, 2002), heighten awareness of negative emotional states (Buss), enhance negative biases in self and other judgments (Alden & Wallace, 1995; Mellings & Alden, 2000; Stopa & Clark, 1993), and increase anxiety (Woody, 1996; Woody & Rodriguez, 2002).

Mansell, Clark, and Ehlers (2003) simultaneously measured internal and external self-focused attention using a probe detection paradigm. High and low socially anxious participants were instructed to detect two probes. The internal probe was a pulse to the finger, which participants were led to believe represented significant changes in their physiology. The external probe was superimposed on pictures of faces (happy, neutral, and angry) or household objects that were presented on a visual display unit. Mansell et al. (2003) predicted that, under conditions of social-evaluative threat (anticipating a speech), high socially anxious individuals would show an internal attentional bias, as indicated by faster reaction times to a probe occurring on their body than to the external stimulus. As predicted, individuals directed their attention towards internal information and away from external information when anticipating a speech. This result is consistent with Clark and Wells’s (1995) suggestion that high socially anxious individuals exhibit an attentional bias for internal, relative to external cues.

Using a different dot probe paradigm, Pineles and Mineka (2005) assessed whether attentional bias for cues of either internal (i.e., visual depictions of heart rate information and segments of a perceptually similar sound wave) or external (i.e., exposure to threatening, happy, or neutral faces) sources of possible threat could be shown in high social anxiety. Pineles and Mineka predicted that (1) high, but not low socially anxious participants would demonstrate a bias toward heart rate, relative to the sound wave, information, (2) a bias toward threat faces, relative to both happy and neutral faces, and (3) that these biases would be stronger under social-evaluative conditions (anticipating a speech). The results indicated that high, but not low, socially anxious individuals showed a bias for heart rate, relative to a sound wave, information; thus, supporting Clark and Wells’ (1995) increased self-focused attention hypothesis. However,

Panayiotou and Vrana (1998) reported that self-focused attention had no effect on the heart rate of socially anxious individuals, but that startle responses, that is, external sensations to an auditory probe, increased under conditions of self-focus for this group of individuals. These findings challenge Clark and Wells' increased self-focused attention hypothesis: in Panayiotou and Vrana's study, self-focus may have decreased. Overall, it is clear that more research is required in order to understand the role of attention to physiological cues in social anxiety. For example, it may be important to consider other cues such as galvanic skin response, blushing, or sweating, which may provide more sensitive psycho-physiological measures of self-focused attention.

Next, I review evidence for Clark and Wells (1995) proposal that the construction of the self as a social object and its corollary the observer perspective maintain social anxiety.

Construction of the Self as a Social Object and the Observer Perspective

Clark and Wells (1995) propose that under conditions of social evaluation, individuals with social phobia construct an impression of themselves as a social object, whereas, Rapee and Heimberg (1997) state that it is as a "mental representation of the self as seen by the audience" (p. 744). In addition, Clark and Wells propose a significant type of internal information that is used to generate a negative self-impression; namely, spontaneously occurring observer perspective images. In the first demonstration of this proposition, Wells, Clark, and Ahmad (1998) found that for images of social situations, socially phobic individuals were significantly more likely than non-patient controls to take an observer perspective. In contrast, for socially phobic individuals and non-patient controls, images of non-social situations were viewed predominantly from a field perspective. In a subsequent study, Hackmann, Suraway, and Clark (1998) gave socially phobic individuals and non-patient controls a semi-structured interview, which focused on spontaneously occurring imagery in feared social situations. As predicted, the majority (77%) of socially phobic individuals reported spontaneously occurring, negative, observer perspective images. In contrast, only 10% of non-patient controls reported such images. The images reported by socially phobic individuals included imagining their worst fears about how they might come across in a social situation. One individual's predominant fear was that he would sweat and, therefore, be considered inept. He described his image when anxious in a shop as follows, "Can see self as being obviously uncomfortable, drenched in beads of sweat. Normal upright posture. Face is red. Worried look. Look of wanting to get out" (Hackman et al., 1998, p. 9).

Hackman, Clark, and McManus (2000) further explored the nature of social phobic imagery by giving a semi-structured interview to 22 socially phobic individuals. All participants were able to identify negative spontaneous images that were recurrent in the sense that their

content appeared to be relatively stable over time and across different feared social situations. For example, one female patient always saw herself “sitting at a table, looking smaller than she was as an adult, and looking nervous and jumpy. In the linked memory, she was sitting at the tea table as a small child, looking nervous and being criticized by her father” (Hackman et al., 2000, p. 605). Thus, a key aspect of both the image and the memory was a negative impression of the observable or public self. Hackman et al. concluded by saying that early traumatic social experiences, for example, being publicly criticized by a teacher for stammering, may lead socially phobic individuals to develop negative, observer perspective images of their public selves that are repeatedly activated in subsequent social situations. However, a limitation of Hackmann, Suraway, and Clark’s (1998) and Hackman et al.’s studies is that they did not include a control group of patients with an anxiety disorder other than social phobia. Thus, it is not possible to know whether observer perspective images are unique to social phobia, or whether they are also present in other anxiety disorders.

Wells and Papageorgiou (1999) investigated the *specificity* of the observer perspective among patients with social phobia, agoraphobia, and blood/injury phobia. Participants were asked to recall and imagine a recent anxiety-provoking social situation and a non-social/non-anxiety-provoking situation, and rate their perspective for each. The results showed that socially phobic individuals were the only group to show a significant shift from an observer perspective in social-evaluative situations to a field perspective in non-social-evaluative situations. Patients with blood injury phobia and non-patient controls remembered both situations from a field perspective. Agoraphobic patients reported an observer perspective for both the social-evaluative and non-social-evaluative situations. Wells and Papageorgiou argue that these results support Clark and Well’s (1995) proposal that the observer perspective is characteristic of social-evaluative concerns rather than a general feature of phobias. However, it is unclear whether participants’ recollections of anxiety-provoking social situations were actually representative of social-evaluative concerns, as they were instructed to “recall a recent specific occasion when you felt really anxious and uncomfortable in a social situation” (Wells & Papageorgiou, p. 634). Moreover, the finding that agoraphobic patients used the observer perspective when recalling the non-social situation suggests that the observer perspective might be a general feature of phobias. Indeed, even low socially anxious individuals report using the observer perspective in social situations (Spurr & Stopa, 2003). It therefore remains unclear whether the observer perspective can be attributed solely to patients with social-evaluative concerns or whether it is a general feature of phobias.

In sum, some evidence suggests that socially phobic individuals use the observer

perspective when remembering social situations and a field perspective when remembering non-social situations (Hackmann, Suraway, & Clark, 1998; Wells, Clark, & Ahmad, 1998). However, other evidence demonstrates that the observer perspective can occur for both high and low socially anxious participants' anxieties during social situations (Spurr & Stopa, 2003). In addition, in two studies by Rachman, Grüter-Andrew, and Shafran (2000) and McEvoy and Kingsep (2006), participants reported taking the field perspective significantly more than the observer perspective. It may be that both state and trait factors need to be considered in order to better understand observer perspective use in social phobia and social anxiety. In particular, level of state anxiety may play an important role in adoption of the observer perspective. It would be helpful to repeat Wells and Papageorgiou's (1999) study and investigate the effects on the observer perspective of recalling a high/low-anxiety social situation and a high/low-anxiety non-social situation.

A study by Coles, Turk, Heimberg, and Fresco (2001) investigated this question. Socially phobic individuals and non-anxious controls rated the perspective of their memories of three different types of social situation: low, medium, and high anxiety. Results showed that socially phobic individuals took more of an observer perspective than non-anxious controls when recalling high anxiety social situations. However, both groups took a predominantly field perspective for memories of low anxiety social situations. Coles et al. (2001) say that these findings are consistent with recent theoretical accounts (Clark & Wells, 1995; Rapee & Heimberg, 1997) and previous research (Hackmann, Suraway, & Clark, 1998; Wells & Papageorgiou, 1999; Wells, Clark, & Ahmad, 1998) on social phobia, suggesting that, when socially phobic individuals feel highly threatened in social situations, they self-focus by forming images and memories of themselves from an observer perspective. Nonetheless, in the Coles et al. study, the size of social phobia participants' ratings of the observer perspective for the high anxiety situation was smaller, when compared to what Wells et al. (1998) and Wells and Papageorgiou found. Specifically, 14 social phobia participants took a field perspective, while 16 took an observer perspective, in the high social anxiety situation. That said, Coles et al.'s study does indicate that individuals with social phobia are significantly more likely to rate their high anxiety memories from an observer perspective than their low anxiety memories, which is consistent with cognitive models of social phobia (Clark & Wells; Rapee & Heimberg).

Clark and Wells' (1995) model predicts that excessive self-focusing on body-state information triggers the observer perspective in socially anxious individuals. Testing this prediction, Papageorgiou and Wells (2002) manipulated the provision of heart rate information in participants scoring high or low on social-evaluative anxiety, assessed by the Fear of Negative

Evaluation scale (Watson & Friend, 1969). There were two conditions: information that heart rate had increased and no information, before participants took part in a conversational task with a stooge. Consistent with previous results (Hackmann, Suraway, & Clark, 1998; Wells & Papageorgiou, 1999; Wells, Clark, & Ahmad, 1998), Papageorgiou and Wells found that participants high in social-evaluative anxiety used the observer perspective more than participants low in social-evaluative anxiety, and that this effect was increased by the provision of information about an increase in heart rate. Thus, consistent with Clark and Wells model, socially anxious individuals appeared to use bodily information to construct a negative impression of themselves.

In contrast, Wells and Papageorgiou (2001) found no evidence that increments or decrements in bodily information would increase or decrease the observer perspective in socially phobic individuals; both types of information decreased its use. This finding is inconsistent with Clark and Wells (1995) suggestion that individuals with social phobia use bodily information to construct a distorted impression of them. Wells and Papageorgiou's inconsistent results may be explained in several ways. One, the sample size was very small ($N = 8$), therefore reducing the likelihood of detecting any significant differences. Two, the pulse rate manipulation may not have been threatening enough to increase anxiety, as participants were told; "I've got a good count of your pulse rate. Your pulse rate has increased. It is higher than before" (Wells & Papageorgiou, p. 6). Pulse rate was also counted on only that one occasion; therefore, participants might not have believed that it was low to start with. Counter to this argument is the fact that participants' self-reported anxiety levels were higher in the increase than in the decrease pulse rate condition. Perhaps, the pulse rate manipulation was sufficient to increase anxiety, but not use of the observer perspective. Certainly, a pulse rate manipulation may reflect more private self-aspects, whereas, the observer perspective is considered to mirror more public self-aspects such as blushing, sweating, and shaking. Lastly, in Wells and Papageorgiou's study, the interaction task (conversation with a stooge) was social, but not specifically evaluative in nature. Clark and Wells suggest that the observer perspective is more likely to be triggered under conditions of social-evaluative threat or negative evaluation (e.g., giving a speech). Nigro and Neisser (1983), for example, found that the observer perspective was most likely to be recalled after giving a speech. Taken together, the pulse rate and task manipulations may have been unlikely to activate the observer perspective in participants in Wells and Papageorgiou's study.

Observer experiences versus observer memories. A methodological issue with experiments investigating the observer perspective is that it is unclear whether observer experiences are being measured or observer memories. Observer experiences relate to adopting

the observer perspective on-line in social situations - as predicted by Clark and Wells' (1995) model - whereas observer memories involve recalling events from an observer perspective. Because memory is a reconstructive process, observer memories are more likely to be influenced by a number of factors, such as the recall interval and the characteristics of the original situation. Nigro and Neisser (1983), for example, found evidence that an observer perspective was used more when recalling older memories and when instructions focused on objective circumstances.

Two studies that have attempted to avoid the contaminating effects of memory perspective are Spurr and Stopa (2003) and Hirsch, Clark, Mathews, and Williams (2004). Spurr and Stopa asked high and low socially anxious individuals to give two speeches: one in the observer perspective and one in the field perspective. They hypothesized that the observer perspective would be associated with cognitions that are more negative, increased safety behaviours, higher self-reported anxiety, and worse self-rated performance in a social situation than the field perspective in the high social anxiety group. The results showed that use of the observer perspective was associated with more of the above effects in both low and high social anxiety groups. These results are consistent with Clark and Wells' (1995) suggestion that the observer perspective represents distorted, negative self-information that maintains anxiety in social situations. Why is the observer perspective therefore not disabling for low socially anxious individuals, when it is for high socially anxious individuals? Spurr and Stopa suggest two reasons: one, the low social anxiety group had fewer safety behaviours and negative cognitions than the high social anxiety group to start with; so, an increase from a very low baseline may not be sufficient to trigger significant anxiety. Two, observer images of low socially anxious people may differ qualitatively from those of high socially anxious people (e.g., more positive and realistic).

Alternatively, it may not be the valence of observer images per se that determines their use, but how well, or not, they are managed. In other words, low socially anxious individuals may have more confidence in their ability to *cope* with negative observer images; thus, for these individuals, observer images may lose some of their veracity and/or might be kept to such a low rate that they do not interfere with social interaction or performance. Conversely, high socially anxious individuals may feel unable to cope with negative observer images; therefore, increasing the perceived veracity and frequency of them. In terms of Clark and Wells (1995) model, this suggests that it is not just the nature or content of observer images that are important, but also how the individual appraises or copes with them. Individuals may not be able to prevent the occurrence of negative observer images, but they may be able to train themselves, or be trained by therapists, to cope with them better, so they are not so disabling.

Negative self-imagery. Hirsch, Clark, Mathews, and Williams (2004) asked socially phobic individuals to participate twice in a conversation with a stranger, once while holding in mind their usual negative self-image and once while holding a less negative control self-image in mind. The authors predicted that negative self-images would be associated with higher levels of anxiety and lower ratings of performance by both the patient and an independent assessor. As predicted, when patients held a negative image in mind, they experienced greater anxiety and rated their performance as poorer, compared to when they held a control image in mind. Furthermore, an independent assessor, who was blind to the experimental conditions, also perceived patients' anxiety as more evident and their behaviour as less positive when the negative image was held in mind. Thus, changes due to the kind of self-image included objective behaviours, rather than being confined to introspective reports. Hirsch, Meynen, and Clark (2004) replicated and extended Hirsch et al.'s (2004) study. High socially anxious individuals had two conversations with a stranger: during one conversation they held their normal negative self-image in mind and during the other they held a non-negative control self-image in mind. In an extension to Hirsch et al.'s study, a conversational partner, rather than an assessor rated socially anxious individual's videotaped performances. In line with Hirsch et al.'s findings, when high socially anxious individuals held a negative image in mind, they overestimated the visibility of their anxiety symptoms, predicted poorer performance, and believed that the conversation was less interesting and did not flow well, compared to when they held a control image in mind. Partner ratings were also worse when the participant held a negative image in mind than when she or he held a control image in mind, demonstrating observable effects of type of imagery on visible signs of anxiety, and level of performance.

In addition, it has been suggested that negative self-imagery block the generation of non-threatening or positive inferential biases in socially phobic individuals during social situations. Specifically, research, using lexical decision tasks, has shown that low anxious individuals generate non-threatening inferences during social situations, whereas, socially phobic individuals do not (Hirsch & Mathews, 1997, 2000). Thus, high socially phobic individuals appeared to lack the on-line positive bias characteristic of low anxious controls. Hirsch, Mathews, Clark, Williams, and Morrison (2006) asked confident public speakers, as indicated by low scores on the Personal Report of Confidence as a Speaker (Paul, 1966) to hold in mind either a negative or control image of them whilst reading descriptions of being interviewed for a job. Results showed that low anxious participants holding a negative image in mind showed significantly greater differences between latencies for non-threat probes presented in emotionally ambiguous descriptions and in the baseline condition. In contrast, the relative slowing in response to threat

probes in emotionally ambiguous descriptions, in comparison to baseline, did not differ between the two groups. It thus appears that negative self-imagery blocks the making of on-line non-threat inferences. These findings provide a possible explanation for the lack of non-threat inferences in social phobia, as these individuals often report experiencing negative imagery during social situations.

In addition to the detrimental effect of holding a negative self-image on the making of non-threatening inferences, Hirsch, Clark, Williams, Morrison, and Mathews (2005) examined the influence of imagery on inferential biases by asking high interview anxious individuals to hold a more benign or positive image in mind (i.e., of a confident other person), while completing the task described by Hirsch and Mathews (2000). The results showed that participants who adopted the perspective of a confident other person showed enhanced inhibition of threat inferences, compared to participants who imagined themselves in the situation. Thus, holding an image as if from the perspective of a confident person appeared to block access to threatening interpretations of ambiguous situations in high socially anxious individuals. Similarly, Garner, Mogg, and Bradley (2006), used both positive and negative cues and outcomes, in order to examine whether social anxiety is associated with impaired processing of positive information. Using an illusory correlation paradigm, Garner et al. (2006) compared high and low socially anxious individual's on- and off-line estimates between emotional faces and aversive, pleasant, and neutral outcomes. The authors found that high socially anxious individuals showed a reduced bias in on-line positive outcome expectancies, compared to low socially anxious individuals. In addition to lacking this normal positive inferential bias, the high social anxiety group reported retrospectively more negative interpretations than the low social anxiety group.

In summary, the results of imagery research are broadly consistent with Clark and Wells' (1995) proposal that negative self-imagery may have a causal role in the development and maintenance of social phobia. Certainly, further research is required that examines positive inferential biases and self-imagery in social phobia. For example, how does positive self-imagery affect the generation of on-line threatening and non-threatening inferences in social phobia? Do socially phobic individuals process positive information differently from other anxiety-disordered groups and non-anxious individuals? Turk, Heimberg, Luterek, Mennin, and Fresco (2005), for example, reported that individuals with social phobia were less expressive of positive emotions than either individuals with generalized anxiety disorder or controls. Socially phobic individuals may therefore actively attempt to suppress the expression of positive emotions, perhaps as a strategy to avoid being in the 'social spotlight' or to protect themselves from being hurt if their feelings are not reciprocated. Alternatively, Alden, Mellings, and Laposa (2004) found that when

feedback framed the presence of positive social cues in a conversational task, patients with social phobia reported *greater* anxiety when anticipating a second conversation than non-phobic controls. One possible reason for this finding is that individuals with social phobia may believe that others will expect more from them following a positive exchange (Wallace & Alden, 1997). Hence, processing of positive information may not necessarily be the opposite of processing of negative information. Models of social phobia that emphasize the processing of negative information alone (e.g., Clark & Wells; Rapee & Heimberg, 1997) may therefore need to be revised to include the processing of positive information as an additional factor.

Post-Event Processing

Clark and Wells (1995) propose that post-event processing plays a key role in maintaining anxiety in social phobia. For example, post-event processing involves a negative appraisal of the completed interaction, and the retrieval of past-perceived social failures. Empirical support for the relationship between social anxiety and post-event processing has only recently begun to accumulate. Rachman, Grüter-Andrew, and Shafran (2000) conducted a psychometric study in order to collect basic information about post-event processing in social anxiety. The authors found that the Post-Event Processing Questionnaire was positively correlated with social anxiety when depression was controlled. Thus, post-event processing after social interactions can be distinguished from depressive post-event processing. Additionally, high socially anxious individuals typically engaged in more post-event processing after anxiety provoking social situations than low socially anxious individuals did. This post-event processing was recurrent, intrusive, interfered with concentration and resulted in avoidance of related social situations. Similar findings are reported by Mellings and Alden (2000), Rushbrook (2003), Edwards, Rapee, and Franklin (2003), and Dannahy and Stopa (2007).

McEvoy and Kingsep (2006) attempted to cross-validate Rachman, Grüter-Andrew, and Shafran's (2000) Post-Event Processing Questionnaire in a clinical sample with social phobia ($N = 117$). Results showed that post-event processing was most strongly and uniquely associated with state social anxiety (i.e., anxiety reported over the past two weeks) when depression, general anxiety, and stress were controlled, suggesting that higher state anxiety might prompt individuals to dwell on the social situation in order to resolve their social concerns. Contrary to predictions, post-event processing was not related to measures of social anxiety, namely, the Social Interaction and Anxiety Scale and Social Phobia Scale (Mattick & Clarke, 1998). However, post-event processing was positively associated with the Anxiety and Stress scales of the Depression and Anxiety Scales (Lovibond & Lovibond, 1995), suggesting that it may be more related to general anxiety.

Collectively, these results imply that post-event processing might be more particular to state than social anxiety, and that it may represent a more irrational response to emotional disorder in general, rather than social phobia in particular. In a clinical study, patients with social phobia delivered an impromptu speech, and, among other variables, the level of post-event processing 1-week later was measured (Abbott & Rapee, 2004). These researchers found that socially phobic individuals engaged in more negative post-event processing than controls, and that negative appraisals of their performance were maintained for 1-week after the task, whereas, non-anxious controls were more positive about their performance over the following week. These findings suggest that, while post-event processing appears to reduce negative self-evaluations in non-anxious people, it has the opposite effect in socially phobic people.

Other researchers have looked at the relationship between post-event processing and memory. Mellings and Alden (2000) found that post-event processing contributed to a later negative memory bias; however, Edwards, Rapee, and Franklin (2003) failed to find this effect. Field and Morgan (2004) examined whether post-event processing affects the retrieval of autobiographical memories rated as shameful, anxious, or negative in socially anxious individuals and controls. High socially anxious individuals recalled more negative and shameful memories regardless of the type of post-event processing engaged in, compared to controls. Surprisingly, those in the negative post-event processing condition reported memories that were more comforting than those in the other post-event processing conditions were. Field and Morgan suggest that negative post-event processing may have an adaptive function for high socially anxious individuals, in that, situations viewed by the individual at the time as negative and shameful, may be subsequently reappraised in a more accepting way, generating calmer memories. Rachman, Grüter-Andrew, and Shafran (2000) also found that some of their anxious participants reported that post-event processing actually improved matters, and Mellings and Alden suggest that post-event processing of social-evaluative situations may help individuals to resolve their social concerns. Thus, the adaptive role that post-event processing may play clearly requires further examination.

Clearly, there is substantial evidence that higher levels of social anxiety are associated with higher levels of post-event processing. However, the specificity of post-event processing has still to be established. Are other anxiety-provoking situations followed by post-event processing, or is it specifically linked to social situations? Attempting to address this question, Fehm, Schneider, and Hoyer (2007) examined whether post-event processing is specific for (a) social anxiety or (b) social situations. In a cross-sectional study, 217 participants reported about a social (e.g., public speaking) and a phobic (e.g., fear of blood) event followed by negative thinking.

Results showed that social, but not phobic events were associated with more frequent and negative post-event processing. Furthermore, social anxiety, assessed by the Fear of Negative Evaluation scale (Watson & Friend, 1969), was significantly associated with post-event processing for social, but not for phobic situations, and vice versa. In sum, negative post-event processing appears to be specifically associated with social anxiety and social interactions, which is consistent with cognitive models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997). However, note that, in Fehm et al.'s (2007) study, 51% of all participants reported some form of post-event processing after a social event. Thus, post-event processing should not be regarded as a pathological process per se.

Anticipatory Processing

The negatively biased post-event processing of socially anxious individuals has the potential adverse effect of increasing anticipatory anxiety for future social situations and the likelihood of avoidance behaviours. Indeed, severe anticipatory anxiety is very common in social phobia. Anticipatory processing is hypothesized by Clark and Wells (1995) as a period of anxious worry, whereby, socially phobic individuals review in detail what they think might happen to them. "As they start to think about the event, they become anxious and their thoughts tend to be dominated by recollections of past failures, by negative images of themselves during the event, and by other predictions of poor performance and rejection" (Clark, 2001, p. 411). If this does not happen and the individual participates in the event, "...he or she is likely to be already in a self-focused processing mode, expect failure, and be less likely to notice any signs of being accepted by other people" (Clark, p. 411). This suggests that anticipatory processing contributes to the socially anxious individual's negative experience of the event.

Some preliminary evidence supports the occurrence of anticipatory processing in social anxiety. Vassilopoulos (2004) reported that high socially anxious individuals engage in more intrusive negative thoughts during anticipatory processing, compared to low socially anxious individuals. High socially anxious individuals also anticipated how they would act in front of others, as if they were "watching a movie in which they were the protagonists" (Vassilopoulos, p. 309). This description is similar to Clark and Wells' (1995) suggestion that socially phobic individuals experience images in which they see themselves as if viewed from an observer's perspective. Some low socially anxious individuals also reported that anticipatory processing decreased their anxiety, suggesting it may have had a positive function for them. Hinrichsen and Clark's (2003) first semi-structured interview explored a wide range of possible anticipatory processing. As well as being more likely to report recalling catastrophic thoughts about what

might happen in the situation, high socially anxious individuals were also more likely than low socially anxious individuals to (1) recall more past social failures than successes; (2) generate negative, distorted observer perspective images about how they might appear in the situation; (3) dwell on ways of avoiding or escaping the situation; and (4) engage in more anticipatory safety behaviours. Collectively, these preliminary studies indicate that high socially anxious individuals do use the potentially maladaptive anticipatory processing outlined in Clark and Wells' model.

Only a small number of studies have examined different aspects of the anticipatory processing proposed by Clark and Wells (1995). Mansell and Clark (1999) asked high and low socially anxious individuals to encode positive and negative words in three separate encoding conditions: public self-referent (describes what someone who knows you would think of you), private self-referent (describes how you think about yourself), and other referent (describes your next-door neighbour). Next, they either anticipated or did not anticipate giving a speech and afterwards were required to recall the words. High socially anxious individuals recalled fewer positive public self-referent words and tended to recall more negative public self-referent words, compared to low socially anxious individuals. As hypothesized, this bias only occurred when individuals anticipated giving a speech. Thus, it appears that anticipatory processing activates selective retrieval of negative impressions of the public self. However, Mellings and Alden (2000) found no support for the idea that anticipation activates the selective retrieval of negative impressions of the public self, in a study, in which socially anxious and nonanxious individuals participated in a conversational task with a stooge on two consecutive days.

Tanner, Stopa, and De Houwer (2006) examined, amongst other processes, high and low socially anxious individuals' anticipatory thoughts about giving a sham speech to a small audience. Participants were given 2-3 minutes to think about the speech and were then asked to say aloud into a tape recorder anything that went through their minds in the last few minutes while they were anticipating the speech. The high social anxiety group reported a higher frequency of and belief in anxious thoughts on the Social Cognitions Questionnaire (Wells, Stopa, & Clark, 1993) than the low social anxiety group. On the think aloud task, all participants had more negative self-evaluative and positive task-focused thoughts than thoughts about other people. Tanner et al. (2006) suggest two potential reasons for the absence of a group difference. First, that anticipation was influenced by participants' level of depression, as measured by the Beck Depression Inventory-Two (Beck, Steer, & Brown, 1996), rather than by his or her social anxiety. Second, that the period of anticipation was brief, only a few minutes, and longer anticipation that is more typical of social anxious individuals may reveal group differences that are not accounted for by depression. Nevertheless, Tanner et al.'s results support Clark and

Wells' (1995) proposal that socially anxious individuals enter into a *self-focused processing mode* when anticipating a social event.

Hinrichsen and Clark's (2003) second study investigated the anxiety inducing effects of the cognitive processes, for example, dwelling on past failures and negative self-images and anticipating the worst thing that could go wrong in the imminent situation, that were found to be characteristic of high socially anxious participants in the first study. High and low socially anxious participants either had a period of anticipation or completed a distraction task before giving a speech. Engaging in the cognitive processes typical of high socially anxious individuals was associated with continued increases in anticipatory anxiety in the participants, and led to higher peak anxiety during the speech. However, this effect was not found to be stronger in either social anxiety group, as Clark and Wells' (1995) model would predict. Further, no effect of anticipatory processing on participants' predictions of appearance before and during the speech was found and no memory test for emotional information was included in the study.

Vassilopoulos (2005) attempted to replicate and extend Mansell and Clark's (1999) and Hinrichsen and Clark's (2003) studies by explicitly instructing participants to engage in anticipatory processing for a greater time length and by including a memory test for emotional information. Before giving a sham speech, high and low socially anxious individuals were instructed to engage in either anticipatory processing, that is, predict how they will appear to others during the speech and what might go wrong or right, and recall past similar situations, or perform a distraction task. High socially anxious individuals engaging in anticipatory processing reported more anxiety feelings and predicted more negative overall appearance (e.g., 'you were anxious/embarrassed'), compared to high and low socially anxious individuals performing the distraction task. For the low socially anxious individuals, there was no significant difference between the anticipation and distraction conditions on measures of anxiety, self-perception, or memory for emotional information. In addition, all participants predicted exhibiting more negative specific behaviours, for example, sweating, blushing, and face muscles tense, during the speech when their anticipatory processing was facilitated, than when it was restricted. These results suggest that increases in adverse specific behaviours are a normal part of anticipating a speech. Nonetheless, Vassilopoulos' results provide reliable evidence that anticipatory processing is associated with more anxiety and more negative predictions about future social interaction (Clark & Wells, 1995).

In Vassilopoulos' (2005) study, high socially anxious individuals also recalled more negative and less positive public self-referent, that is, describe what someone who knows you, or has just met you, would think of you, words during the distraction task than during anticipatory

processing. This is opposite to what Mansell and Clark (1999) found, and is inconsistent with Clark and Wells' (1995) model. Noteworthy, in Vassilopoulos' study, high socially anxious individuals in the distraction condition did not avoid thinking about the impending speech, as manipulations checks showed, which may partially account for these unexpected results. It might also be possible that anticipatory processing allowed high socially anxious individuals to habituate or get used to the idea of giving the speech, which resulted in them recalling more positive (e.g., 'realistic', 'logical', 'interesting') and less negative (e.g., 'inhibited', 'lonely', 'timid') public self-referent words. Anticipatory processing might therefore have a helpful or positive function for high socially anxious individuals. Nonetheless, the fact that high socially anxious individuals reported more feelings of anxiety after than before anticipatory processing argues against this possibility. In contrast, distraction may not have allowed high socially anxious individuals to acclimatize to giving the speech or to negative public self-referent thoughts; thus making the thoughts/words highly salient, and so enhancing recall of them. However, the fact that, in the distraction condition, high socially anxious individuals did not recall more negative words relative to positive words, and reported less feelings of anxiety after than before distraction argues against these suggestions.

In sum, assessing anticipatory processing in social phobia and social anxiety is an underdeveloped area. This is surprising, considering that it is thought to be the first stage in the sequence of socially phobic individuals' dysfunctional processes. If we manage to fully understand its nature, perhaps we will be in a better position to manage and change the maladaptive cognitions and behaviours that individuals with social phobia bring into social situations, with the result of making the experience less negative.

In addition, cognitive models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997) tend to overlook anticipatory processing that is positive or constructive, and how it operates in conjunction with interpersonal processes. Indeed, the maintaining factors in Clark and Wells' model are unlikely to operate in isolation. For example, there appears to be a strong relationship between observer perspective imagery and anticipatory processing in social anxiety (Hinrichsen & Clark, 2003). Currently, we do not have a clear understanding of how the different maintaining factors operate together and influence each other. However, see Hirsch, Clark, & Mathews (2006) for an examination of how cognitive biases work together to maintain social phobia. Lastly, at present, there is a lack of in-depth understanding of anticipatory processing in social anxiety that is grounded in the experiences and perceptions of socially anxious individuals. Indeed, there are no qualitative studies that have directly explored anticipatory processing in social anxiety. A deeper understanding of anticipatory processing in social anxiety may provide new insights into

its nature and offer new directions for future research.

The Present Thesis

The present chapter has provided a critical review of the many experimental studies that have endeavoured to explain the cognitive biases argued to play an important role in the maintenance of social phobia/anxiety. Clearly, much progress has been made, however, a number of experimental and theoretical uncertainties remain. Noted, are ambiguities concerning recent cognitive model's attempts to distinguish explicitly between internal and external aspects of self-focused attention (Clark & Wells, 1995; Rapee & Heimberg, 1997). Furthermore, only recently has experimental work examined anticipatory processing in social anxiety/phobia, while phenomenological analysis of it in the condition/disorder has received scant attention. Therefore, the main aim of the present thesis is to confirm and extend promising, if limited research into anticipatory processing and self-focused attention in social anxiety, with particular reference to theoretically relevant biases in appraisal and attention (Clark & Wells; Rapee & Heimberg).

Chapter 3: Experiment 1

Introduction

As outlined in Chapter's 1 and 2, Clark and Wells (1995; Clark, 2001) suggest that, in anticipation of a feared social situation, socially anxious individuals' thoughts tend to be governed by negative images of themselves during the event, by memories of past social failures, and by other negatively biased predictions. In particular, studies by Vassilopoulos (2004, 2005) and Hinrichsen and Clark (2003) have examined whether socially anxious people engage in negatively biased anticipatory processing before entering a feared social situation. However, while these studies are valuable additions to a sparse literature on anticipatory processing, they have some limitations. For example, Vassilopoulos's (2004) study and Hinrichsen and Clark's first study were based on self-report questionnaires and may not accurately reflect socially anxious individuals' anticipatory processing when exposed to real social events. In addition, Hinrichsen and Clark's second study measured the effect of anticipatory processing on anxiety only. Furthermore, Hinrichsen and Clark's second study and Vassilopoulos's (2005) study used a between-subjects design to compare anticipatory processing and distraction, in which individual differences between participants might have obscured interesting effects. Moreover, in the latter two studies, participants were instructed to engage in a number of anticipatory cognitive processes, as outlined in Clark and Wells' model. In contrast, the current study opted for a more 'naturalistic' type of anticipatory processing, in which, participants were not directed as to how they should use their time during it. This allowed for potential group differences in anticipatory processing, and set up the experiment as a specific test of anticipatory processing in a speech task, rather than as a more general test of Clark and Wells' model.

The main aim of this study was to investigate the effect of anticipatory processing in a subsequent speech using a within-subjects design, which would provide an even stronger test of Clark and Wells' (1995) hypothesis that anticipatory processing increases self-focused attention during a situation, and to examine public and private self-awareness, awareness of surroundings, perspective, negative thoughts (frequency and belief), and performance (predicted and actual), as well as state anxiety. A subsidiary aim of the study was to examine individuals' anticipatory processing before the second speech. Specifically, to examine anxiety, and self-imagery and recollections of past speeches (positive vs. negative and helpful vs. unhelpful) - as outlined in Clark and Wells' model. High and low socially anxious participants gave two speeches in a fixed order. The first speech was given with no anticipatory processing and the second speech was given after ten minutes anticipatory processing.

It was predicted that, in anticipation of a social-evaluative situation, high socially anxious

participants would report more anxiety, and more negative and unhelpful self-images and recollections of past speeches, compared to low socially anxious participants. It was also predicted that, during the anticipated speech, participants would report more public and private self-awareness, less awareness of their surroundings, use the observer perspective more, report more negative thoughts and a higher belief in these thoughts, rate predicted and actual performance worse, and be more anxious, compared to during the unanticipated speech. Lastly, it was predicted that, the magnitude of these differences would be greater among high, compared to low socially anxious participants.

Method

Participants

Students ($N = 177$) at the University of Southampton were screened using the Brief Fear of Negative Evaluation scale (BFNE; Leary, 1983), which was administered twice - once for screening and once again during the study. Students with scores of ≤ 28 (low social anxiety) and ≥ 44 (high social anxiety) were eligible to participate. These two cut off points corresponded to one standard deviation (SD) below and above the mean BFNE score ($M = 35.7$, $SD = 8.10$; Leary). Using these two cut off points eliminated the mid range scores. Forty-five participants were tested (5 men, 40 women). Five participants were excluded, two because they no longer met criteria on the BFNES and three because they refused to give the unanticipated speech. BFNE scores of the remaining 40 participants at testing produced a high ($n = 20$) and a low ($n = 20$) social anxiety group.

Design

There was one between-subjects variable (low and high social anxiety) and one within-subjects variable (no anticipatory processing and ten minutes anticipatory processing). There were two possible speech topics (Topic A: *The Advantages and Disadvantages of University Top up Fees* and Topic B: *The Advantages and Disadvantages of Legalizing Cannabis*) that were counterbalanced across participants in the low and high social anxiety groups. A third topic (Topic C: *The Advantages and Disadvantages of Britain Going to War with Iraq*) was offered if participants did not want to speak on topics A or B. Participants spoke on a different topic in each condition.

Descriptive Measures

Brief Fear of Negative Evaluation scale (BFNE; Leary, 1983). The 12-item BFNE questionnaire assesses the fear of receiving negative evaluation from other people, which is considered one of the hallmarks of social phobia (American Psychiatric Association, 2000). The BFNE uses a five-point Likert-type rating scale, ranging from 1 (*not at all characteristic of me*) to

5 (*extremely characteristic of me*), rather than the true-false format of the original Fear of Negative Evaluation scale (FNE; Watson & Friend, 1969). Total BFNE scores range from 12 to 60. Undergraduates' responses correlate highly with the original FNE scale ($r = .96$; Leary) and the BFNE demonstrates both high internal consistency ($\alpha = .90-.91$) and 4-week test-retest reliability ($r = .75$) in undergraduate samples (Leary). More recent support was obtained for the reliability and convergent and discriminant validity of the BFNE in a nonclinical, nonstudent sample (Duke, Krishnan, Faith, & Storch, 2006), and in patients with social phobia (Collins, Westra, Dozois, & Stewart, 2005; Weeks et al., 2005). This study used the BFNE, rather than the FNE, because its shorter length and increased sensitivity from using Likert-style rather than dichotomous response options make the BFNE an appealing alternative (Carleton, McCreary, Norton, & Gordon-Asmundson, 2006; Leary; Rodebaugh et al., 2004). In this study, the BFNE demonstrated a significant relationship with both the Social Phobia Scale (SPS; Mattick & Clarke, 1998; $r = .73, p < .001$) and the Social Interaction Anxiety Scale (SIAS; Mattick & Clark; $r = .68, p < .001$), suggesting it is a valid screening measure of social anxiety.

Social Phobia Scale (SPS; Mattick & Clarke, 1998) and Social Interaction Anxiety Scale (SIAS; Mattick & Clarke). The SPS and SIAS each contain 20 items that are rated on a five-point scale from 0 (*not at all characteristic or true of me*) to 4 (*extremely characteristic or true of me*). The SIAS and SPS are scored by summing the ratings and total scores range from 0-80. Both scales have high levels of internal consistency (SPS, $\alpha = .89$; SIAS, $\alpha = .93$), validity, and test-retest reliability ($r > .90$; Mattick & Clarke). The SIAS and SPS also distinguish well between individuals with social phobia and non-patient controls (Mattick & Clarke).

Beck Anxiety Inventory (BAI; Beck & Steer, 1990). The BAI consists of 21 items rated on 0 (*not at all*) to 3 (*severely*) scales. The instrument has excellent internal consistency ($\alpha = .92$) and high test-retest reliability ($r = .75$; Beck & Steer).

Outcome Measures during the 10-Minutes of Anticipatory Processing

Anticipatory Anxiety. Anxiety was rated on a 0-100 point scale of 0 (*not at all anxious*) to 100 (*extremely anxious*).

Self-Images and Memories of Past Speeches. Participants rated the degree to which they found self-images and memories of past speeches to be either 'negative' or 'positive', using a seven-point bipolar rating scale that ranged from -3 to 0 to +3. On this scale, -3 to -1 were labelled as (*Negative*), 0 was labelled as (*Neutral*), and +1 to +3 was labelled as (*Positive*). Participants were instructed to circle only one number - negative, positive, or neutral. They also rated the degree to which they found those images and memories 'helpful' or 'unhelpful' in their speech preparation, on a 0 (*not at all helpful*) to 100 (*extremely helpful*) scale.

Outcome Measures during the Unanticipated and Anticipated Speeches

State Anxiety. ‘Happy’, ‘angry’, ‘depressed’, and ‘anxious’ moods were measured on a 0 (*not at all X*) to 100 (*extremely X*) visual analogue scales. Anxiety was the key measure and the other moods were used as filler scales. This measure was also used to assess participants’ anxiety at baseline and after the 10-minute rest period.

Self-Awareness. Self-awareness was rated using the Situational Self-Awareness Scale (SSAS; Govern & Marsch, 2001), which measures public and private self-awareness and awareness of surroundings. The SSAS comprises nine items, three for each subscale. Items are measured on a seven-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The internal consistency of the three subscales is good ($\alpha = .82$, public; $.70$, private; and $.72$, surroundings), while, the test-retest correlation is $.78$ (public self-awareness subscale) and $.58$ (private self-awareness subscale; Govern & Marsch). The SSAS can also detect differences in public and private self-awareness produced by laboratory manipulations, and is sensitive to changes in self-awareness within individuals over time and across situations (Govern & Marsch). Cronbach alpha’s of $.94$ (public self-awareness), $.92$ (private self-awareness), and $.84$ (awareness of surroundings) were obtained in this current sample.

Perspective. Participants rated whether they experienced images of themselves during the two speeches from either an observer or a field perspective. It was explained to participants that viewing an image of themselves from an ‘observer’s perspective’ involved “...seeing yourself giving the speech as if from another person’s perspective”, whilst viewing an image of themselves from a ‘field perspective’ involved “...seeing yourself giving the speech as if you were viewing the scene from behind your own eyes, observing the details around you.” As in previous studies (Hackman, Suraway, & Clark, 1998; Spurr & Stopa, 2003; Wells, Clark, & Ahmad, 1998; Wells & Papageorgiou, 1998), ratings of perspective were made on a scale from -3 to -1 (*field*) to +1 to +3 (*observer*). In addition to rating perspective, participants also wrote down in as much detail as possible the content of the perspective images they experienced during the speeches.

Cognitions. Cognitions were rated using a Negative Thoughts Checklist (NTC) that was adapted from the Public Speaking Rating Scale (Rapee & Lim, 1992) and the Social Cognitions Questionnaire (Wells, Stopa, & Clark, 1993). The NTC comprised 20 items such as (*I was going red*) and (*I was stuttering*). Items were rated for frequency and belief. Frequency was measured on a five-point scale of 0 (*thought did not occur*) to 4 (*thought occurred all of the time*). Belief was measured on a scale of 0 (*I did not believe this thought at all*) to 100 (*I was completely convinced this was true*). The NTC has high levels of internal consistency for frequency ($\alpha = .93$)

and belief ($\alpha = .93$), and good split-half reliability for frequency ($r = .95$) and belief ($r = .94$; Spurr & Stopa, 2003). Cronbach alpha's of .92 (NTC; frequency subscale) and .96 (NTC; belief subscale) were obtained in this current sample.

Performance. Participants predicted how well they thought they would perform during the two speeches and how well they actually performed during them, on a 0-100 point scale of 0 (*not at all well*) to 100 (*very well*).

Materials and Apparatus

One camcorder, mounted on a tripod, puzzle books, and magazines. The puzzle books were used during the 10-minutes of no anticipatory processing condition. Specifically, participants worked on a number of 'word searches', that is, groups of words hidden in a grid of random letters, selected not to cause anxiety (e.g., capital cities of the world). The magazines were given to participants to browse through during the 10-minute rest period.

Procedure

Participants read and signed a consent form, and rated their current anxiety state. They were then told to complete as many of the word searches as possible during the 10-minute no anticipatory processing condition. Participants were then told that they would have to give a two-minute speech on topic's A or B in front of a video camera, and that their speech performance would be rated at a later date by a group of psychologists. They predicted how well they thought they would perform and then gave the speech in a different room, and completed the SSAS, NTC, perspective, performance, and anxiety measures. Participants had a 10-minute rest period in the original room and then rated current anxiety.

Participants were told that they would have to give a second speech and that they had 10-minutes to prepare themselves (anticipatory processing condition). They were told that a different group of psychologists would evaluate the speech later, and that they should use the full 10-minutes to prepare themselves mentally for what they would say during the speech. After this, participants completed the anticipatory processing measures, namely, anxiety, self-images, and memories of past speeches, and predicted how well they would perform the second speech. They performed the second speech in a different room and repeated the measures completed following the first speech, the social anxiety measures, and were debriefed. The experimenter remained in the room during both speeches.

Results

Participant Characteristics

Table 1 shows the means and statistics for the standardized questionnaires for the two groups. Scores were compared using a multivariate analysis of variance (MANOVA). There was

a significant effect of group, $F(1, 59) = 82.65, p < .001, \eta^2 = 0.94$. The high social anxiety group had higher scores on all measures of social anxiety than the low social anxiety group. The high social anxiety group's mean score on the SIAS was very close to the mean score for the socially phobic patients ($M = 34.40$ vs. $M = 34.60; t(19) = -0.06, p = .95$) in Mattick and Clarke's (1998) sample. The high social anxiety group's mean score on the SPS was comparable to the mean score for the socially phobic patients ($M = 33.55$ vs. $M = 40.00; t(19) = -1.81, p = .09$) in Mattick and Clarke's sample. The groups did not significantly differ on either gender (High group: 18 female, 2 male; Low group: 18 female, 2 male), $\chi^2(1, N = 40) = .000, ns$, or on age (High group: $M = 21.30, SD = 5.15$; Low group: $M = 20.75, SD = 2.75$), $t(38) = -0.42, ns, \eta^2 = -0.01$.

Table 1

Characteristics of Participants in each Social Anxiety Group

	Low social anxiety		High social anxiety		$F(1,39)$	η^2
	M	(SD)	M	(SD)		
Screen BFNE	24.20	(3.45)	49.40	(4.08)	443.59*	0.92
Test BFNE	23.65	(4.41)	48.95	(4.12)	350.73*	0.90
BAI	7.70	(5.33)	18.75	(8.19)	25.55*	0.40
SPS	12.05	(7.01)	33.55	(15.95)	30.44*	0.45
SIAS	16.70	(7.01)	34.40	(13.97)	25.48*	0.40

Note. BFNE, Brief Fear of Negative Evaluation scale; BAI, Beck Anxiety Inventory; SPS, Social Phobia Scale; SIAS, Social Interaction Anxiety Scale. * $p < .001$.

The Effect of Anticipation on Participants' Anxiety, Self-Imagery, and Memories of Past Speeches

Anticipatory anxiety. High socially anxious participants ($75.50, SD = 14.31$) experienced significantly more anticipatory anxiety about giving the second speech than low socially anxious participants ($58.50, SD = 18.99; t(38) = -3.19, p < .05, \eta^2 = -0.08$).

Self-imagery. Eighty-five percent of high and 65% of low socially anxious participants reported experiencing images of themselves giving the second speech, $\chi^2(1, N = 40) = 2.13, ns$. In the high social anxiety group, participants reported negative images of themselves giving the speech ($M = -1.23, SD = 1.37$), whereas in the low social anxiety group, participants reported positive images of themselves giving it ($M = 0.23, SD = 1.64; t(28) = 2.68, p < .05, \eta^2 = 0.10$). High socially anxious participants ($M = 38.23, SD = 18.10$) also reported that the images had a more unhelpful influence on their speech preparation, compared to low socially anxious

participants ($M = 57.69$, $SD = 19.64$; $t(28) = 2.81$, $p < .01$, $\eta^2 = 0.10$).

Memories of past speeches. Significantly more high socially anxious participants (80%) recalled memories of speaking in public than low socially anxious participants (35%; $\chi^2(1, N = 40) = 8.26$, $p < .05$, $\eta^2 = .20$). However, contrary to prediction, both groups rated the memories as rather neutral (High group: $M = 0.12$, $SD = 1.59$; Low group: $M = 0.71$, $SD = 1.8$; $t(21) = 0.68$, ns) and as having a somewhat helpful influence on their speech preparation (High group: $M = 58.12$, $SD = 22.57$; Low group: $M = 52.85$, $SD = 27.51$; $t(21) = -0.48$, ns).

The Effect of no Anticipation Versus 10-minutes Anticipation on Participants' Self-Awareness, Perspective Taking, Anxiety, Negative Thoughts, and Performance during the Speeches

Manipulation check. To help assess whether participants' performance in the first speech affected their preparation during anticipatory processing, their anxiety levels at baseline and after the 10-minute rest period were compared. Low socially anxious participants' anxiety scores were positively skewed and therefore all anxiety scores were log transformed, which was successful in achieving normality. Participants' perspective, anxiety (during the speeches), negative thoughts, and performance data were also positively skewed and thus log transformed, which was successful in achieving normality. Although log-transformed data were entered into the analyses, the untransformed means are reported in the figures, tables, and text, as these are easier to interpret. Participants' anxiety ratings were analyzed using a 2 x 2 (Time x Group) mixed analysis of variance (ANOVA). There was a main effect of group, $F(1, 38) = 4.20$, $p < .05$, $\eta^2 = 0.10$. High socially anxious participants reported significantly more overall anxiety ($M = 72.50$, $SD = 50.35$) than low socially anxious participants ($M = 45.50$, $SD = 41.48$). There was no main effect of time, $F(1, 38) = 1.93$, ns , $\eta^2 = 0.05$, and no Time x Group interaction, $F(1, 38) = 1.28$, ns , $\eta^2 = 0.03$. These results suggest that anxiety during the first speech was unlikely to have affected participants' speech preparation during anticipatory processing.

Self-awareness. Table 2 shows the mean scores for the overall levels of public and private self-awareness and awareness of surroundings, and for the three SSAS subscales for the two speeches. The SSAS ratings were analyzed using a 2 x 3 x 2 (Experimental condition x Subscale x Group) ANOVA. Mauchly's test indicated that the test of sphericity had been violated for the Experimental condition x Subscale interaction, $\chi^2(2) = 7.95$, $p < .05$, and therefore the analyses reported below use the Greenhouse-Geisser corrected values. Although a number of main effects and two-way interactions reached statistical significance, they were of little interest because there was a significant three-way (Experimental condition x Subscale x Group) interaction, $F(1.67, 63.69) = 6.14$, $p < .01$, $\eta^2 = 0.14$. Post-hoc t -tests using a significance level of $p < .008$ (after a Bonferroni adjustment of $.05/6$) showed that high socially anxious participants reported more

overall public self-awareness, compared to low socially anxious participants. Participants did not differ in overall private self-awareness or in awareness of surroundings (see Table 2 for means and statistics).

Paired *t*-tests using a significance level of $p < .008$ (after a Bonferroni adjustment of $.05/6$) showed no differences between the two speeches in public self-awareness (High group, $t[19] = 0.19$, *ns*, $\eta^2 = 0.001$; Low group, $t[19] = 2.35$, *ns*, $\eta^2 = 0.12$), in private self-awareness (High group, $t[19] = -1.00$, *ns*, $\eta^2 = -0.05$; Low group, $t[19] = 1.01$, *ns*, $\eta^2 = 0.05$) or in awareness of surroundings (High group, $t[19] = 0.98$, *ns*, $\eta^2 = .05$; Low group, $t[19] = 1.83$, *ns*, $\eta^2 = 0.07$), in either group.

Table 2

Self-Awareness Means and Standard Deviations (in Parenthesis) for High and Low Social Anxiety Groups during the Unanticipated and Anticipated Speeches

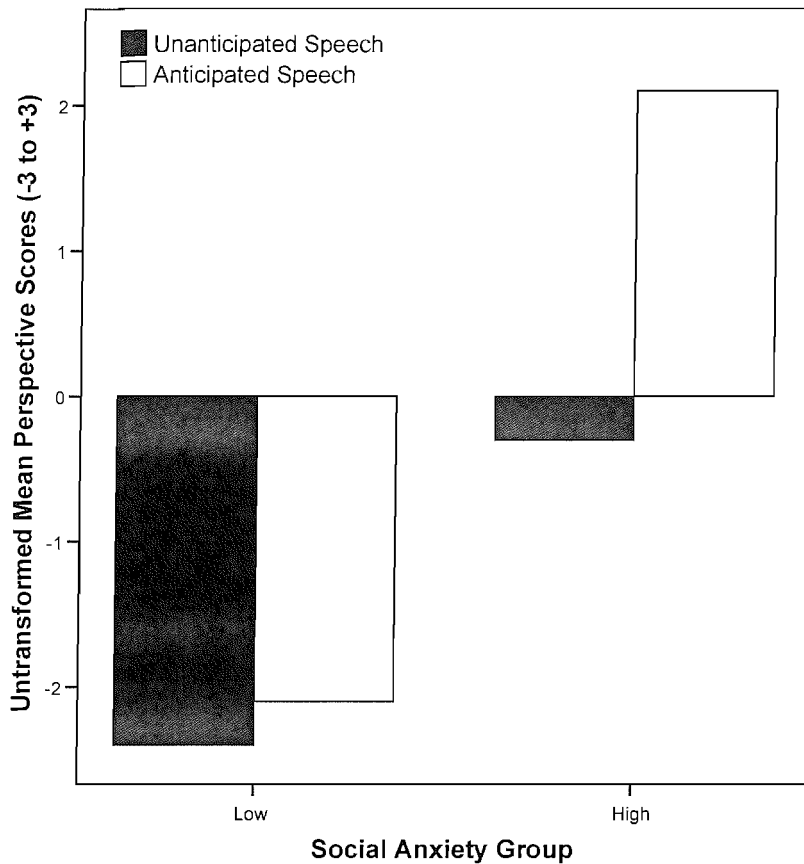
Measures	Low social anxiety	High social anxiety	Univariate analyses	η^2
<i>Self-Awareness</i>				
Public	22.55 (7.40)	32.60 (6.49)	$t(38) = -4.56^{**}$	0.12
Private	14.05 (6.17)	17.15 (6.52)	$t(38) = -1.54$	0.04
Surroundings	20.15 (7.56)	22.80 (7.77)	$t(38) = -1.09$	0.02
<i>Unanticipated Speech</i>				
Public	12.20 (4.52)	16.35 (3.32)	$t(38) = -3.30^*$	0.08
Private	7.30 (3.21)	8.20 (3.03)	$t(38) = -0.91$	0.02
Surroundings	10.70 (4.34)	11.85 (4.70)	$t(38) = -0.80$	0.02
<i>Anticipated Speech</i>				
Public	10.35 (3.61)	16.25 (3.56)	$t(38) = -5.19^*$	0.13
Private	6.75 (3.41)	8.95 (4.19)	$t(38) = -1.81$	0.04
Surroundings	9.45 (3.79)	10.95 (4.07)	$t(38) = -1.20$	0.03

Note. η^2 = Effect Size. $*p < .01$; $**p < .001$.

Perspective. Perspective was measured on a +3 (*observer*) to -3 (*field*) bipolar scale. In the high and low social anxiety groups, the mean perspective ratings were (Unanticipated speech: -.15, $SD = 2.03$; -1.20, $SD = 1.50$) and (Anticipated speech: 1.05, $SD = 1.40$; -1.05, $SD = 1.57$),

respectively. Perspective ratings were analyzed using a 2 x 2 (Experimental condition x Group) mixed ANOVA. There were main effects of perspective, $F(1, 38) = 8.59, p < .01, \eta^2 = 0.18$ and of group, $F(1, 38) = 9.10, p < .05, \eta^2 = 0.23$, which were moderated by a significant Perspective x Group interaction, $F(1, 38) = 5.10, p < .05, \eta^2 = 0.11$. This interaction is illustrated in Figure 3. High socially anxious participants tended to use the observer perspective in the anticipated speech, whilst, in the unanticipated speech, they gave ratings around zero, which may indicate they were switching between observer and field perspectives. By comparison, low socially anxious participants' tended to use a field perspective in both speeches.

Post hoc *t*-tests showed a significant difference in perspective between the two groups during the anticipated speech, $t(38) = -4.41, p < .001, \eta^2 = -0.12$, but not during the unanticipated speech, $t(38) = -1.85, p = .13, \eta^2 = -0.04$. In the high social anxiety group, there was a significant difference in perspective between the two speeches, $t(19) = -3.55, p < .01, \eta^2 = -0.19$, but there was no difference in reported perspective in the low social anxiety group, $t(19) = -.45, p = .61, \eta^2 = -0.02$. In addition to rating the perspective of their images during the speeches, participants also described the content of any observer perspective images that they reported. Descriptions of images were not analyzed, but are available from the researcher.



Minus figures represent the field perspective and plus figures represent the observer perspective.

Figure 3. Untransformed mean perspective taken by low and high socially anxious participants during the unanticipated and anticipated speeches.

Anxiety. Participants rated anxiety on a 0-100 scale during the unanticipated speech (Low group: $M = 54.00$, $SD = 24.79$; High group: $M = 71.50$, $SD = 21.34$) and anticipated speech (Low group: $M = 37.00$, $SD = 23.19$; High group: $M = 66.50$, $SD = 23.23$). Anxiety ratings were analyzed using a 2 x 2 (Experimental condition x Group) mixed ANOVA. There were main effects of experimental condition, $F(1, 38) = 4.54$, $p < .05$, $\eta^2 = 0.10$, and of group, $F(1, 38) = 13.37$, $p < .001$, $\eta^2 = 0.26$. Participants reported more anxiety during the unanticipated speech than during the anticipated speech. In addition, high socially anxious participants were more anxious overall (pooled $M = 138.00$, $SD = 39.14$) than low socially anxious participants (pooled $M = 91.00$, $SD = 40.50$), $t(38) = -3.59$, $p < .001$, $\eta^2 = -0.09$. The Experimental condition x Group interaction was not significant, $F(1, 38) = 2.79$, $p = .12$, $\eta^2 = 0.07$. However, because the

interaction was in the direction of statistical significance, I decided to run post-hoc analyses.¹ There was a trend for participants in the low social anxiety group to report higher levels of anxiety during the unanticipated speech than during the anticipated speech, $t(19) = 1.96, p = .06, \eta^2 = 0.10$. However, there were no significant differences in anxiety in the two speeches in the high social anxiety group, $t(19) = 0.92, p = .36, \eta^2 = 0.04$.

Negative Thoughts

Table 3 shows the mean scores for frequency and belief on the NTC. Frequency and belief were analyzed separately with 2 x 2 (Experimental condition x Group) mixed ANOVAs.

Frequency of negative thoughts. There were main effects of experimental condition, $F(1, 38) = 11.78, p < .001, \eta^2 = 0.24$ and of group, $F(1, 38) = 14.99, p < .001, \eta^2 = 0.28$. Participants reported a higher frequency of negative thoughts in the unanticipated speech, compared to the anticipated speech. In addition, high socially anxious participants reported more negative thoughts overall, compared to low socially anxious participants (see Table 3 for means and statistics). The Experimental condition x Group interaction was not significant, $F(1, 38) = 2.80, p = .10, \eta^2 = 0.07$. High socially anxious participants' frequency of negative thoughts did not differ in the two speeches, $t(19) = 1.17, p = .26, \eta^2 = 0.06$. However, participants in the low social anxiety group reported significantly more negative thoughts in the unanticipated, compared to in the anticipated speech, $t(19) = 3.84, p < .001, \eta^2 = 0.20$.

Belief in negative thoughts. There were main effects of experimental condition, $F(1, 38) = 7.37, p < .01, \eta^2 = 0.16$ and of group, $F(1, 38) = 12.00, p < .001, \eta^2 = 0.24$. Participants reported a higher belief in negative thoughts in the unanticipated speech, compared to the anticipated speech. In addition, high socially anxious participants believed their negative thoughts overall significantly more than low socially anxious participants (see Table 3). The Experimental condition x Group interaction was not significant, $F(1, 38) = 1.35, p = .25, \eta^2 = 0.03$.

Performance (Predicted and Actual)

Table 3 shows the mean scores for participants' predicted and actual performance ratings for the two speeches (higher scores indicate better performance). Predicted and actual performance ratings were analyzed separately with 2 x 2 (Experimental condition x Group) mixed ANOVAs.

Predicted performance. There were main effects of experimental condition, $F(1, 38) = 7.79, p < .01, \eta^2 = 0.17$ and of group, $F(1, 38) = 8.66, p < .01, \eta^2 = 0.17$. Participants predicted worse speech performances in the unanticipated speech than in the anticipated speech. In

¹ I repeated this procedure for frequency of negative thoughts.

addition, high socially anxious participants predicted overall significantly worse performance than low socially anxious participants did (see Table 3). The Experimental condition x Group interaction was not significant, $F(1, 38) = .006, p = .10$.

Actual performance. There was a main effect of experimental condition, $F(1, 38) = 16.95, p < .001, \eta^2 = 0.31$, but no main effect of group, $F(1, 38) = 3.37, ns, \eta^2 = 0.08$. Participant's actual performance ratings were better after the anticipated speech than after the unanticipated speech. Ratings of performance did not differ in the two speeches in either group (see Table 3). The Experimental condition x Group interaction was not significant, $F(1, 38) = 0.24, p = .63, \eta^2 = 0.006$.

Table 3

Untransformed Mean Scores (with Standard Deviations in Parentheses) on the Negative Thoughts Checklist (NTC; Frequency & Belief Ratings) during the Unanticipated and Anticipated Speeches and Performance Ratings Before and After the Two Speeches

	Low social anxiety	High social anxiety		
	Mean (SD)	Mean (SD)	$t(38)$	η^2
NTC				
<i>Thought frequency</i>				
Unanticipated speech	1.32 (0.73)	2.18 (0.86)	-3.19**	0.08
Anticipated speech	0.96 (0.65)	2.04 (0.94)	-4.16***	0.10
<i>Belief ratings</i>				
Unanticipated speech	35.97 (21.51)	59.67 (18.29)	11.86***	0.24
Anticipated speech	31.00 (23.16)	56.62 (23.24)	11.24**	0.23
Performance Ratings				
<i>Unanticipated speech</i>				
Before	27.00 (18.38)	16.00 (13.91)	2.60*	0.07
After	25.00 (19.60)	17.50 (17.43)	1.49	0.03
<i>Anticipated speech</i>				
Before	36.50 (16.31)	23.50 (17.25)	2.64*	0.16
After	38.00 (20.41)	27.50 (17.12)	1.77	0.04

Note. NTC, Thought frequency, η^2 = Effect Size. * $p < .05$, ** $p < .01$, *** $p < .001$.

Discussion

This study examined the effects of anticipatory processing in a subsequent speech in high and low socially anxious individuals. In anticipation of a social-evaluative situation, high socially anxious participants reported more anxiety and more negative and unhelpful self-images, compared to low socially anxious participants. These findings are broadly consistent with Clark and Wells' (1995) suggestion that anticipatory processing is associated with more anxiety and more negative self-images about the upcoming social situation, and with Hinrichsen and Clark's (2003) first study and Vassilopoulou's (2005) studies on anticipatory processing in high and low socially anxious individuals. However, contrary to Clark and Wells' predictions, both high and low socially anxious participants rated memories of past speeches as rather neutral and as having a somewhat helpful influence on their preparation for the second speech. This latter finding might nevertheless be an artefact of giving the first speech, as when participants recollected memories of past speeches, they may have been only recollecting on the first speech they had just given. Thus, knowing they would have to give a second and similar speech, participants' ratings might reflect their belief that their performance on the first speech helped their performance on the second speech.

Alternatively, socially anxious people might experience public speaking events as negative or unhelpful in-situ, but over time they remember these situations in a more positive or helpful manner. This post-event processing may therefore serve as a potential coping strategy for coming to terms with past-perceived social failures. Indeed, Mellings and Alden (2000) found that post-event processing could help socially anxious individuals resolve their social fears. However, other research shows that post-event processing plays a key role in maintaining anxiety in social phobia. For instance, Rachman, Grüter-Andrew, and Shafran (2000) found that high socially anxious individuals engaged in more recurrent and intrusive post-event processing after anxiety provoking social situations than low socially anxious individuals did.

High socially anxious participants also reported more overall self-awareness, more self-awareness that is public, more anxiety, a greater frequency of negative thoughts, and a higher belief in those thoughts, and poorer predictions of performance, compared to low socially anxious participants. These results suggest that increases in public self-awareness, anxiety, and negative thinking are a normal part of performing a speech. However, high socially anxious individuals start with higher levels of these processes than low socially anxious individuals do, and therefore

the rises that occur in response to social interaction may put them above a disabling threshold.

Clark and Wells (1995) seem to imply that anticipatory processing contributes to the socially phobic individual's negative experience of the event itself. In this study, anticipation affected the two groups differently in some ways during the second speech, but in other respects, it operated in the same ways during it. On the one hand, high socially anxious participants tended to use the observer perspective during the anticipated speech, but not during the unanticipated speech, where they may have been switching between observer and field perspectives. In contrast, low socially anxious participants tended to use the field perspective during both speeches. On the other hand, low socially anxious participants reported *less* anxiety during the anticipated, compared to during the unanticipated speech. They also reported more negative thoughts during the unanticipated speech than during the anticipated speech. Furthermore, participants reported more anxiety, higher frequency and higher belief in negative thoughts, and predicted worse speech performances in the unanticipated speech than in the anticipated speech. Participants' actual performance ratings were also better after the anticipated speech than after the unanticipated speech. Collectively, these results provide limited support for Clark and Wells' proposal that anticipatory processing contributes to socially anxious individuals' negative experience of the situation itself. However, they do indicate that anticipatory processing, at least before a speech, may have some potential benefits for participants' speech performance.

What factors might account for these mixed results? One possibility may relate to the design of the study, in that, all participants performed the unanticipated speech first. Consequently, the second speech may have been affected by carry over or practice effects from the first speech. Whilst state anxiety differences prior to the speeches were ruled out, other effects, such as prior practice in giving the first speech may have been responsible for fewer negative thoughts in the second speech. Practice effects or exposure might also account for the fact that anticipatory processing had no influence on participants' public and private self-awareness, negative thoughts (frequency or belief), and anxiety during the second speech. Other harder to quantify factors include familiarity with surroundings and comfort with task demands.

Alternatively, the experimental social situation adopted in this study may have been too highly structured. As Rapee and Heimberg (1997) have proposed, and research has shown (Thompson & Rapee, 2002), structured situations where there are clear and explicit expectations of how to perform (e.g., a speech) are less likely to show decrements in performance in high socially anxious participants. This is because structured situations make clear demands and limit the use of safety behaviours, compared to unstructured situations (e.g., a party). Thus, in structured situations, socially anxious individuals might believe that their performance is more

likely to match a standard expected by them or by an audience, whereas, in unstructured situations, they believe the opposite. If a more unstructured experimental social task had been used, for instance, a conversation between a participant and a stooge, then there may have been more likelihood of finding a significant effect of anticipatory processing on participants' self-awareness, and other processes.

Nevertheless, the idea that participants may believe that anticipatory processing has some benefits is consistent, both with the finding that participants rated actual performance better during the anticipated, compared to during the unanticipated speech, and with research into post-event processing, where some individuals report that it is helpful (Field & Morgan, 2004; Mellings & Alden, 2000; Rachman, Grüter-Andrew, & Shafraan, 2000). One critical point is that the nature and content of anticipatory processing is likely to affect whether it is helpful or not. If an individual preparing for a speech remains task focused, prepares some general ideas, and imagines a positive outcome, then this is likely to facilitate performance, whereas, being anxious and creating negative and unhelpful self-images is likely to impede performance. Moreover, high socially anxious individuals might focus on avoiding appearing anxious, whereas, low socially anxious individuals might focus on trying to perform a good speech.

One noteworthy finding is that anticipatory processing had a significant effect on the perspective that participants took during the speech, but only among participants in the high social anxiety group. That is, high socially anxious participants tended to use the observer perspective during the anticipated speech, whereas during the unanticipated speech they may have been switching between observer and field perspectives. This lends some support to Clark and Wells' (1995) suggestion that if a socially anxious individual does not avoid an event, but enters it, then "...he or she is likely to be already in a self-focused processing mode" (Clark 2001, p. 411). Because of anticipatory processing, the information provided by this study on the features of anticipatory processing suggests why high socially anxious participants may have entered the second speech in a self-focused state. High socially anxious participants reported more anxiety that is anticipatory and more negative and unhelpful self-images than low socially anxious participants did. The combination of negative self-images and anxiety might increase the probability of using the observer perspective in a future speech, because high socially anxious participants are motivated to check out how they are coming across to others. Low socially anxious participants do not need to do this because they may have generated more images that are positive during anticipatory processing, and therefore assume they will come across well. However, an alternative explanation for the above results is that high socially anxious participants switched to an observer perspective after delivering the first speech. That is, the results may be an

artefact of being asked to repeat a performance.

The observer perspective images reported in this study suggest there may be differences in the types and valence of images that spontaneously arise in high and low socially anxious individuals during anticipatory processing and that it would be valuable to follow up this preliminary evidence with a qualitative study that explores the phenomenology of imagery in more detail. For example, one high socially anxious participant said, “[I] was watching myself fidget. I was cringing at the image of myself giving the speech”, while another said, “People looking at me, thinking I was stupid and unattractive.” In one description, the individual is seeing an image of self, whereas, in the other, the individual imagines him or herself being seen by others. This raises the question of whether observer perspective self-images usually include being seen by others during anticipatory processing, or whether the self is seen in isolation. In other words, the socially anxious individual becomes the observer and therefore the judge of any observed performance. Stopa and Clark (1993) showed that socially phobic individuals had more negative self-referent thoughts (e.g., “I am being boring”) than other-referent negative thoughts (e.g., “He thinks I am boring”). Tanner, Stopa, and De Houwer (2006) also reported that high and low socially anxious individuals had more negative self-evaluative thoughts than thoughts about other people. Future research could therefore assess whether there is any association between negative self-referent thoughts and perspective images in social anxiety.

Three other limitations of the study are worth noting. First, this study was based on analogue, not patient groups, and in order to generalize the findings to individuals with social phobia, the study requires replication with clinical groups. Second, a clinical measure of depression (e.g., BDI-II) was not used and therefore it is not possible to establish if the findings of the current study are unique to social anxiety, or due to elevated levels of depression among high and low socially anxious individuals, or a mixture of both. Finally, the study relied exclusively on self-report measures to assess the study variables, thus, it is not possible to rule out demand effects. One way that future research could address the issue of demand when using self-report paradigms, would be to measure participants’ physiological arousal before or during a stressful social task. If arousal was greater when anticipating or during the task, this would provide some validation for subjective reports.

In sum, Clark and Wells’ (1995) model of social phobia suggests that anticipatory processing plays a key role in maintaining social anxiety. The current results provide partial support for that hypothesis. Anticipatory processing was associated with more anxiety and more negative and unhelpful self-images. Moreover, during the anticipated speech, high socially anxious participants tended to use the observer perspective, whereas, low socially anxious

participants did not. In addition, in some cases, participants find anticipatory processing somewhat helpful and further research is needed to confirm that this is true and to explore what type of anticipatory processing is helpful. Indeed, anticipatory processing is likely to be more helpful for a speech situation, than, say, for a conversation with a group of people. Research is needed to clarify if this is the case.

Chapter 4: Experiment 2

Introduction

In Experiment 1, a quantitative methodology was used to examine anticipatory processing in social anxiety, in which participants completed a number of self-report questionnaires containing fixed-choice items. However, fixed-choice questionnaires restrict participants to a limited range of responses that the researcher considers important and may conceal details of the personal and social context, which influences the meaning attributed to experiences (Wilkinson, Joffe, & Yardley, 2004). In contrast, qualitative research, such as interviews, allows the views of the participants to be obtained with fewer restraints imposed by the researcher. Interviews allow participants to provide insights that have not been anticipated by the researcher and allow the researcher to gain an appreciation into how participants actively make sense of their experience (Wilkinson et al., 2004).

The aims of this study were two-fold. The first aim was to follow up the preliminary evidence of Experiment 1 with a qualitative study that intensively explored the phenomenology of anticipatory processing in high social anxiety. For example, the results of Experiment 1 suggested that, before a social situation, high socially anxious individuals experience negative and unhelpful self-images during the situation, which may contribute to them experiencing observer perspective images in the situation. Clark and Wells' (1995) model of social phobia also proposes that high socially anxious individuals' anticipatory thoughts can be dominated by negative images of themselves in the event, however, the model does not consider other dimensions of self-images that may add to problem maintenance (e.g., perspective [observer vs. field], valence [negative vs. positive], or content [size and vividness]). Therefore, this study aimed to conduct a more systematic and detailed investigation of anticipatory self-imagery that may inform models of social anxiety and increase our understanding of the nature of self-images in the condition.

The second aim of this study was to extend Hinrichsen and Clark's (2003) first study that looked at high socially anxious individuals' anticipatory cognitive processing habits, by conducting a thematic analysis of participants' semi-structured interview data provided during the current study. As previously described in Experiment 1, Hinrichsen and Clark's first study and Tanner, Stopa, and De Houwer's (2006) methodologies were largely quantitative; thus, they did not provide detailed descriptive data of high socially anxious individuals' anticipatory processing habits. Moreover, Hinrichsen and Clark's first study used a purely deductive or theoretically driven approach - based on Clark and Wells' (1995) model - to compare individuals' anticipatory processing habits. Although the 'deductive' approach allows the researcher to replicate, extend, or refute prior discoveries (Boyatzis, 1998), it does not allow him or her to make new discoveries that

could possibly inform current theories of social phobia and/or lead to new avenues of research.

An alternative method is to use a more ‘inductive’ approach to discover themes from the data. The inductive approach is typical of qualitative methodologies. This study used a mixed approach, in which themes were selected from Clark and Wells’ (1995) model of social phobia and previous research (Hinrichsen & Clark, 2003), then confirmed, and supplemented by inspection of the data. The deductive themes applied to the data were prior preparation, anticipatory thoughts about catastrophisation, recollections of past similar social events, and self-images and impressions about performing in the future event. Thus, two different ways were used to develop a thematic code - theory driven and data or inductive driven. These two approaches can be considered to form a continuum from theory-driven to data-driven approaches (Boyatzis, 1998). A mixed approach was chosen because very little is known about anticipatory processing and the researcher did not want to miss important themes by using a purely deductive approach (Tanner, Stopa, & De Houwer 2006).

Phenomenological thematic analysis attempts to describe and interpret meanings with depth and richness. It does not aim to report statistical relationships among variables or the frequency of certain behaviours (van Manen, 1990). Thematic analysis was chosen because of its flexibility, that is, it is independent of theory and epistemology, and can be applied across a range of theoretical and epistemological approaches. Through its theoretical and technical freedom, thematic analysis provides a flexible and useful research tool, which can potentially provide a rich and detailed, yet complex, account of data (Braun & Clarke, 2006). Other approaches, such as interpretative phenomenological analysis, grounded theory, discourse analysis, or narrative analysis, stem from a particular theoretical or epistemological position (Braun & Clarke). Thus, in the current study, no statistical relationships among variables were examined. In addition, consistent with other exploratory qualitative research that has used small sample sizes (e.g., Burnell, Coleman, & Hunt, 2006) no predictions were made and no hypotheses were tested.

Method

Participant Characteristics

Eighty-eight students at the University of Southampton were screened using the Brief-Fear of Negative Evaluation scale (BFNE; Leary, 1983), which was administered twice-once for screening and once again during the study. The BFNE was used to select individuals who had scores of ≥ 44 . This cut off point corresponded to one standard deviation (*SD*) above the mean BFNE score ($M = 36.00$, $SD = 8.10$; Leary). To be included in the analysis, participants were again required to score ≥ 44 on the BFNE when re-tested just after the interview. There were no significant differences in participants’ BFNE scores between screening ($M = 47.91$, $SD = 3.67$)

and testing ($M = 47.64$, $SD = 4.32$; $t(10) = 0.29$, ns).

Eleven high socially anxious participants were interviewed (8 women, 3 men, $\chi^2 [1, N = 11] = 2.27$, ns), who had a mean age of 19.55 ($SD = 2.38$). Participants' mean score ($M = 45.45$, $SD = 8.57$) on the Social Interaction Anxiety Scale (Mattick & Clarke, 1998) was greater than the mean score ($M = 34.60$, $SD = 16.40$) for the socially phobic patients in Mattick and Clarke's sample. Participants' mean score ($M = 36.36$, $SD = 10.18$) on the Social Phobia Scale (Mattick & Clarke) was comparable to the mean score ($M = 40.00$, $SD = 16.00$) for the socially phobic patients in Mattick and Clarke's sample. Participants' mean score on the Beck Anxiety Inventory (Beck & Steer, 1990) was 18.63 ($SD = 7.00$).

Descriptive Measures

The *Brief Fear of Negative Evaluation scale* (BFNE; Leary, 1983), *Social Phobia Scale* (SPS; Mattick & Clarke, 1998), *Social Interaction Anxiety Scale* (SIAS; Mattick & Clarke), and *Beck Anxiety Inventory* (BAI; Beck & Steer, 1993) were previously described in Experiment 1.

Materials and Procedure

All participants took part in a semi-structured audiotaped interview that focused on their anticipatory cognitive processing habits. The interview was conducted individually and lasted approximately 1 hour. Only the researcher and the participant were present in the room during the interview. Before the interview began, the nature of it was explained to the participant and informed consent was obtained. The participant's consent was also obtained for the interview being audiotaped and during the interview; the tape recorder was placed inconspicuously to stop the participant from feeling too uncomfortable.

The interview guide consisted of a series of standardized open-ended questions and probing questions to supplement them if participants had difficulty in describing their experiences (see Appendix). This kind of questioning allows participants to give their personal reactions to the questions rather than forcing them to choose between predefined options. Initial questions, for example, "How were you feeling at the time ..." were asked as a way of easing both the researcher and the participant into the interview, and creating a rapport to enable questions of a more personal nature to be asked (Wilkinson, Joffe, & Yardley, 2004).

The interview guide, containing six broad questions, was designed to elicit accounts from the participants rather than short answers, enabling rich data to be collected. First, participants identified a recent social situation, which they had spent some time anticipating and about which they had felt significantly anxious.² Next, they were asked to describe how they prepared for the

² To identify an event that participants felt significantly anxious about, they were asked to rate

future social event and what they hoped to achieve by carrying out that preparation. They also described the ‘worst’ possible thing(s) that could happen to them during the anticipated event. Then, participants were asked to indicate whether, while anticipating the event, they had thoughts about similar past events. Subsequently, they talked about the kind of impression(s) that they wanted to make in front of other people. Participants also indicated whether they had a mental image of how they would perform during the event, the extent to which the image involved seeing the self from a field or an observer perspective, and the extent to which it appeared helpful or unhelpful, exaggerated, and how vivid it was. They then described the modality of the image, that is, whether it was predominantly visual (seen), auditory (heard), tactile (felt), olfactory (smelt), gustatory (tasted), or a mixture of the five senses. Participants were then asked whether the image of themselves during the future event was related to their own general self-image, and how important that self-image was to them. Finally, they were asked whether there was anything else, they would like to add that might not have been discussed. After the interview, participants completed the BFNES, SPS, SIAS, and BAI. Finally, they were debriefed verbally, supplemented by the provision of a written debriefing statement.

Method of Thematic Analysis

Boyatzis’s (1998) and Joffe and Yardley’s (2004) methods for thematic analysis of qualitative data were used to analyze the transcriptions obtained from in-depth semi-structured interviews. The purpose of thematic analysis is to represent an individual’s own point of view through descriptions of experiences, beliefs, and perceptions. It is not concerned with reporting statistical relationships among variables or the frequency of particular behaviours (van Manen, 1990). Instead, thematic analysis searches for a deeper understanding and insightful descriptions of lived experiences. In this study, the ‘lived’ experience is an anticipatory one.

Stages of Thematic Analysis

All the interviews were transcribed verbatim³ except for any names that may identify the participant, which were omitted. Thematic analysis was conducted through immersion in the transcripts, re-reading to gain familiarity, and highlighting ‘themes.’ Following Joffe and Yardley

how anxious they felt about the event on a 0%-100% scale. To be considered ‘significant’, participants had to rate the event as $\geq 70\%$.

³ The following notation was used: (...) was used to represent a pause in the conversation; (...) was used to indicate any omission between two sentences; words omitted because they contained identifying information or words added for clarification by the researcher were shown in square brackets []; and words emphasized in a quotation by the researcher were italicized [italics added].

(2004), themes were defined as specific patterns of interest, and were applied to units of meaning, defined as whole sentences and/or paragraphs. In addition, both the manifest material (directly observable) and latent material (requiring interpretation) were included in the analysis. Thematic analysis was accomplished using the following procedures:

1. A simple reading of the complete set of transcripts was performed in order to become acquainted with them. Notes were not taken at this time.
2. A second reading of the complete set was conducted in order to identify themes. Notes were taken and main points and themes were summarized.
3. Participants' responses to questions or categories 1-6 and associated prompts were then clustered into separate coding categories. For example, Question 5 asked participants about the kind of impression(s) they wanted to make in front of other people, while anticipating an upcoming social event. This question contained nine sub questions or sub categories, including sub questions that asked about the association between impressions and images, the modality of images, and the vividness of images. Thus, all of the participants' responses to each of the nine sub categories and associated prompts within Question 5 were placed into nine separate folders.
4. Participants' responses to each category and sub category were then read, reviewed, reread, and reviewed again in order to gain familiarity with the themes. The theory and prior research driven questions or deductive themes, that is, categories 1-5, were then applied to their related categories and patterns were noted. Then, evidence for inductive themes was looked for in all categories and patterns noted. When it appeared unlikely that any new themes would be revealed, it was determined that a saturation point had been reached. Pseudonyms chosen by the researcher were assigned to each participant.

Results

All participants were able to identify a recent social situation where they had felt a significant amount of anticipatory anxiety ($M = 81.81$, $SD = 10.07$). They identified the following anxiety-provoking situations: starting University ($n = 5$); public speaking ($n = 2$); interview ($n = 1$); tutorial ($n = 1$); funeral attendance ($n = 1$); stage performance ($n = 1$). Five broad and 14 sub 'deductive' themes emerged from the data analysis: (1) *prior preparation* (specific, general, and goals); (2) *catastrophic thoughts* (specific and general); (3) *recollection of past similar social events* (general remembering of past events); (4) *impressions*; and (5) *self-images* (volitional control, valence, images linked to past events, perspective, embellishment, modality, general use, and importance of self-images). In addition, although not included in this study's predefined deductive themes, two additional themes emerged from the data, which would be predicted by

cognitive models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997); that is, *avoidance of social situations*; and *physical symptoms of social anxiety*. The latter themes emerged through the techniques of splicing and linking, which involved fusing a number of themes under one category (Burnell, Coleman, & Hunt, 2006). Lastly, three ‘inductive’ themes emerged from the raw data: (1) *bad dreams and nightmares*; (2) *loomingness*; (3) and *metacognitive processing*.

Deductive Themes (Based on Clark & Wells’ [1995] Model of Social Anxiety and Current Research)

Prior Preparation

Specific Situations

Participants’ preparation for specific situations included memorization, visualization, relaxation techniques, using medication, changing their appearance, and distracting themselves from the upcoming situation. For example, Sue described preparing for a clarinet performance on stage and how that preparation made her feel:

Practiced a million, billion times, it makes absolutely no difference ... because you go out there and you see everyone starring at you, and you completely forget everything, screw it up; and once you make one mistake, you make a million others, because you get all nervous and shaky. It’s not very nice; I’m never doing it again [Makes you feel] “As if you are disappointing everyone, because it’s not just you, it’s the rest of your group as well It makes you feel pants, because you have wasted loads of time ... and then you sit down and think I could have done so much better.”

Claire’s preparation for a future tutorial appeared to centre on how she would look in front of other people:

I made sure that I looked okay ... I didn’t want anyone to look at me strangely, so I didn’t want to feel insecure, on top of having to be with other people I talked myself into it, thinking it will be good for me [It made Claire feel] “More confident and made me feel that it wouldn’t give people a reason to stare at me. If I didn’t have make up on, I might feel unattractive, and people might look at me and think, “She looks unattractive;” and me preparing myself ... gave me the motivation to go, to try to overcome the situation.

Jack stressed the importance of arriving early before a job interview:

... I was really early, obviously, because I’m anxious, like all anxious people

Thinking about where you’ve got to be and what you’ve got to do, it’s always in your mind, looking at the clock ... you’re going to be more alert. Also, you don’t want to get

there late and be in a panic. I suppose if you're liable to panic anyway, the last thing you want is additional things exacerbating it; it might get your heart rate up even more. So, I try to get there well early I read stuff and tried to memorize a few bits and pieces Just thinking about it, preparing for eventualities, what they might say - it takes a lot of time, it's quite draining, I'd be quite tired after that.

General Preparation

Sue highlighted the importance of what she would wear, when preparing for social situations beforehand, "Plan everything that you wear or all the things you are going to say and stuff, if you can; but mostly what you wear, it's harder to know what to say," as did Emily, "... I suppose in certain situations, I can alter slightly the way I portray myself, especially through clothes." Claire said, "... There'll be people that will want to talk to me and I don't like socializing with people ... so in that situation beforehand, I'll get very drunk, so I don't feel as tense and more confident. Unless I'm drunk, I don't like being surrounded by many people." Julie explained that, "I think about situations before I go into them and plan eventualities [being put down by someone] and problems I might come across; so that, if they do happen, I know what to do." Sharon believed that, "I probably visualize it and then prepare myself for what I expect to happen If it's something where you're being judged, then I'll prepare."

Goals in Prior Preparation

Several high socially anxious participants' comments represented their goals in preparing for social events in advance. Jack said, "Not to look completely stupid, not have a complete blank, not remember anything, and not have to leave [the interview]," while Emily thought, "... To just give me more confidence, so I can go into that situation [University]." Julie explained that, "I hoped to make it [start University] a bit easier ... to put my mind at ease beforehand about the situation," whilst Claire believed, "To be able to feel more secure with the situation [tutorial], so I would be able to cope with it better. If I feel secure within myself, then I don't feel as nervous, and it doesn't seem as scary." Joanne said, "That I would be quite strong I guess it's a bit of comfort if you think about what's going to happen in the situation and how you prepare for it Then expect the worst; it might not be as bad," while Sue thought:

So I knew that [stage performance] off by heart, I could just stand there and play it [the clarinet] without having to think about it, and completely switch off from the situation; it never works because your brain is thinking of other things at the time.

Catastrophic Thoughts

Specific Situations

Claire's worst-case scenario about participating in a forthcoming tutorial was:

... Other people getting along, talking, and me just sat there, really quiet, and seeming strange. I think I would present myself in a way that I wouldn't want to present myself, in a negative way; that would be the worst thing. I could also embarrass myself somehow Ashamed as well, mostly, I suppose helpless, because I don't really know what I can do about it. Actually, the worst thing is being aware that I'm different to other people; it highlights my insecurities and makes me feel different When I'm put in a situation where it's made clear that I have problems that other people may not [have], such as social phobias, it seems that kind of highlights my problems and I don't know what I can do about it ... I don't want the feeling of wanting to be like someone else and knowing I can't.

Sue said:

Standing up in front of my concert band, that's the worst I'm rubbish at playing the clarinet, so it was really embarrassing. I kept squeaking and then, because you get all shaky, it goes all wrong; it was just horrible [You imagine] all the worst things that could happen, all the worst case scenarios, and you just get a really horrid feeling. You just worry about it all the time. I always never sleep before it and I always talk to everybody about it and make everybody think that you are completely rubbish. So, when you screw it up, they don't think badly of you.

Three other participants described the worst thing(s) that could happen to them when anticipating beginning University:

I imagined that all my flat mates would be really pretty girls with a lot of confidence; very like some people I've met before that tend to make my confidence less. I imagined that they'd all be like that and that there's no way I'd manage to be friends with them I imagined having the worst people in my flat with me. (Julie)

That I wouldn't meet anyone that I like or anyone that would like me That I wouldn't bond with people or really connect with them and I would regret going to that particular university I was kind of imagining that people wouldn't enjoy my company, that I wouldn't have anything interesting to say to people I think it's the fear of regretting, getting there, making that decision. (Simon)

In addition, Simon felt, "Quite depressed I saw myself negatively, because I thought that I was going to meet new people, so it must be because of me." Jane also described that, "... I wouldn't like anyone that I lived with; I'd feel excluded or other people would bond and I really wouldn't fit in." Sharon described her worst-case scenario about giving a presentation, "... Completely forgetting what I was talking about ... and I think stuttering ... just forgetting and

then stumbling over words,” as did April, “That I’d forget what I was saying.” Imagining that made April feel, “Really stupid, like an idiot I was getting really worried about looking really stupid in front of people.”

General Use of Catastrophic Thoughts

Participants were asked if it was normal for them to spend a lot of time imagining worst-case scenarios before entering social situations. Simon said, “Yeah ... more so than during the situation ... more before, it’s like the *unknown* [italics added] ... you’re not sure what’s going to happen,” while Mark thought, “... I become very uptight about the whole thing [speaking in public] and I tend to shrink and become very nervous and very aware of my own voice.” April believed, “Yeah I do, just generally. I worry a lot that I can’t get into places that make me anxious about quite a lot of things” and Julie said, “Yeah, any situation Just feeling uncomfortable, like I’m sitting there and everyone else has somebody to talk to and I’m on my own.”

Interestingly, Sue expressed the apparent benefits of imagining worst-case scenarios:

Yeah, absolutely, all the time, but then I find that if I don’t think of the worst case scenario and then it happens ... it’s much more likely to happen if you don’t think of it, and you’re less prepared. So, if you just think that that’s going to happen all the time, and then it does, it’s a little bit better, than if you don’t think it’s going to happen and it does.

Jane pictured positive scenarios:

Yes, I do that, but more so imagine how good it would be, but probably won’t be Like how it would be with a new guy or imagine living with a nice set of girls and always having fun and watching videos and stuff; imagine how cool that would be.

Recollections of Past Similar Social Events

All participants described dwelling on past similar social events in anticipation of the future situation, except Claire, who said, “No actually, I was just trying to focus on what I was going to do Going to the tutorial, I was just focused on what was ahead of me.” Jack talked about recalling both positive and negative memories of past social events and how negative events fused into one common type of remembrance:

Yeah ... definitely, good ones and bad ones, mostly bad Occasionally, if you get something that goes okay, got a little bit of confidence from ... that’s not a complete disaster. Then, you’ve gone into something quite similar ... I’ve remembered that one, which is good, as it builds up your confidence. And the negative ones, they sort of get *merged* [italics added], generalized a bit. I think that’s part of the problem - once you’ve had several that are enough for your brain to make this generalization about those types of events; so then, they all merge into one really [For example,] going to a pub with

10 or 15 people ... you remember the last time you went out with this big group ... and they merge together, and you generally think, 'I don't like doing that.' Then, if you have a load of them ... it's a bit of a problem, you have different pockets of things. I don't like doing that ... and that were bad, and then they all rolling into one sort of thing - bit of a snowball.

Julie described how previous experiences affected her thoughts about beginning University:

There was one particular girl who was my friend ... she had the sort of confidence about her that seemed like a false confidence, which made me feel very unconfident ... she'd put people down. And so, she made me feel very unconfident about myself So, I'd had experiences like that before that made me unconfident about myself It affected me quite a lot, because I [was] aware that it could happen again ... I can be made unconfident again, if I came across a certain type of person.

General Remembering of Past Social Situations.

Mark described a "... General remembering of past experiences ... cumulative memory. It's the same type of feeling that you remember, rather than any event ... I feel like I'm becoming aware that everybody is becoming aware of me in the room," while April described being stuck in the past, "... If something does go wrong, I do dwell on it a lot, and [am] not able to move on too well Just keep thinking about it and how it shouldn't have gone wrong." Sue also said:

I just remembered all the other times that I messed up with the clarinet, like my exam, when I got so shaky; I dropped my clarinet on the floor. I had a big crying thing and had to leave That was at the back of my mind all the time ... you feel like you are letting them [parents] down, letting everyone down.

In contrast, Joan viewed recollecting past experiences in a more positive fashion:

I try not to dwell on things too much. I do things for a reason at the time and so I try not to think, if I'd done this that way, then this would have been better, because I wouldn't have done it that way at the time But I do think of ways that I can improve my kind of situations.

As did Ruth:

I think about the past quite a lot, but I don't necessarily dwell on it, I just like to reminisce a lot about the good things; I don't think I dwell too much I like to talk about things with my friends, places we've been, things we've done ... the things I want to remember and talk about are the good things, because I'm quite a positive person; that's my way of dealing with things. I don't dwell on negative stuff really.

Jack described not dwelling on past events, but he did experience 'flashbacks' about past events,

“I don’t really dwell on things, I certainly don’t analyze things But having said that, afterwards, I do get flashbacks, intrusive thoughts that pop in of that event.” [That is,] “... When there’s a similar situation; anything that will spark off a memory, something that’s vaguely similar, ping! That pops in and you relive the embarrassment again and again. And they’re really engrained, etched in my brain, they’ll stay there.”

Impressions

Participants were asked about how they thought they would appear in front of other people in the anticipated social situation. A number of them seemed to describe ‘wanting’ to make a positive impression, but instead thinking that the ‘actual’ impression they would make would be more negative. Emily said:

... That at least I have some confidence, but I always think that I’m going to giving the impression of [being] really closed and not sociable And from what people have said ... when they first see me, they expect me to be really moody and bitchy; so, I think that’s just generally the impression I end up giving off when I have my normal face on. My mouth goes down a bit naturally, so, it always looks as if I’m miserable, even if I’m not. People tell me to cheer up in the street and stuff. I think it’s a given that I’m going to look that I’m not approachable.

Jack wanted to, “... Come across as at least a reasonable, average, human being that knew roughly what they were doing, what they expected ... and knew roughly what they were talking about.” However, he actually thought he would appear, “Ridiculous - just worried that I came across as anxious.” Sharon also said:

What I wanted was probably different [from] what I came across; I would have thought that I came across as nervous. I would have liked to appear more confident ... but I think they are different things [from] what I thought people saw me as and what I wanted to project.

Mark thought:

... You want to come across as impressive, but always in the back of my mind, there’s the fear of coming across as foolish A fear of people judging you ... I have high expectations of myself, thinking I can’t mess up because they’ll judge me; that’s always constantly in the back of my mind.

Others described coming across as introverted, stupid, unapproachable, and rubbish. Jane said, “I thought that I would come across as quite shy, because I always used to be very timid around people I did not know,” while Simon said, “It was completely non-physical, I wasn’t really bothered about what people thought when they looked at me ... it was more stuff like if I said

something stupid.” Claire thought that she would appear:

... Quite aloof, like I was there for the intent of learning, not socializing at all ... I would come across as maybe a loner, or just a very cold person. But, I try to give the impression that it doesn't bother me what people think, and so, rather than think, 'Oh, look, she's by herself, oh, I feel sorry for her,' I would want to give the impression that I'm by myself because I want to be; which is actually the case.

While Sue said:

I wanted them to think that I was okay at playing the clarinet ... but whenever I play it in front of anybody else, I always mess it up I always think that they think that I am rubbish So I tell them about the good things I've done; then they'll think I'm brilliant. But, it doesn't work like that; because people think that you are either arrogant or stupid.

In contrast, Joan described wanting to portray a more positive impression:

... That I was quite fun ... I wanted to give the impression of being me. I wanted people to see someone who was quite normal, not particularly strange ... quite interesting; so, on first impression, I just wanted to fit in, I didn't want to stand out at all. So, I didn't want to give anybody a particular impression, except that I wasn't weird.

Self-Images

Three participants' self-images highlighted their feelings of being rather different from other people or not fitting in. Emily said, "Picturing myself ... sitting on my own; I can't imagine it being an easy situation," while Claire thought, "I could see myself as other people might see me Quite distant Say, I was someone else looking at me See myself sat there, as I was trying to portray myself to be." Julie believed, "Not looking particularly good and not fitting in I was worried that people would want to go out a lot more than me, drink a lot more than me." Jane also talked about not being able to contribute in a group setting:

I had to give a talk on a psychology team 'get to know each other' day I imagined doing that in my head like actually what I'm saying and what my mannerisms are and people's reactions. I [imagined] that if I had to speak, I'd probably not sound overly confident, like 'high!' I also did think that I might come across as not having much to say, because there's lot's of people and I don't feel extremely comfortable Like, when you're having a brainstorm, I panic, thinking, 'What am I going to say?' So, I thought I might come across as no constructive input.

Jack imagined disapproving faces, "... I get flashes, not pictures as such Can imagine a pile of people, three or four people interviewing you, and they just sat there, stony faced, looking quizzical I picture people's faces observing me and not really approving." Simon described

two different types of images, depending on his mood at the time:

... Not wanting to seem anti-social Pictured myself, not so much looking nervous, but I could almost feel how I was going to feel in that situation I wouldn't always think about it in a bad way, sometimes I'd think about unpacking, and if I was in a positive mood, I wouldn't imagine myself feeling anxious in that situation; it depended what way I was looking at it. If I was taking a positive view on it, I'd imagine myself feeling quite relaxed and happy ... having a few drinks I was having two different views of that situation ... two different images.

April also reported positive self-images, "Picturing it finishing Just me in front of everyone, sat down, just it finished and everyone else clapping. And it looked like they had enjoyed it, rather than just sitting there and going, 'oh my god.' In contrast, Mark described more of a 'felt sense' than a concrete image, "Occasionally ... I'm aware of what I think how they could be perceiving me ... an impression of some sort It's like an acute awareness of what you think they might be thinking about you It can escalate from there."

Volitional control of self-images. Some participants described being able to create, control, or manipulate self-images; whilst others said that they 'popped' into awareness and remained 'stuck' in awareness. Claire said, "... It [self-image] popped into my mind, if often does Like walking down the street, sitting on a bus, or anytime that there are people possibly looking at me or judging me," while Emily thought, "It feels like they're stuck there Just that way of thinking ... I've done it for so long; I've ended up practicing that way of thinking, rather than a more positive way of thinking I tend to go more into a more negative side, rather than a positive side." April described images entering her awareness and then manipulating them, "I think they came into my head, but you try to make them nicer, rather than worse You'd imagine it finishing ... make it better by having people applaud ... so it wasn't so bad." Jane said, "Sometimes I consciously create them, I think to myself, 'Right, what is that going to be like,' or if I am excited about something, I will create would could happen by thinking about it ... I do that quite a lot."

Valence of self-images. Julie's negative self-images were viewed as both helpful and unhelpful in her prior preparation, "... It [self-image] was helpful in the way [that] I was aware of my insecurities, but not helpful in the way that I don't want to be aware of them. Because if I'm aware of them, I might worry about them more; so in some ways it was helpful." Sharon thought:

Both, so then I can prepare for both ways It helps if you view in a positive way, you're frame of mind is good for when you go in. But the negative ones kind of creep in and I also wanted to rehearse what would go wrong ... so I would picture myself doing

that to recover from something going wrong

April's images appeared to be viewed negatively before an event, but positive after it:

More negatively ... I'd still be worried about it [giving speech], then afterwards I'd think, 'That went okay,' and then it would be a more positive view of what happened. I'd be thinking of myself more negatively probably; I'd be worried that it wouldn't go as well; just worried what people would think of me, even though I tried to imagine the end being a good thing. But, it would still be more negative than when I'm finished, but if [it] went okay, then I'd be able to picture myself in a more positive light.

Claire's apparent 'neutral' image of herself as looking 'non-plus' helped her to relax around other people:

... I suppose so, if that's how I think other people perceive me [non-plus], then I'm okay with that image, and then I can feel more comfortable I was seeing myself how I wanted to be perceived, so I wasn't worrying so much about the expression on my face, because, in my head, I was looking at myself, and I was thinking that I just looked non-plus. Then, that helped, because I wasn't worrying about how other people were seeing me If I didn't have that image, maybe I might be worrying what people are thinking of me more They might be looking at me and thinking, 'What's up with her, is she just really rude,' or "Is she just really shy and we should just feel sorry for her...." It made me feel comfortable that I was behaving, as I wanted to behave.

Simon used positive self-images to 'distract' himself from thinking about starting University, "I think the positive image definitely helped me relax and it was another way to distract myself from thinking about University." He also said, "If I was having a negative image of myself, I ... talk to someone about it, and then I'd be reassured about it. So, maybe negative images in that way could be helpful ... they did serve some purpose." Sharon also said, "... It's the positive ones [images] that solve the negative ones If you have negative images, I try and target them with positive ones to solve the problem that could arise ... positive ones helping and then suppressing the negative ones."

Self-images linked to past events. Julie's future images about beginning University were linked to bullying in the past:

Yeah, at school being picked on by other people about my hair, about my shoes or whatever; I've had quite a lot of that in primary and secondary school It got to the stage where I wasn't being picked on, but I still thought them [negative self-images] anyway; I carried on creating them in my head I [now] have specific memories of times when people said something at me ... my hair, that is was an afro ... images like

that stuck in my head. And, I've [had] comments about my weight ... which amplify the situation ... even though they happened a few years ago ... those things still stick in my mind.

Emily's self-images appeared to relate to early childhood memories, "I do remember specific situations, like, when I was only four; so that makes me think that I'm more predisposed to think like that," while Jack said, "Yeah, previous ones - I remember I had an interview at UCL ... I think that's where I borrowed it from, mapped it on. That must have had some influence on these images about the panel." In addition, Jane said, "Yeah, maybe about 2 years ago, when I met my close friends I met them when I was a very shy and timid person So, I wonder how I will come across to new people, because when I first think of myself, I think of myself as the shy person.

Perspective of self-images. High socially anxious participants were asked to describe whether they experienced images of themselves from an observer's perspective or from a field perspective when anticipating social events. The majority of participants described viewing images of themselves in future situations from an observer's perspective. Simon said, "I was seeing it [first day at University] as if I was there in the hall unpacking I was seeing myself rather than the situation I was observing myself in the situation It's almost like seeing a video of what to expect," while Claire thought, ".... Just myself, sat as I was, but kind of looking at myself from slightly behind, or wherever the other people were sat, in relation to me." Others' observer perspective images were associated with more negative thoughts. Sharon explained that:

... Immediately before the presentation, it would have been the observer kind of imagery It relates to the fact that it's immediately before, your more negative ... I'm seeing me negatively ... that's my expectations of what I think they will see me as.

Jane believed:

.... I can't actually see their faces, but just looking at myself doing it I imagine me being them and what they might be thinking Bit of a geek really ... stumbling over my words or just laughing Or, saying something that no one finds funny I never really imagine it from me, always like an observer watching me Like watching other people and knowing what they're thinking Observer type images make you have like expectations or make you feel worried when there is no need.

April described negative, observer perspective images before the situation and positive, field perspective images after the situation:

... Me being up there somewhere, and just viewing myself doing the talk and other people's faces ... seeing it all happen and what could go wrong Seeing it from a

bird's eye view, just seeing everyone in a big hall, listening to me and the talk I'd imagine myself being so small in front of all those people Worried that I was going to mess up Then afterwards, it would probably be more of [a] field perspective, just seeing everything happen The field [perspective] would be more helpful afterwards, because I could imagine everyone's faces Afterwards, I'd feel bigger and prouder, because if I thought it went okay, I don't think I'd imagine myself being as small I just think about other people's reactions to it, rather than myself in the situation anymore, because I didn't have to be in it anymore.

Julie described a type of observer 'felt sense' that appeared to contribute to the negative impression of her social self:

... It's more of a feeling than anything specific ... observing myself, because I'm aware that people might not observe me as much as I might observe myself; so, I think it was more me looking at me Suddenly aware of any flaw that I might have ... that flaw is quite influential and I might focus on it Probably my hair, the fact that it's not perfect, the fact that I wear glasses.

In contrast, Ruth's images were from a field perspective, "Just seeing things through my own point of view," as were Jacks, "First person I'm not the panel or an abstract other, viewing or seeing ... it's me It's of people really, focused around faces."

Switching between perspective images. Four participants described switching between observer and field perspective images. April said, "Yeah, I can imagine ... looking on myself doing it and then actually picture me doing it and seeing it," while Julie thought:

... I was looking at how people view me [and] I was looking at how I view myself I was thinking about what other people might think I tend to switch between all bad and all good, rather than a mixture of the two; so, I'm either almost all confident about myself, or I'm not at all It was mainly bad things.

Joanne also switched between perspectives:

Yeah, probably, depending on whom I was talking with. Definitely, the people you are more comfortable with, you wouldn't be thinking about seeing yourself from an observer perspective; you wouldn't be worried about what impression you are giving or anything Whereas, on the other [field perspective], just more comfortable ... feeling more relaxed, when you're not thinking about how your coming across all the time.

Embellishment of self-images. Participants were asked whether they exaggerated any particular aspect(s) of the self-images they experienced when anticipating a social event. Several participants' comments represent the content of self-images being exaggerated in terms of size or

magnitude. Emily said, “I made it [observer image] into a bigger thing than it was; I’m sure I can change my perspective in certain ways, but it always seems too hard at the time,” while Simon explained, “I could see myself, I could see the hallway ... just the amount of rooms ... seemed to go on forever - endless ... I was seeing one long corridor I was imagining the hallway to be quite long and dark.” April’s anxiety caused her to appear small:

[Being small] made me feel a bit nervous, because I could see myself in front of all those people Made the situation more real, just thinking about what’s going to happen, because you could see all the people there And just me being really tiny and this big mass of people It was a bit scary and daunting ... Imagine myself being smaller than I was and them having bigger faces I’d imagine myself being really small in front of all those people When you scan the audience, you see big faces, expression’d faces that pop out; it’s confusing Feeling very nervous, I’d appear quite small. And, obviously want to impress them; those would be quite an important factor, so they’d be bigger.

Sharon saw herself as both large and small:

... I notice the difference between the images of what I think is going to happen and what actually happens I think I pictured myself [in the negative, observer images] smaller than I am and the audience was larger But, then at times, I was larger and concentrated on, which was a bit too much I was just seeing myself as having more attention on me It’s awkward, it feels like a performance all of the time.

Modality of self-images. The majority of participants’ self-images were experienced as predominantly visual. Julie said, “I could just see a picture, like a video in my head beforehand I put people in it ... and so, I build up a picture of things I like doing that,” while Simon said, “... Image of the bar in the evening; just the usual you would associate with a pub - very smoky, kind of atmosphere of a pub.” Simon’s self-images also had an auditory element, “I imagined it being loud, like everyone talking; just being able to hear everyone talking around you,” as did April’s:

Just hearing other people’s reactions to it, louder than you would normally As if they were in your head, whispering to each other I probably made their comments good comments, so it [giving the speech] didn’t make me feel so bad beforehand.

General self-image. Participants were asked whether they believed there was any relationship between the self-images they experienced before social situations and their own general self-image. Jack said, “Yeah, they’re both related, definitely I have a low self-image of myself and when you go into situations, you expect others to form a similar opinion,” while Sue believed, “Yeah ... I don’t think I’m very good. Mostly, I think that everyone thinks I’m [a]

bit rubbish Not very talented or intelligent ... always comparing myself to everybody else.” Jane also thought, “Yeah, I introspect things too much and I worry about who I am too much,” whilst Sharon said, “... I am self-analytical ... but generally, my personality has a pessimistic aspect, so that the negative ones [thoughts and images] take over. But, I have a rational side where I try and see the positive too.”

Importance of general self-image. Many participants believed that their own self-image was ‘very important’ to them. Claire said, “Very important, to me, it matters far more how I think of myself, than how others think of me. So, to have a self-image; is just more important to me I want to be in control of myself,” whilst Sharon stated, “Very Because people judge you by how you appear So, I try to act normal A socially acceptable thing of trying to conform I try to be me, who I want to be, and then project that; but then, still make that socially acceptable.” Jack stressed the importance of having a self-image, even though he saw himself negatively:

It’s really important I don’t like it when people form negative opinions about me I think of myself in negative terms, I’m not very good at stuff ... I have a low self-image In a way, you want to hoodwink people You feel that your self is crap [In addition,] I’m not strong enough; I should be stronger, more resolute If you have a more solid view of yourself, you’re convinced that you have a solid sense of self, then in situations, you’re going to be more confident, more sure of yourself; more convinced that you are this excellent person ... but if you’re not so sure, then it’s going to make you more nervous in situations.

Two other participants viewed themselves in a more positive fashion, “It’s really important that I see myself positively, I hate seeing myself negatively” (Julie) and “Very important, because if I am happy with myself and what I am doing, then I think back and it can only be a good thing” (Ruth).

Avoidance of Social Situations

Many participants talked about avoiding social situations. Jack thought, “I don’t want to face that [social situations], I don’t want to go through it; it’s too painful, it’s too embarrassing,” while Sue said:

Wanting to get out of the situation [performing on stage]; you start thinking up excuses as to why you can’t do it You know you have to do something and you think up the best excuse possible to get out of that. I do that even when I go out with my friends, think up really random excuses not to go out with them; it’s hard and it’s really draining as well.

Claire also said:

I try to avoid social situations I know the way the situation will make me feel; it will make me feel really tense and awkward, like I won't want to be there. So then, what's the point of being there, if I'm just going to feel that I'd want to do anything to get out of there? [For example,] ... She [tutor] wanted to split everyone into groups ... and I [Claire] could not see myself doing that; I was just so scared, I just really freaked out about it I sneakily walked out.

Sharon explained her avoidance of *groups*, "... It's quite intimidating; I'd usually try to avoid being in a group as much as possible," as did Emily, "... Social interaction ... because that involves talking in a group, I'm steering clear of that one." Emily also recalled previous events that she had avoided, "... I was remembering other times before that [speaking in public], even that I'd avoided. So, at the time, I remembered avoiding speaking in situations." Mark preferred the "company of his own voice" to that of other people:

... I tend to be quite anti-social and avoid social situation When I'm in social situations, I tend to bring down the atmosphere quite a lot; people tend to stop talking when I'm around I [also] have contempt for people I just don't like being social, I prefer the company of my own voice Unless, I'm with people I'm really comfortable with, which is not many, then I would just rather avoid them [social situations] I'm not overly sociable [in] big groups.

Physical Symptoms of Anxiety

Participants frequently described strong physical symptoms of anxiety when anticipating social events. April said, "[I] tried to relax, but I couldn't; feel like your heart is sticking out of your chest ... you can hear your own heartbeat," while Jane said, "... Coming to this University, it was quite scary and I was very nervous The morning that I was packing the car up, I felt really sick." Mark explained that, before social situations his, "Breath becomes shorter [and his] heart rate increases." Jack's self-images about attending a job interview were accompanied by strong physical experiences, "... There's a massive adrenalin thing going on Not like memories of smells and sounds, but always the association with that taste of adrenalin, that metallic taste; it's always around at that time." When Jack imagined his worst-case scenario about the interview, it also had a significant physiological component:

... Not being able to speak or being so nervous that you just couldn't function; that would be the ultimate, just a breakdown in functioning or throwing up Not being able to carry on, either by shaking, or not being able to speak; complete memory blank. If you did something like that, it would be interview over, bye; that would be a nightmare.

Jack then explained what he did in an attempt to mask his anxiety, "... I took a load of 'Kalms'

[herbal tablets] ... that has loads of valerian in it. I just downed a shed load of them, but they're not strong enough for someone like me ... I had some in my pocket, just before I went in." He also spoke of another situation that elicited physically powerful feelings:

I had to give a talk So, for about an hour or two, I was anticipating I was just imagining not being able to speak, not being able to convey, not talking loud enough, or shaking too much, breaking down, sweating, going horribly wrong; that's like a fear The waiting is definitely, generally bad It builds it up and up, you keep thinking, 'Oh, what if I can't say anything,' and then you start [thinking], 'I [have] done this thing before,' 'I can't swallow - I can [swallow!],' 'I 'm just getting nervous.' You think, 'I can't stop, I can't stop,' and then you try and swallow, 'I can swallow!' or you can't breathe, you can't get your breath; it's just pure anxiety, isn't it.

Sharon's observer perspective images also included a significant physical element, "... I'm seeing them seeing me as stuttering, nervous, going red, looking anxious," while April's self-images had a strong bodily component, "More like a physical thing, were I could imagine my heart racing loads ... and just being really shaky and nervous."

Sue described how she felt before and during a stage performance:

You get all butterflies in your stomach You get very hot, agitated, and uncomfortable As they read out your name to go up, you get a heat rush ... up your body, and then you can feel yourself sweating When you're standing up there, you get butterflies in your stomach, and then you start shaking It's a horrible feeling that I don't like.

Inductive Themes (Derived from the Raw Data)

Bad Dreams and Nightmares

Three participants described having either bad dreams or nightmares about the anticipated social situation. Julie said, "When I have a dream, it's the same situation [starting University] I don't think of what's behind me, but there are things behind me; I just don't care what they are or what they look like. So, it's like I'm looking through a camera lens, but the whole rest of the world is still there; I just can't see [them]." Hannah explained that, "... I did start having dreams about what it [University] would be like when I came here Just like random ones, can't remember anyone's faces, but dreamed about what the halls of residence would be like I had a few dreams of arguing with my boyfriend about it as well ... I think they [dreams] made me realize how nervous I was." Sue's dreams about performing the clarinet on stage took on a more terrifying or distressing quality:

Yeah, I had nightmares about it for a while beforehand; nightmares are the worst. And, you can see everyone's faces in the audience starring at you and you messing up Just

disapproving faces The disapproval of the faces ... You can't hear them, but you just know that they are not saying very nice things, and everyone thinks that you are really rubbish. But, you'd have other dreams about you doing badly in the situation I always have dreams and nightmares about situations before they happen You'd always wake up in the typical cold sweat and your in a really horrible situation, and you knew that you hadn't got any proper sleep, because you'd just be shattered for weeks coming up to it You always know if you've had a nightmare though, because you're absolutely exhausted in the morning.

Sue also described being observed by "monsters" and the affects that the nightmares had on her before and during her stage performance:

I didn't see me on stage, I always felt I was on stage and different people were watching me, especially my parents. But, I wasn't in my dreams, in the audience watching me; I was never like that I was at the concert playing my clarinet, but I was on my own and everyone was watching me. It was like monsters would come out or something, there were many different ones But, it would never be that I'd see me playing the clarinet and messing up; it was always me doing it You forget everything that you've worked so hard to remember. I always have a complete blank that comes over me when I'm in that situation, a nerve-wrecking situation; and, it's horrible.

Loomingness

Some individuals seemed to describe the anticipated social event as *looming*, that is, as appearing ominously close. In other words, anticipation could be considered as dynamic or moving, and characterized by the perception of a threat as accelerating and increasing as the individual imagines him or herself in the future event. Jack said about an impending interview, "... Then my hands start sweating ... and then it accelerates, like two or three days before it," while, Mark explained that, "... The closer it comes to the [event], then the more acutely aware you become of it, and then it just goes whoosh!" Emily said about starting University, "In the last few days, it got more *real* [italics added]," while Sharon stated, "... The time scale matters, so, just before I am going to do a presentation, I'll think more of the worst thing that might happen Because it's so near and you're going to do it there and then; it's becoming more real!" Sue's nightmares also appeared to increase in frequency and intensity as the day of her performance grew nearer:

.... Like a few weeks beforehand ... you're thinking about it a lot, and then you'll have a nightmare about it that evening. But then, coming up to it ... it'd be like three or four nights in a row beforehand, leading up to it, where you have really bad nightmares about

it More vivid, you remember them more, because you wake up more.

Metacognitive Processing

Some participants described engaging in *metacognitive processing*, that is, awareness of their own thoughts, as well as an overall type of meta-awareness. Sue described metaworry, “You worry about worry ... it makes you ill in the end,” and reported that, “As they [other people] are talking, you think of things that you might say. So, you might not really be listening to them; you’ll be thinking, ‘Oh, I can tell them about this or that.’” Mark explained that he became, “... Very aware of [his] own voice.” He then described the potential drawbacks of engaging in excessive metacognition when talking to other people:

... I’m engaging in conversation with people...and at the same time observing my thoughts I think that creates problems, because I become detached from people, not engaging with them, even though it can appear on the surface that I am.”

In addition, Mark described a more general sort of meta-awareness:

... When I’m actually engaging in conversation with people, I’m actually talking and at the same time observing what they’re doing. They think I’m interacting with them, but in fact, I’m back there somewhere If you take, like, the eye in the mind, consciousness, that’s where I exist; but that isn’t actually the bit they’re interacting with. I can sort of respond in a conversation and give the appropriate response, but not really be tuning into anything they’re saying It’s not my body, it’s the bit I define as me, and I tend to keep it quite well hidden from other people.

Emily also described a kind of general meta-awareness, which includes her trying to ‘see’ the thoughts of other people:

I’m analyzing what I’m thinking that person is analyzing from what I’ve said. Sometimes I do feel like there’s another part of my brain that sort of observing what’s going on I feel like there’s something going on up there that doesn’t match And, I do feel as if I’m having an outside analysis; like an extension Like, I’m being me, but there’s still another something analyzing me The other part of my personality; I’m sounding like I’m schizophrenic now. So, sometimes, I do feel like there is another parallel me there - observing I’m trying to see their thoughts.

Similarly, Jack said:

... Got a really heightened awareness and a sense of what other people are thinking ... imagining what they might be thinking based on your own thoughts; it’s like your watching your thoughts, but not in a dissociated way Then, you take your experience and map it onto somebody else’s [experience] It’s probably your own worries, your

own thoughts about other people ... and that takes away from what you're actually doing in the moment Things like invasive, intrusive thoughts about dire, highly unlikely events are not helpful It's all about embarrassment; there are things that will trigger embarrassment within yourself. You suddenly think of something that someone else might be thinking, and then you think, 'They'll probably think I look stupid.'

Discussion

The aim of this qualitative study was to explore high socially anxious individuals' anticipatory processing. By listening to the voice of the people affected by anticipatory social anxiety, rather than measuring it with self-report measures, this study begins to identify the range of anticipatory processing that may be used by socially anxious people. The findings in this study illuminate the problems and complicated feelings involved in anticipatory social anxiety.

Thematic analysis of the coded interviews revealed five broad *deductive* themes, that is, themes derived from Clark & Wells' (1995) model of social anxiety and prior research, and 14 sub deductive themes: (1) 'prior preparation' (specific, general, and goals); (2) 'catastrophic thoughts' (specific and general); (3) 'recollection of past similar social events' (general remembering of past events); (4) 'impressions'; and (5) 'self-images' (volitional control, valence, self-images linked to past events, perspective, embellishment, modality, general use, and importance of self-images). These findings are consistent with both previous research (Hinrichsen & Clark, 2003, Study 1; Vassilopoulos, 2005) and Clark and Wells' model, which proposes that socially anxious people engage in negatively biased anticipatory processing before social situations.

Furthermore, consistent with previous research (Hinrichsen & Clark, 2003, Study 2; Mansell & Clark, 1999; Vassilopoulos, 2005), participants frequently described exhibiting unhelpful specific behaviours, for example, 'sweating', 'blushing', and 'shaking', and negative and distorted observer perspective images, high levels of anxiety, and negative impressions of their public selves in the feared social situation. These results are convergent with Clark's (2001) proposition that negatively biased anticipatory processing adds to the socially anxious individual's negative experience of the social situation.

Examining participants' specific and global engagement in anticipatory processing is a novel aspect of this study. For example, participants described not only recollecting past similar social events and imagining worst-case scenarios about specific events, but also about events in general. For example, according to "Jack", memories of past social *failures* "merged" into one regular type of memory, which appeared to lead him to appraise future social situations in a negative way. One explanation for this finding may be that, based on early experience, Jack

developed a series of dysfunctional assumptions about himself and his social world (Clark & Wells, 1995); for example, unconditional negative beliefs about the self (e.g., "... I'm anxious, like all anxious people"), conditional beliefs concerning the consequences of performing in a certain way (e.g., "... Always the fear that you're going to look completely stupid ... and they'll [interview panel] be thinking, 'What's this guy doing here?"), and excessively high standards for social performance (e.g., "I must never look like a complete idiot"). Once social events are appraised in this way, Jack, for example, described becoming "nervous" and "reliving the embarrassment again and again."

The results of the current research also revealed that, in anticipation of social situations, for instance, in big groups, participants often felt that they would seem a "loner", "unapproachable", "shy", "distant", "unsociable", and as a "very cold person." They also described feeling "excluded" from groups, socially isolated, "not fitting in", and being unable to make friends or "bond" with other people. One account for these findings is perhaps that socially anxious individuals are susceptible to the effects of *social ostracism*, that is, being excluded or ignored in social situations (Zadro, Boland, & Richardson, 2006). Social anxiety is directly related to a fear of social rejection, of which ostracism is a form (Zadro et al., 2006). Zadro et al. examined the moderating influence of social anxiety on the *immediate* and on the *delayed* effects of ostracism (i.e., after 45-minutes) in high and low socially anxious participants. Results showed that ostracism persisted longer in the high than in the low socially anxious participants.

Clark and Wells (1995) suggest that socially anxious individuals encode more threatening cues in social situations, and hence are more likely to interpret ambiguous forms of exclusion in a negative fashion. They also propose that anticipatory processing maintains social anxiety because socially anxious people dwell on how poorly they will perform in the future situation. Therefore, regarding ostracism, socially anxious individuals might be more likely to anticipate being excluded or ignored in social situations than non-anxious individuals. The impact of ostracism might then be greater and more persistent in socially anxious individuals than in non-anxious individuals. However, only speculations can be offered here and firm conclusions will come from future studies.

In the current study, several participants described 'wanting' to make a positive impression in the future social situation, but instead thought that the 'actual' impression they would make would be more negative. This pattern of results is consistent with Leary and Kowalski's (1995) self-presentational model, in which social anxiety arises when people desire to make a favourable impression on others, but believe that they are incapable of doing so. Clark and Wells (1995) also suggest that negative assumptions about the self and about others lead

socially anxious individuals to predict that they will fail to achieve their desired level of interaction (e.g., “I’m going to give the impression of [being] really closed and not sociable”). While current research (e.g., Wallace & Alden, 1997; Alden & Wallace, 1995) has shown that socially anxious people doubt their ability to achieve desired impressions on others *during* social situations, the current findings suggest that they may also exhibit this doubt *before* situations.

In addition to socially anxious participants’ belief that others are essentially critical (e.g., “I always think that they [others] think that I am rubbish”), they were often preoccupied with self-images that were activated by negative thoughts about participating or performing in the anticipated situation. For example, “April” described negative self-images before the event and positive self-images after it. She also described more negative observer perspective images before the event, while after it; she reported more helpful field perspective images (viewing the scene from behind her own eyes). A possible account for these findings may relate to the fact that some participants, including April, described a fear of the *unknown*; that is, they did not know what was going to happen in the future event, which appeared to trigger severe anxiety and negative thoughts.

According to Clark and Wells (1995), this anxiety then causes socially anxious people to shift attention onto detailed monitoring and observation of themselves. They then use the internal information made accessible by self-monitoring to generate a negative self-impression that can occur in the form of distorted observer perspective images. Unfortunately, what they see in the image is not what the observer would see, but rather their fears visualized (Clark, 2001). For instance, participants expected observers to see them as “stumbling over [their] words” and “messing up” their performance. Additionally, “Julie” “felt” that she was observing herself, which caused her to become acutely aware of “any flaw [that she] might have.” This “felt” sense seemed to reinforce her perception of herself as physically flawed. Consequently, this self-focus on future (unknown) scenarios locks socially anxious people into a closed system, in which most of their evidence for their fears is self-generated, and prevents them from processing disconfirmatory evidence (Clark & Wells), such as memories of past social successes.

In contrast, “April” described positive field perspective images after the event. This positive post-event processing is consistent with research that has shown that post-event processing can help socially anxious individuals resolve their social concerns (Mellings & Alden, 2000). Perhaps the fear of the unknown causes individuals to appraise future events in a threatening manner, however, after the event and over time, they may remember them in a more positive or helpful way. Indeed, when questioned about whether participants’ view of the high anxiety-provoking event had changed over time, the majority of them appraised it in a more

positive fashion. For example, one participant said, “I think with time, it’s not as upsetting to think about it [funeral] ... I think about it in a more positive way,” while another said, “Definitely, because immediately after, I was thinking that’s [interview] a complete disaster, that’s horrific ... Thinking now, it’s not so bad, it’s almost laughable, and you can see the funny side of it now.” Two others’ thought, “I probably view it [speech] now as if it went really well and I wasn’t scared before ... I just remember the good bits now” and “Yeah, it’s [speech] more distant ... it’s not as significant now, it’s done.” Thus, post-event processing may serve as a possible way to manage coming to terms with past social failures.

However, “Sue” did not appear to have come to terms with a past social failure, “It’s [stage performance] still horrible, but now, whenever I bring it up, I just laugh about it, but it really does hurt. You change it into a joke, but it really means a lot to you, because you couldn’t do it.” This participant’s view is consistent with other research that has shown that high socially anxious individuals engage in more persistent and invasive post-event processing after anxiety provoking social situations than low socially anxious individuals do (e.g., Rachman, Grüter-Andrew, & Shafran, 2000).

Some participants also associated self-images about anticipating social situations with their own general or global self-image. For example, Jack’s “low self-image of [him]self” lead him to believe that others’ would form a similar opinion of him in-situ. In addition, Sue said, “I don’t think I’m very good”, and Sharon believed that her personality was “pessimistic.” These negative self-views might help to explain why, in Sharon’s and April’s negative, observer perspective images, they imagined themselves as being “small” and “tiny”, compared to observers, who appeared “bigger” (e.g., “bigger faces”). In other words, participants’ low self-confidence or low self-esteem about themselves may have manifested as distorted and negative observer perspective images, in which they appeared visibly smaller than others may.

In addition to the deductive themes described so far, this study also unearthed three *inductive* themes; that is, from the raw data: (1) bad dreams and nightmares; (2) loomingness; and (3) metacognitive processing. Nightmares are typically frightening and lengthy dream sequences, which depict physical or other threats to the dreamer (DSM; American Psychological Association [APA], 1994, p. 580). Their frightening content usually provokes high levels of anxiety and disturbs the sleep of the dreamer (DSM-IV; APA, 1994, p. 580). In this study, “Hannah” seemed to describe bad dreams, whilst “Sue” clearly explained nightmares about performing the clarinet on stage, in which she depicted “disapproving faces” and different types of “monsters.” Sue’s nightmares also caused her to wake up in a “cold sweat” and feel “exhausted” the following morning. These findings are consistent with previous research, which has found frequent

nightmares to be associated with higher levels of anxiety and related distress (Levin & Fireman, 2000; Roberts & Lennings, 2006; Zadra & Donderi, 2000).

According to Revonsuo's (2000) evolutionary theory of dreams, the biological and adaptive function of dreaming is to simulate threatening events and to rehearse threat avoidance behaviours. Certainly, Sue's nightmares contained many threatening elements; however, contrasting Revonsuo's theory, her nightmares appeared to be more maladaptive than adaptive, as she wanted to avoid social situations. In ancestral environments, social anxiety may have had an adaptive advantage in preparing people for important *physical* threats, however, in today's society, the threats socially anxious people are most likely to face on a daily basis are primarily *emotional* in nature (e.g., fear of negative evaluation). In social anxiety, bad dreams and nightmares about anticipated threats might be seen as less 'natural' and more 'imaginary' functions of dreaming; for example, as 'failures' of dream function (i.e., unsuccessful attempts at solving emotional problems). Future research could explore how nightmare content, frequency, and intensity contribute to the persistence of social anxiety, for example, by reminding the individual of future threat by reactivating powerful negative feelings about it.

In anticipation of a social event, some participants also described the event as *looming*, that is, as appearing threateningly close. For instance, the nearer it came to the event, the more "Sharon" imagined worst-case scenarios, the more "Sue's" nightmares increased in frequency and intensity, the more "Jack's" physical symptoms of anxiety worsened, and for "Emily", the event seemed more 'real.' These findings suggest that in order to fully understand anticipatory processing in social anxiety, we perhaps need to consider a more *dynamic* or shifting view of it. In contrast, Clark and Wells' (1995) model seems to portray anticipation as a static event, which focuses more on the content of thought (e.g., negative thoughts and images) and has largely ignored the processing styles that give negative thoughts and images their salience.

This study also revealed *metacognitive processing*, that is, 'thinking about thinking', or any cognitive process that is involved in the appraisal, monitoring, or control of cognition (Wells, 2000), as another dynamic type of anticipatory cognitive process. For example, "Sue" described that worrying about worry made her ill, while she and "Mark" explained that engaging in excessive metacognition created problems, such as feeling "detached" from others, resulting in him feeling psychologically removed from the interactive process. Similarly, "Emily" seemed to describe a split personality, a "parallel me", observing her own thoughts, while "Jack's" focus on his own thoughts triggered acute embarrassment. These observations suggest that socially anxious individual who are fearful of interpersonal situations and who anticipate negative evaluation from others, may engage in too much self-focused metacognition.

In sum, the metacognitive and 'loomingness' dimensions of participants' anticipatory processing, uncovered by this study, suggest that it would be useful to follow-up this preliminary evidence with questionnaire studies that explore whether these two types of processing styles are actual features of anticipatory social anxiety. In other words, while qualitative methods can yield rich and detailed information about individuals' anticipatory processing, quantitative methods are necessary to determine the prevalence of this processing and their relative impact on behaviour.

This study has three important strengths. First, it contributes to an area that is virtually untouched - using a phenomenological approach to explore in-depth socially anxious individuals' anticipatory processing. Second, the use of qualitative methods and analysis allowed the 'voice of the socially anxious individual' to be heard and to guide future research that may be conducted in non-clinical and clinical populations. Third, the inclusion of both deductive and inductive coding, permitted the confirmation or refutation of Clark and Wells' (1995) key hypothesis concerning negatively biased anticipatory processing, and/or the discovery of novel anticipatory processes, not previously considered by Clark and Wells' model.

Although this study has some strengths, there were notable limitations. First, although both male and female participants were used, gender differences could not be analyzed due to the sample size. In addition, the small sample size and exploratory nature of the study limit the extent to which the findings can be generalized to a socially phobic population. Third, the researcher's views may have influenced the data collected in this study. For example, the researcher could have inadvertently guided the participants' discourse to fit his or her expectations. Future research could therefore consider using a completely unbiased interviewer, naïve to the study's aims.

In conclusion, the present study has provided a valuable insight into high socially anxious individuals' experiences of anticipating social situations. The nature of qualitative research has provided a detailed description of the types of negatively biased anticipatory processing that socially anxious people engage in before entering social situations - as outlined by Clark and Wells' (1995) model of social anxiety, and allowed anticipatory processes in social anxiety that have eluded quantitative research to be revealed. It is also worth highlighting that the present themes are not isolated, distinct themes, but are interrelated and connected to each other. Each theme influences another. For example, avoidance of social situations produces memories of other avoided situations, which creates feelings of failure, hopelessness, or ostracism. These feelings arouse anxiety, fear, and responsibility, thus, contributing to participants' physical symptoms of anxiety. Contributing to their physical symptoms is their negative, observer perspective images, frequent nightmares, and excessive metacognition. Finally, their poor self-image about themselves reinforces their feelings of powerlessness and being excluded. Future

research could build on these findings by exploring how different themes influence and interact with one another.

Chapter 5: Experiment 3

Introduction

Findings from Experiment 2 suggest that we might need to look at broader aspects of cognition, and to focus explicitly on process, in order to better understand threat appraisals in social anxiety. Specifically, in Experiment 2, some high socially anxious individuals' anticipatory processing seemed to possess a *looming* quality, in which they described future events as appearing ominously close. Contemporary cognitive-behavioural models of social phobia (e.g., Clark & Wells 1995; Rapee & Heimberg, 1997) have tended to focus mainly, although not exclusively, on the content of cognition, particularly at the knowledge and appraisal levels; for example, on negative beliefs, thoughts, and images in anxiety. In other words, while these models do focus on process, for instance, on anticipatory processing, post-event processing, and self-focused attention, they appear to pay more attention to the content of the process, rather than the process itself. Undoubtedly, the content of cognitive processing is important in determining the nature of social phobia, however, the process, namely, how people think, and the cognitive style that give negative thoughts and images their salience are also important dimensions that might have implications for the disorder. Thus, in the next section, mechanisms that might underlie these dynamic cognitive processes will be considered.

So how can we conceptualize a more dynamic view of threat appraisals in social anxiety? According to the model of looming vulnerability (Riskind, 1997), anxiety is related to differences in how individuals generate mental representations of dynamically increasing danger and rapidly rising risk (Riskind & Williams, 1999; Riskind, Williams, Theodore, Chrosniak, & Cortina, 2000). According to this model, a unique feature of the mental representations generated by anxious individuals is the perception of danger as unfolding and intensifying as one projects oneself into an anticipated future. This is like playing and replaying a movie or a videotape of a threat that is approaching, in which the threat is perceived as a dynamic object that is rapidly changing and rearranging itself in time and space (Riskind). This sense of looming vulnerability is differentiated from imminence, that is, perceived proximity, as a stimulus can be far away while quickly approaching or close by but motionless. The dynamic aspect creating fear in this model is the degree to which the stimulus is appraised as looming. With each moment that the stimulus advances, it becomes more threatening, and the individual perceives an increasing risk of losing control over the situation and his or her emotional response to it. The looming model adds specificity to cognitive models of social phobia that are mainly, although not exclusively, content-based (Clark & Wells, 1995; Rapee & Heimberg, 1997).

Riskind's (1997) model assumes that an individual's sense of looming vulnerability can

occur in two forms. One is in response to threat in specific situations, whereas the other occurs as a more general cognitive disposition in clinical anxiety. For the latter, Riskind proposed the *looming maladaptive style* as a general cognitive disposition, in which threat is judged as rapidly rising in risk and danger. The looming maladaptive style is conceptualized as an evolutionary-based process of threat appraisal that biases the ways in which individuals mentally represent the spatial and temporal progression of potential future threat. Consequently, individuals who develop the looming maladaptive style are likely to have difficulty habituating to possible threats and show increased vigilance, anxiety, and use of safety behaviours (Riskind; Riskind, Long, Duckworth, & Gessner, 2004). The looming maladaptive style is also hypothesized as a unique cognitive risk factor for anxiety, but not for depression (Riskind, Williams, Theodore, Chrosniak, & Cortina, 2000).

The looming maladaptive style has been investigated across a number of samples and in a number of anxiety disorders. Riskind, Williams, Theodore, Chrosniak, and Cortina (2000) demonstrated that higher scores on the Looming Maladaptive Style Questionnaire-Two (LMSQ-II⁴; Riskind et al. 2000) were significantly related to higher levels of anxiety, measured on the Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988) and the State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970), in an unselected university sample. However, the looming maladaptive style was not related to depression. Riskind and Williams (2005) showed that looming maladaptive style scores were significantly elevated in both students who had a probable diagnosis of generalized anxiety disorder (GAD) and a clinical GAD group, compared to students, community controls, and depressed patients. In the two studies reported in the paper, the probable GAD and clinical GAD groups differed in looming maladaptive style scores, independently of general anxious and depressive symptoms. Collectively, these studies support the specificity of the looming maladaptive style to anxiety.

Williams, Shahar, Riskind, and Joiner (2005) examined whether the social and physical looming scales of the LMSQ-II predicted common variance in the following anxiety disorder symptoms: obsessive-compulsive concerns, post-traumatic stress, generalized anxiety, specific phobic fears, and fear of negative evaluation (assessed by the Brief Fear of Negative Evaluation

⁴ On the LMSQ-II, participants read six vignettes describing potentially stressful situations – three vignettes assess social looming (i.e., appraisals in response to potentially threatening social stimuli, such as negative evaluation by others during a speech) and three vignettes assess physical looming (i.e., appraisals in response to potentially threatening physical stimuli, such as experiencing heart palpitations).

scale [BFNE]; Leary, 1983), independently of depressive symptoms. Structural equation modelling showed that the looming maladaptive style predicted shared variance in a range of anxiety disorder symptoms, even after controlling for depression. Importantly, structural equation modelling revealed a specific link between social, but not physical, looming and fear of negative evaluation. Additionally, the correlation matrix provided by Williams et al. (2005) suggested that the social looming subscale of the LMSQ-II correlated more highly with fear of negative evaluation than the physical looming subscale.

Reardon and Williams (2007) replicated and extended Williams, Shahar, Riskind, and Joiners (2005) study by testing the prediction that the looming maladaptive style is an *anxiety-specific* vulnerability. Williams et al. had modelled depression as an independent variable and left the specificity of the looming maladaptive style to anxiety untested. Reardon and Williams modelled depression as a dependent variable, in order to estimate its relationship to the looming maladaptive style. They showed that the looming maladaptive style demonstrated specificity only in predicting anxiety disorder symptoms, including social phobia (measured by the Social Phobia Diagnostic Questionnaire; Newman, Kachin, Zuellig, Constantino, & Cashman-McGrath, 2003). Furthermore, similar to Williams et al.'s (2005) findings, Structural equation modelling demonstrated a specific link between social looming and social phobia, but not between physical looming and social phobia. Social looming also correlated more highly with social phobia than physical looming. Collectively, Williams et al.'s and Reardon and William's findings suggest specificity of social looming to fear of negative evaluation and social phobia, but not to depression.

The aim of the present study was to partially replicate and extend the two studies described above by examining multiple aspects of trait social anxiety, while controlling for general anxiety and depression. The three trait aspects were social interaction anxiety (assessed by the Social Interaction and Anxiety Scale [SIAS]; Mattick & Clarke, 1998), fear of negative evaluation (assessed by a straightforwardly worded version of Leary's [1983] BFNE scale [BFNES-II]), and public scrutiny fears (assessed by the Social Phobia Scale [SPS]; Mattick & Clarke). In this study, the SIAS, BFNES-II, and SPS were used together, so that a wide range of the cognitive and behavioural aspects believed to underlie social anxiety could be examined. The BFNES-II assesses maladaptive cognitions associated with fear of negative evaluation, the SPS assesses fears of being scrutinized during routine activities (e.g., eating, drinking, or writing), and the SIAS assesses general social interaction anxiety (e.g., being boring when meeting or talking with other people). General anxiety was assessed by the Beck Anxiety Inventory (Beck & Steer, 1990).

The current study tested the prediction that social looming functions as a specific cognitive diathesis to trait social anxiety, but not to depression. Specificity would be demonstrated if social looming significantly accounted for variance in trait social anxiety only. I therefore predicted that social, but not physical looming, would be a significant and unique predictor of trait social anxiety but not of depression. This prediction also follows from cognitive models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997), as the cognitive profile of social anxiety centres on aspects of trait social anxiety such as fear of negative evaluation, rather than on, say, the misinterpretation of bodily (physical) symptoms found in panic disorder. I also expected social looming to be a significant predictor of general anxiety, but to a lesser extent than to trait social anxiety; because social looming involves individuals' appraisals of potentially threatening social stimuli, rather than their appraisals of general anxious symptoms.

Method

Participants and Procedure

One hundred and seventy seven undergraduates (152 females and 25 males) at the University of Southampton, who ranged in age from 18 to 58 ($M = 21.30$, $SD = 6.11$) participated in the study. There were significantly more female than male participants, $\chi^2(1, N = 177) = 91.12$, $p < .001$. However, there were no significant differences between male and female participants on the social looming, $t(175) = -1.30$, $p = .20$, $\eta^2 = 0.00$, or physical looming, $t(175) = -0.45$, $p = .66$, $\eta^2 = 0.00$, subscales of the LMSQ-II; or on the BFNES-II, $t(175) = 0.05$, $p = .96$, $\eta^2 = 0.00$, BAI, $t(175) = 0.69$, $p = .50$, $\eta^2 = 0.00$, Beck Depression Inventory-Two (BDI-II; Beck, Steer, & Brown, 1996), $t(175) = -0.27$, $p = .79$, $\eta^2 = 0.00$, SPS, $t(175) = 0.56$, $p = .58$, $\eta^2 = 0.00$, or SIAS, $t(175) = 1.03$, $p = .31$, $\eta^2 = 0.03$.

Students were informed about the study via e-mail, poster advertisement, and an on-line booking system. From a specified location, students collected and returned the questionnaire packs that each contained an information sheet, a consent form, the battery of questionnaires, and a debriefing form. Participants received course credit for completing the study.

Materials

Outcome Measures

Trait social anxiety. The 12-item Brief Fear of Negative Evaluation scale (BFNE; Leary, 1983) was previously described in Experiment 1. However, for the purposes of the current study, I used revised wording to create the Brief Fear of Negative Evaluation Scale-Two (BFNES-II), because of concerns that the reverse-worded items are confusing for participants (Collins, Westra, Dozois, & Stewart, 2005; Duke, Krishnan, Faith, & Storch, 2006; Rodebaugh et al., 2004; Weeks et al., 2005). The four reverse-worded items of Leary's BFNE scale were reworded as follows:

Item 2 was reworded from “I am unconcerned even if I know people are forming an unfavourable impression of me” to “I am concerned if people are forming an unfavourable impression of me.” Item 4 was reworded from “I rarely worry about what kind of impression I am making on someone” to “I often worry about what kind of impression I am making on someone.” Item 7 was reworded from “Other people’s opinions of me do not bother me” to “People’s opinions of me bother me.” Lastly, item 10 was reworded from “If I know someone is judging me, it has little effect on me” to “If I know someone is judging me, it has a lot of effect on me.” In this study, the BFNES-II demonstrated excellent internal consistency ($\alpha = .96$), similar to other studies using a 12-item straightforwardly-worded version of the BFNE scale (Collins et al., 2005; Carleton, Collimore, & Gordon-Asmundson, 2007; Carleton, McCreary, Norton, & Gordon-Asmundson 2006), albeit with slightly different wordings of the reverse-worded items.

The Social Phobia Scale (SPS; Mattick & Clarke, 1998) and the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke) were previously described in Experiment 1. In the current study, the internal consistency was high for both the SPS ($\alpha = .88$) and the SIAS ($\alpha = .94$).

Predictors or Independent Measures

The Looming Maladaptive Style Questionnaire-Two (LMSQ-II; Riskind, Williams, Theodore, Chrosniak, & Cortina (2000) is a validated measure of individuals’ tendency to create mental representations of potentially threatening situations that are rapidly rising in risk or intensifying in danger (i.e., the looming maladaptive style). Participants read six short vignettes describing potentially stressful situations and then complete three questions for each vignette using a five-point Likert-type scale (i.e., “In this scene, do the chances of you having a difficulty ... seem to be decreasing, or increasing or expanding with each moment?”; “Does the level of threat to you ... seem to be staying fairly constant, or is it growing rapidly larger with each passing moment?”; “How much do you visualize your ... as in the act of progressively worsening?”). The six vignettes are: (1) Hearing a strange engine noise from your car as you are driving on the motorway in heavy rush-hour traffic; (2) the risk of getting into a car accident on the motorway; (3) developing heart palpitations while talking to someone about a financial problem; (4) inviting an extremely popular person to a party in front of a group of people; (5) speaking in front of a large audience of strangers; and (6) the possibility of a romantic relationship breaking up. Vignettes 1-3 relate to physical looming, whereas vignettes 4-6 relate to social looming. In addition, for each of the six scenes, participants are asked, “How worried or anxious does imagining this scene make you feel?” This item is rated on a 1 (*not at all*) to 5 (*very much*) Likert-type scale.

A total looming maladaptive style score is calculated by aggregating responses to the three looming questions across the six vignettes. Alternatively, aggregating responses to the three social and physical looming vignettes (Riskind, Williams, Theodore, Chrosniak, & Cortina, 2000; Williams, Shahar, Riskind, & Joiners, 2005) produces two indices of physical and social looming. Anxiety associated with imagining the six vignettes is calculated in the same way as the looming maladaptive style. The social and physical looming vignettes were arranged in such a manner that they were not adjacent to one another. Riskind et al. 2000 provided strong evidence for the validity of the LMSQ-II, and its test-retest reliability over a 1-week time period ($r = .88$), and its internal consistency ($\alpha = .91$). Cronbach's alphas of .85 (physical looming) and .83 (social looming) were obtained in this current sample.

General Anxious and Depressive Symptoms

The Beck Anxiety Inventory (BAI; Beck & Steer, 1990) was previously described in Experiment 1. The Beck Depression Inventory-Two (BDI-II; Beck, Steer, & Brown, 1996) also consists of 21 items rated on a 0-3 point scale. The BDI-II has excellent psychometric properties (Beck et al., 1996; Dozis, Dobson, & Ahnberg, 1998). In this study, the internal consistencies of the BDI-II and BAI were .92 and .89, respectively. The BDI-II and BAI were included in this study to determine (a) the specificity of social and/or physical looming to trait social anxiety and (b) if any of the results were due to general anxiety or depressive symptoms rather than trait social anxiety.

Results

A preliminary set of regression analyses examining gender and its interactions with social and physical looming⁵ were conducted, in order to determine whether there were any differences between males and females on the looming constructs and the trait social anxiety measures. Gender was not a significant predictor of SIAS, $t(170) = 0.99, p = .33, \eta^2 = 0.00$, BFNES-II, $t(169) = 0.71, p = .48, \eta^2 = 0.00$, or SPS, $t(169) = 0.89, p = .38, \eta^2 = 0.00$. In addition, gender did not significantly interact with social or physical looming to predict SIAS, $t(170) = -0.76, p = .45, \eta^2 = 0.00$; $t(170) = -0.35, p = .73, \eta^2 = 0.00$, BFNES-II, $t(169) = -0.43, p = .67, \eta^2 = 0.00$; $t(169) = -0.35, p = .73, \eta^2 = 0.00$, or SPS, $t(169) = -0.03, p = .97, \eta^2 = 0.00$; $t(169) = -0.99, p = .32, \eta^2 = 0.00$, respectively. The lack of differences in the means on these measures is surprising, as differences between men and women are typically reported. However, the small number of males in the current sample ($n = 25$) raises the possibility that there would be insufficient power to

⁵ All continuous predictor variables (i.e., social and physical looming) were centred for the purpose of testing interactions (Aiken & West, 1991).

detect significant interaction effects, and therefore it would be difficult to interpret the results. Accordingly, I decided to exclude the males and use a female-only sample ($n = 152$; age, $M = 20.47$, $SD = 4.70$).⁶

Bivariate Partial Correlations

Correlations between the social and physical looming subscales of the LMSQ-II, BFNES-II, SIAS, SPS, BAI, and BDI-II are presented in Table 4.⁷ The looming model assumes that the looming maladaptive style is associated with anxiety, but not with depression. Consistent with the model, social and physical looming scores were correlated with BDI-II, but these correlations were not significant when controlling for BFNES-II ($r = .01$, $p = .91$; $r = .02$, $p = .79$), SPS ($r = .05$, $p = .53$; $r = .05$, $p = .55$), or SIAS ($r = .05$, $p = .54$; $r = .06$, $p = .47$), respectively. Conversely, when BDI-II was controlled, social and physical looming scores were still significantly associated with BFNES-II ($r = .43$, $p < .001$; $r = .24$, $p < .01$), SPS ($r = .36$, $p < .001$; $r = .19$, $p < .05$), and SIAS ($r = .35$, $p < .001$; $r = .17$, $p < .05$), respectively. Social and physical looming scores were also correlated with BAI, but these correlations were not significant when controlling for BFNES-II ($r = .13$, $p = .08$; $r = .07$, $p = .39$), SPS ($r = .05$, $p = .49$; $r = .02$, $p = .76$), or SIAS ($r = .11$, $p = .14$; $r = .07$, $p = .33$), respectively. Conversely, when BAI was controlled, social and physical looming scores were still significantly associated with BFNES-II ($r = .42$, $p < .001$; $r = .24$, $p < .01$), SPS ($r = .34$, $p < .001$; $r = .20$, $p < .01$), and SIAS ($r = .35$, $p < .001$; $r = .17$, $p < .05$), respectively. Thus, social and physical looming correlated with trait social anxiety, but not with general anxiety or depression when controlling for trait social anxiety.

It was also expected that the significant correlations between physical looming and BFNES-II, SPS, and SIAS would become nonsignificant when controlling for social looming. Supporting this prediction, BFNES-II ($r = .06$, $p = .45$), SPS ($r = .05$, $p = .56$), and SIAS ($r = .03$, $p = .71$) were no longer significantly correlated with physical looming when controlling for social looming. However, the relationship between social looming and BFNES-II ($r = .44$, $p < .001$),

⁶ The regression analyses were the same whether I included women only or the full sample. However, using the full sample ($N = 177$), social looming, $t(173) = 2.23$, $p < .05$, $\eta^2 = 0.01$, uniquely predicted BAI general anxious symptoms, accounting for 2% of the variance.

⁷ Because of multiple comparisons among the measures, I used a significance level of $p < .006$ (after a Bonferroni adjustment of $.05/9$). All comparisons were still significant at the $.006$ level, except that BDI-II was no longer significantly associated with physical looming or anxiety associated with imagining the physical looming vignettes; while, SIAS was no longer significantly associated with anxiety associated with imagining the physical looming vignettes.

SPS ($r = .40, p < .001$), and SIAS ($r = .40, p < .001$) remained significant when controlling for physical looming. Thus, social looming was significantly associated with trait social anxiety when controlling for physical looming, but the reverse was not true.

Table 4

Correlations among the Social and Physical Looming Scores, Trait Social Anxiety (using the SIAS, BFNES-II, and SPS), and the General Anxiety and Depressive Symptom Measures (n = 152)

Measures	1	2	3	4	5	6	7	8	9
1. Social looming	-	.52**	.68**	.33**	.52**	.47**	.47**	.33**	.35**
2. Physical looming		-	.39**	.67**	.31**	.28**	.26**	.21	.23**
3. Anxiety (social)			-	.44**	.45**	.39**	.39**	.33**	.31**
4. Anxiety (physical)				-	.31**	.31**	.17	.20	.29**
5. BFNES-II					-	.65**	.64**	.62**	.52**
6. SPS						-	.80**	.62**	.68**
7. SIAS							-	.64**	.55**
8. BDI-II								-	.61**
9. BAI									-
Mean	3.40	3.36	3.81	3.85	32.26	18.10	21.20	8.45	8.71
Standard deviation	0.72	0.70	0.73	0.67	11.91	10.89	13.41	8.27	7.35

Note. BFNES-II, Brief-Fear of Negative Evaluation Scale-Two; SPS, Social Phobia Scale; SIAS, Social Interaction and Anxiety Scale; BDI-II, Beck Depression Inventory-Two; BAI, Beck Anxiety Inventory. * $p < .05$, ** $p < .01$.

Regression Analyses for Trait Social Anxiety (using the BFNES-II, SIAS, and SPS) and the BDI-II Depressive and BAI General Anxiety Symptom Measures

To examine whether social and/or physical looming predicted trait social anxiety and general anxious and depressive symptoms, five separate multiple regression analyses were conducted on the whole female sample ($n = 152$) using BFNES-II, SIAS, SPS, BAI and BDI-II scores as outcome variables and social and physical looming scores as predictors. Because social and physical looming scores were highly correlated with anxiety scores associated with imagining the social and physical scenes of the LMSQ-II, $r = .68$ and $r = .67$, respectively, only the former

two looming constructs were included in the regression analyses.

In the three regression analyses predicting trait social anxiety, I entered social and physical looming and BDI-II and BAI scores simultaneously. The BAI and BDI-II scores were entered into the analyses to allow for a demonstration of incremental validity on the part of social and/or physical looming. Regression analysis was used because it allowed trait social anxiety and general anxiety and depressive symptoms to be investigated as continuous variables and to allow any possible impact of the latter two symptoms to be accounted for.

Table 5 summarizes the regression analysis predicting fear of negative evaluation. The total model accounted for 51% of the variance in BFNES-II. Both social looming, $t(147) = 4.45, p < .001, \eta^2 = 0.03$, and BDI-II, $t(147) = 5.78, p < .001, \eta^2 = 0.03$, uniquely predicted BFNES-II, accounting for 7% and 11% of the variance, respectively (indicated by the squared semi-partial correlation in Table 2). Neither physical looming, $t(147) = 0.42, p = .68, \eta^2 = 0.00$, nor general anxiety, $t(147) = 1.96, p = .05, \eta^2 = 0.01$, were significant predictors of BFNES-II. The overall model was significant, $F(4, 147) = 38.36, p < .001, \eta^2 = 0.26$.

Table 5 also summarizes the regression analysis of variables predicting social interaction anxiety. The total model accounted for 50.3% of the variance in SIAS scores. Social looming, $t(147) = 3.58, p < .001, \eta^2 = 0.02$, BDI-II, $t(147) = 5.77, p < .001, \eta^2 = 0.04$, and BAI, $t(147) = 2.78, p < .01, \eta^2 = 0.02$, uniquely predicted SIAS, accounting for 4%, 12%, and 3% of the variance, respectively. Physical looming was not a significant predictor of SIAS, $t(147) = -0.01, p = .93, \eta^2 = 0.00$. The overall model was significant, $F(4, 147) = 37.14, p < .001, \eta^2 = 0.25$.

Table 5 summarizes the regression analysis of variables predicting public scrutiny fears. The total model accounted for 58% of the variance in SPS scores. Social looming, $t(147) = 3.44, p < .01, \eta^2 = 0.02$, BAI, $t(147) = 6.10, p < .001, \eta^2 = 0.04$, and BDI-II, $t(147) = 4.29, p < .001, \eta^2 = 0.03$, uniquely predicted SPS, accounting for 3%, 10%, and 4% of the variance, respectively. The overall model was significant, $F(4, 147) = 49.87, p < .001, \eta^2 = 0.34$.

It was also predicted that social looming would be an *anxiety-specific* vulnerability factor. Table 5 summarizes the regression analysis of variables predicting depressive symptoms. The total model accounted for 38% of the variance in BDI-II scores. Supporting the prediction, social looming was not a significant predictor of BDI-II, $t(148) = 1.61, p = .11, \eta^2 = 0.01$, nor was physical looming, $t(148) = 0.25, p = .81, \eta^2 = 0.00$. However, BAI uniquely predicted BDI-II, $t(148) = 8.07, p < .001, \eta^2 = 0.05$, accounting for 27% of the variance. The overall model was significant, $F(3, 148) = 30.55, p < .001, \eta^2 = 0.21$.

Table 5 also summarizes the regression analysis of variables predicting general anxious symptoms. The total model accounted for 39.2% of the variance in BAI scores. Social looming

was not a significant predictor of BAI, $t(148) = 1.91, p = .06, \eta^2 = 0.01$, nor was physical looming, $t(148) = 0.49, p = .63, \eta^2 = 0.00$. However, BDI-II uniquely predicted BAI, $t(148) = 8.10, p < .001, \eta^2 = 0.05$, accounting for 27% of the variance. The overall model was significant, $F(3, 148) = 31.76, p < .001, \eta^2 = 0.21$.

Table 5

Summary of Multiple Regression Analyses for Variables Predicting Trait Social Anxiety (Using the BFNES-II, SIAS, and SPS) and BDI-II Depressive and BAI General Anxious Symptom Measures

Variable	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ²	<i>sr</i>
<i>BFNES-II</i>					
Constant	5.72	3.85			
Social Looming	5.21	1.17	.32**	.07**	.26**
Physical Looming	0.48	1.14	.03	.00	.02
BAI	0.24	0.12	.15	.01	.11
BDI-II	0.61	0.11	.42**	.11**	.33**
<i>SIAS</i>					
Constant	-3.02	4.00			
Social Looming	4.76	1.33	.26**	.04**	.21**
Physical Looming	-0.11	1.21	-.01	.00	-.01
BAI	0.38	0.14	.21*	.03*	.16*
BDI-II	0.69	0.12	.43**	.12**	.34**
<i>SPS</i>					
Constant	-2.52	3.28			
Social Looming	3.43	1.00	.23*	.03*	.19*
Physical Looming	0.08	1.00	.01	.00	.00
BAI	0.62	0.10	.42**	.10**	.33**
BDI-II	0.39	0.09	.29**	.04**	.23**
<i>BDI-II</i>					
Constant	-2.68	3.00			
Social Looming	1.45	0.90	.13	.01	.10
Physical Looming	0.22	0.90	.02	.00	.02
BAI	0.63	0.10	.56*	.27*	.52*
<i>BAI</i>					

Constant	-1.84	2.64			
Social Looming	1.51	0.78	.15	.01	.12
Physical Looming	0.38	0.78	.04	.00	.03
BDI-II	0.49	0.06	.55*	.27*	.52*

Note: $n = 152$; BFNES-II, $R^2 = .51$ ($p < .001$, $f^2 = 38.36$); SIAS, $R^2 = .50$ ($p < .001$, $f^2 = 37.14$); SPS, $R^2 = .58$ ($p < .001$, $f^2 = 49.87$); BDI-II, $R^2 = .38$ ($p < .001$, $f^2 = 30.55$); BAI, $R^2 = .39$ ($p < .001$, $f^2 = 31.76$); sr = semi-partial correlation; sr^2 = squared semi-partial correlation (represents the proportion of variance uniquely accounted for by each predictor, beyond that accounted for by all predictors at that step). BAI, Beck Anxiety Inventory; BDI-II, Beck Depression Inventory-Two; BFNES-II, Brief-Fear of Negative Evaluation Scale-Two; SIAS, Social Interaction and Anxiety Scale; SPS, Social Phobia Scale. * $p < .01$, ** $p < .001$.

Discussion

The present study examined the relationship between looming maladaptive style, that is, an enduring and trait-like cognitive pattern to appraise threat as rapidly rising in risk, progressively worsening, or actively speeding up and accelerating and three different aspects of trait social anxiety, namely, fear of negative evaluation (using the BFNES-II), social interaction anxiety (using the SIAS), and public scrutiny fears (using the SPS), as well as general anxiety and depression. The looming maladaptive style comprises two types of looming vulnerability: *social* (i.e., looming appraisals in response to potentially threatening social situations) and *physical* (i.e., looming appraisals in response to potentially threatening physical stimuli).

Consistent with prediction, social looming uniquely predicted BFNES-II, SIAS, and SPS scores, accounting for 7%, 4%, and 3% of the variance, respectively. That is, after controlling for depression and general anxiety, social looming contributed incrementally to the prediction of trait social anxiety. Physical looming was not a significant predictor of trait social anxiety or depression. These results replicate the findings of Williams, Shahar, Riskind, and Joiner (2005), who found a specific link between social, but not physical, looming and fear of negative evaluation. The results also advance the conclusions drawn from Williams et al. (2005) by assessing multiple aspects of trait social anxiety (BFNES-II, SIAS, and SPS). It is important to note, however, that depression was a larger predictor of social anxiety than social looming on all three measures. This result might reflect the significant comorbidity of social anxiety and depression (Mineka, Watson, & Clark, 1998).

In addition, largely supporting the hypothesis that social looming functions as an *anxiety-specific* cognitive vulnerability; it predicted trait social anxiety but did not predict depression.

These results are in accord with the central hypothesis of the looming model of anxiety (Riskind, 1997) that looming vulnerability is specific to anxiety, but not to depression, and replicate Reardon and Williams's (2007) findings. These results suggest that the tendency to construct dynamic self-images of the rapidly progressing and intensifying fear of being negatively evaluated or scrutinized (i.e., social looming) are related to trait social anxiety but not to depression. In addition, using the female-only sample ($n = 152$), social looming did not significantly predict general anxious symptoms, however, using the full sample ($N = 177$), social looming uniquely predicted general anxiety, accounting for 2% of the variance. Again, these results support the hypothesis that social looming functions as an anxiety-specific vulnerability. They also suggest the importance of including both males and females when examining relationships between predictor variables and measures of social anxiety.

One possible explanation as to why social looming did not predict depression is that the LMSQ-II items are primarily concerned with perceived threat and personal vulnerability, whereas in depression, the principal cognitive themes revolve more around social loss and personal failure (Dozois & Frewen, 2006). Alternatively, the lack of relationship between social looming and depression maybe because looming vulnerability is conceptualized as predominantly future-oriented (Riskind, 1997), whereas depression is conceptualized as predominantly past-oriented.

Nevertheless, the current findings are promising given the lack of studies that show some specificity to anxiety versus depression for self-report measures of anxiety or threat-related cognition, particularly in analogue samples (Riskind, 1997; Williams, Shahar, Riskind, & Joiner, 2005; Reardon & Williams, 2007). Beck and Perkins (2001) conducted a meta-analysis on findings from both patient and non-patient samples and found that anxious automatic thoughts lacked sufficient cognitive-content specificity to differentiate between anxiety and depression. The present results, together with those of Williams et al. (2005) and Reardon and Williams, suggest that the construct of looming vulnerability is specific to the cognitive phenomenology of anxiety, and predicts unique variance in such measures with the effects of depression controlled. Whereas trait social anxiety and depression are highly correlated and share similar features, social looming has distinct relationships to the former, but not the latter.

The findings that social looming predicted multiple aspects of trait social anxiety, that is, enduring trait-like cognitive patterns, and was not associated with general anxiety (assessed over a short-lived [two-week] period) after partialling out the effects of fear of negative evaluation, social interaction anxiety, and public scrutiny fears, is consistent with the assumption that social looming is more of a trait than a symptom construct. However, the looming model also proposes that the looming maladaptive style functions as a cognitive diathesis that increases vulnerability

to anxiety when stressful life events occur. For example, social looming would be expected to predict more state than trait symptomatology when individuals are facing an actual social threat situation than when they are not. Previous studies have found evidence for this diathesis-stress model over varying time intervals (Black, Balaban, & Riskind, 2000; Riskind, Williams, Theodore, Chrosniak, & Cortina, 2000, Study 2; Riskind & Williams, 2005). Given the exploratory nature of this study, stressful events were not examined. Additional research is needed to examine this important question.

Why did social looming explain significantly more unique variance (7%) in fear of negative evaluation than in either social interaction anxiety (SIAS; 4%) or in social phobia fears (SPS; 3%)? Fear of negative evaluation, considered to be one of the hallmarks of social anxiety, is a cognitive aspect of social anxiety, whereas, the SIAS and SPS assess social phobia symptoms (i.e., cognitive and behavioural reactions to social threat). Clark and Wells (1995) propose that social anxiety is associated with the triggering of mental self-images of the extent that one is being negatively evaluated by an audience. In addition, the looming model suggests that socially phobic individuals may maintain and attend to threatening dynamic images of the rapidly progressing and intensifying danger of being negatively evaluated (i.e., social looming vulnerability). It is therefore perhaps not surprising that social looming is more associated with fear of negative evaluation than with social phobia symptoms (SPS and SIAS), because both social looming and fear of negative evaluation involve cognitive, and largely anticipatory, appraisals of potentially threatening social stimuli; whereas, social phobia symptoms are more associated with the behavioural reactions to those appraisals. In other words, the construct of looming and fear of negative evaluation may operate together and perhaps precede other facets of social anxiety (e.g., social phobia symptoms).

The present study has a number of limitations that deserve comment. First, the study was correlational in nature and it should be borne in mind that no firm conclusions on cause-effect relationships can be drawn. Second, the study used a non-clinical and female-only sample and this limits generalization to a social phobic population and men. Third, the study relied exclusively on self-report measures to assess the study variables, and it is possible that shared method variance inflated the results obtained. However, because looming research is presently in its infancy, the only available measure of looming vulnerability is the self-report LMSQ-II. Finally, the study relied exclusively on self-reports during a single period of assessment. This begs the question as to whether responses to vignettes tap into 'dynamic' threat processes and whether they are not a measure of content to a significant degree. However, the goal of this exploratory study was not to model looming vulnerability over time, but to establish that it is, in

fact, a feature of social anxiety. Nevertheless, to assess dynamic threat processes in social anxiety, future studies will need to attempt to model growth over time.

Despite these limitations, these preliminary findings suggest that the sense of social looming vulnerability might be relevant to understanding unique cognitive features of social anxiety, especially, fear of negative evaluation. These findings do not appear to be the result of depression. If further study should establish the significance of social looming vulnerability to social anxiety, consideration of how to treat this tendency to appraise social threat as rapidly rising in risk and danger might be required. Future research could also examine the impact that social looming has on a variety of 'real life' situations both in social anxiety and social phobia, and across different anxiety disorders (e.g., in social phobia vs. in panic disorder). Integrated cognitive models of social phobia are needed that account for not only the content of cognition, but also the cognitive styles that give negative thoughts and image their salience, for instance, social looming vulnerability. The significance of understanding threat appraisals is that this may increase our knowledge of factors that maintain social phobia or interfere with its treatment. Such increased understanding not only has important implications for theory, but may provide opportunities for improvements in assessment and treatment.

Chapter 6: Experiment 4

Introduction

Findings from Experiment 2 also suggest that metacognitive processing may be an important feature of anticipatory processing in social anxiety. Specifically, in Experiment 2, some high socially anxious individuals' described how engaging in too much metacognition, that is, an excessive focus on their own thoughts, feelings, or beliefs created difficulties for them in anticipation of a feared social event. For example, one individual reported that focusing on his own thoughts created acute embarrassment, while another described feeling 'detached' from other people. Therefore, using the same sample as in Experiment 3, in the next section, I examine possible relationships between metacognitions about anticipatory processing and social anxiety.

The models of Clark and Wells (1995) and Rapee and Heimberg (1997) describe the kinds of anticipatory processing - a form of perseveration - that individuals engage in predominantly, although not exclusively, at the content-based level (e.g., "I'll shake; I'll make a fool of myself"; Clark, 2001, p. 407). In other words, while these models do focus on process, that is, on anticipatory and post-event processing, and self-focused attention, they appear to pay more attention to the content of the process, rather than the process itself. The content of thought is clearly important in determining the nature of social anxiety; however, the metacognitive styles of particular types of thinking might also play a key role in the initiation and/or maintenance of processes such as anticipatory, post-event, or self-monitoring. Metacognition is defined by Wells (2000) as "...any knowledge or cognitive process that is involved in the appraisal, monitoring or control of cognition" (p. 6). Indeed, Wells and Cartwright-Hatton (2004) suggest that it is the metacognitive component of thinking that contributes to the maintenance of cognitive disorder, not the content of thought per se.

Both the Self-Regulatory Executive Function (S-REF) model of cognitive disorder (Wells, 2000; Wells & Matthews, 1994, 1996) and Hartman's (1983) metacognitive model of social anxiety provide conceptual frameworks for understanding the detrimental effects of engaging in excessive metacognition. The metacognitive approach emphasizes the dynamic nature of processing in psychological disorders. The S-REF model specifies three levels of cognitive processing: (1) automatic and reflexively driven cognitive activity; (2) strategic processing that demands voluntary allocation of attention; and (3) stored meta-self-beliefs in long-term memory. In addition, different modes, that is, the individual's appraisal of his or her thoughts and beliefs of processing, can be executed. When in object or default mode, thoughts are taken as unevaluated and accurate representations of reality. When in metacognitive mode, the individual is distanced from thoughts, and thoughts can be evaluated and not necessarily accepted

as reality. According to the S-REF model, maladaptive metacognitive processing directs individuals to focus attention on negative self-relevant information (e.g., anxious thoughts), and to select inappropriate coping strategies (e.g., thought control strategies) and goals (e.g., social avoidance) for the basis of cognition and action. Such inflexible self-focused attention fails to disconfirm or modify maladaptive beliefs. For example, avoidance of feared social situations in social anxiety contributes to the failure to discover that situations are not dangerous.

Similarly, Hartman's (1983) metacognitive model of social anxiety proposes that socially anxious individuals lose the ability to interact with people in social situations because they are constantly monitoring their own thoughts, physiological arousal, and ongoing performance, in an attempt to avoid feared social responses such as blushing, stammering, or appearing foolish. "It's as if my own thoughts are so loud that I can't listen to what other people are saying" (Hartman, 1983, p. 441). Turk, Lerner, Heimberg, and Rapee (2001) also suggest that socially anxious individuals function within the equivalent of a "multiple task paradigm" (p. 295), in which they have to simultaneously monitor their internal and external states for imperfections that may elicit public scrutiny from others, while engaging in social interaction. Consequently, valuable information regarding social interaction is not processed, gets lost, distorted, or is ignored; resulting in impaired social performance.

Few studies have examined metacognitive processes in social anxiety. Abramowitz, Dorfin, and Tolin (2001), using the Thought Control Questionnaire (TCQ; Wells & Davies, 1994), found that patients with social phobia used more worry, punishment, social control, and reappraisal strategies to suppress unwanted thoughts than controls. However, Fehm and Hoyer (2004) showed that patients with social phobia used only the social control strategy less often than all the other strategies on the TCQ, including distraction, compared to patients with obsessive-compulsive disorder and controls. Valente (2003) investigated thought control strategies in anticipatory, in situ, and post-event processing in high and low speech anxious individuals (measured by the Personal Report of Confidence as a Speaker Scale, Paul, 1966). Before, during, and after giving a speech, high speech anxious individuals reported greater use of thought control strategies than low speech anxious individuals. Wells and Carter (2001), using the Metacognitions Questionnaire (MCQ; Cartwright-Hatton & Wells, 1997) examined positive beliefs about worry, and negative beliefs concerning themes of uncontrollability and danger, and themes of superstition, punishment, and responsibility (SPR) in generalized anxiety disorder (GAD), panic disorder, social phobia, depression, and non-patients. Results showed that GAD patients reported significantly higher negative beliefs about the uncontrollability and danger of thoughts and SPR, than any of the other anxious groups or non-patients. There were no significant

group differences in the endorsement of positive beliefs about worry.

Most recently, Dannahy and Stopa (2007) explored, amongst other mechanisms, metacognitive processes in post-event processing in social anxiety. Two dimensions of metacognition were examined using an adapted version of the MCQ, namely, beliefs regarding the degree to which thinking helps problem-solving and negative beliefs about the uncontrollability of thoughts and cognitive self-consciousness, that is, an individual's tendency to be aware of and monitor his or her thinking. High and low socially anxious individuals appraised their performance immediately after a conversation with a confederate and prior to an anticipated second conversation task one week later. Prior to the second task, high socially anxious individuals reported more cognitive self-consciousness and a higher belief in the uncontrollability of their own thoughts than low socially anxious individuals did. However, the two groups did not differ on the problem solving subscale on the MCQ.

The aim of the present study was to partially replicate and extend the above studies by examining the relationships between metacognitions about anticipatory processing and trait social anxiety, whilst controlling for depression and general anxiety. The three trait aspects were social interaction anxiety (assessed by the Social Interaction and Anxiety Scale [SIAS]; Mattick & Clarke, 1998), fear of negative evaluation (assessed by a straightforwardly worded version of Leary's [1983] Brief Fear of Negative Evaluation scale; i.e., the Brief Fear of Negative Evaluation Scale-Two [BFNES-II]), and public scrutiny fears (assessed by the Social Phobia Scale [SPS]; Mattick & Clarke). In this study, the SIAS, BFNES-II, and SPS were used together, so that a wide range of the cognitive and behavioural aspects believed to underlie social anxiety could be examined. The BFNES-II assesses maladaptive cognitions associated with fear of negative evaluation, the SPS assesses fears of being scrutinized during routine activities (e.g., eating, drinking, or writing), and the SIAS assesses general social interaction anxiety (e.g., being boring when meeting or talking with other people).

Participants also completed the TCQ, which assessed four thought control strategies - distraction, punishment, social control, and worry, the Metacognitions Questionnaire-30 (MCQ-30; Wells & Cartright-Hatton, 2004), which assessed positive beliefs about worry, negative beliefs about the uncontrollability and danger of thoughts, and beliefs about the need to control thoughts, and the Cognitive Self-Consciousness Scale-Expanded (CSCS-E; Janeck, Calamari, Riemann, & Heffelfinger, 2003), which measured individuals' cognitive self-consciousness. Janeck et al. (2003) proposed that cognitive self-consciousness is a distinct metacognitive process, and might act as a risk factor for anxiety. The construct of cognitive self-consciousness was included in this study as it is hypothesized to make negative and intrusive thoughts or images

highly salient (Marker, Calamari, Woodard, & Reimann, 2006). The TCQ, MCQ-30, and CSCS-E were each modified to examine the relationships between metacognitions about anticipatory processing and social anxiety. Participants also completed measures of depression and general anxiety.

Based on prior research (Abramowitz, Dorfin, & Tolin, 2001; Dannahy & Stopa, 2007; Valente, 2003) and according to metacognitive models of social anxiety (Hartman, 1983) and psychopathology (Wells, 2000), I expected positive correlations between metacognitive beliefs and thought control strategies and trait social anxiety, namely, BFNES-II, SIAS, and SPS, because these factors have been implicated in preservative styles of thinking such as anticipatory anxiety in the S-REF theory, and such anticipatory anxiety is a key feature of social anxiety. I also examined whether the predicted positive association between the metacognitive processes and trait social anxiety would remain after controlling for depression and general anxiety. Finally, I examined the specificity of the metacognitive processes to trait social anxiety, by modelling depression and general anxiety as dependent variables. Specificity would be demonstrated if the metacognitive processes significantly accounted for variance in trait social anxiety only.

Method

Participants and Procedure

In addition to that described in Experiment 3, there were no significant differences between male and female participants on the four thought control strategies (distraction, $t[175] = 2.95, p = .09, \eta^2 = 0.00$; social control, $t[175] = .36, p = .55, \eta^2 = 0.00$; punishment, $t[175] = 0.01, p = .94, \eta^2 = 0.00$; worry, $t[175] = 0.09, p = .76, \eta^2 = 0.00$), the three MCQ-30 dimensions (positive beliefs about worry, $t[175] = 0.45, p = .50, \eta^2 = 0.00$; negative beliefs about the uncontrollability and danger of thoughts, $t[175] = 0.01, p = .93, \eta^2 = 0.00$; beliefs about the need to control thoughts, $t[175] = 2.88, p = .09, \eta^2 = 0.00$), the CSCS-E, $t(175) = 0.73, p = .40, \eta^2 = 0.00$; or on the BFNES-II, $t(175) = 0.05, p = .96, \eta^2 = 0.00$, SPS, $t(175) = 0.56, p = .58, \eta^2 = 0.00$, SIAS, $t(175) = 1.03, p = .31, \eta^2 = 0.03$, Beck Anxiety Inventory (BAI; Beck & Steer, 1990), $t(175) = 0.69, p = .50, \eta^2 = 0.00$, or Beck Depression Inventory-Two (BDI-II; Beck, Steer, & Brown, 1996), $t(175) = -0.27, p = .79, \eta^2 = 0.00$. The lack of differences in the means on these latter measures is surprising, as differences between men and women are typically reported. However, the small number of males in the current sample ($n = 25$) raises the possibility that there would be insufficient power to detect significant differences, and therefore it would be difficult to interpret the results. Accordingly, I decided to exclude the males and use a female-

only sample ($n = 152$; age, $M = 20.47$, $SD = 4.70$).⁸

Materials

Outcome or Dependent Measures

Trait social anxiety. The Brief Fear of Negative Evaluation Scale-Two (BFNES-II), Social Phobia Scale (SPS; Mattick & Clarke, 1998) and Social Interaction Anxiety Scale (SIAS; Mattick & Clarke) were previously described in Experiment 3.

Predictor or Independent Measures

The Thought Control Questionnaire (TCQ; Wells & Davies, 1994) is a 30-item self-report measure developed and validated to identify the frequency of use of five strategies of thought control: distraction (e.g., “I keep myself busy”); punishment (e.g., “I tell myself not to be so stupid”); social control (e.g., “I talk to a friend about the thought”); reappraisal (e.g., “I try to reinterpret the thought”); and worry (e.g., “I dwell on other worries”). Each subscale consists of six items rated on a four-point Likert scale (from 1 = *never* to 4 = *almost always*); the subscales have moderate to strong internal consistency ($\alpha s = .64-.79$; Wells & Davies) and good test-retest reliability over a 6-week period ($r s = .67-.83$; Wells & Davies).

Research shows that the reappraisal subscale of the original TCQ is unrelated to psychopathology, including social anxiety (Coles & Heimberg, 2005; Fehm & Hoyer, 2004; Wells & Davies, 1994), so it was not used in this study. Moreover, on the recommendation of Fehm and Hoyer, the confusing phrase “unwanted thoughts” from the original TCQ instructions was replaced with “negative thoughts or images.” For instance, instead of reading, “I do something that I enjoy instead”, this item from the distraction factor of the original TCQ read, “When I experience negative thoughts or images before social situations, I do something that I enjoy instead.” In addition, as suggested by Fehm and Hoyer, Wells and Davies’ original instruction “We are interested in the techniques that you generally use to control such thoughts” (p. 873) was replaced with, “We are interested in the techniques that you use to control such thoughts or images before social situations....” Lastly, on the worry factor of the original TCQ, the word ‘worry’ or ‘worries’ was replaced with the word ‘anxiety’ or ‘anxieties’ to reflect more

⁸ The regression analyses were the same whether I included women only or the full sample. However, using the full sample ($N = 177$), the MCQ subscale negative beliefs about the uncontrollability and dangerousness of thoughts, $t(168) = 2.65$, $p < .01$, $\eta^2 = 0.02$, uniquely predicted SPS, accounting for 1% of the variance, while, the TCQ subscale anxiety $t(168) = 1.96$, $p = .05$, $\eta^2 = 0.01$, uniquely predicted SIAS, accounting for 1% of the variance.

precisely the nature of social anxiety.⁹ For example, instead of reading, “I dwell on other worries”, this item from the worry factor of the original TCQ read, “When I experience negative thoughts or images before social situations, I dwell on other anxieties.” Cronbach alpha’s of .83 (distraction), .76 (anxiety), .72 (punishment), and .70 (social control) were obtained in this current sample.

The Metacognitions Questionnaire-30 (MCQ-30; Wells & Cartwright-Hatton, 2004) is a 30-item version of the original 65-item MCQ scale (Cartwright-Hatton & Wells, 1997). The MCQ-30 comprises five factors that assess three domains of positive and negative metacognitive beliefs. The five factors are: (1) positive beliefs about worry (e.g., ‘Worrying helps me cope’); (2) negative beliefs about the uncontrollability and danger of thoughts (e.g., ‘When I start worrying I cannot stop’); (3) beliefs about the need to control thoughts (e.g., ‘Not being able to control my thoughts is a sign of weakness’); (4) beliefs about cognitive confidence (e.g., ‘My memory can mislead me at times’); and (5) cognitive self-consciousness (e.g., ‘I pay close attention to the way my mind works’). For the purposes of testing the present hypotheses, only factors 1-3 were used. Factor 4, cognitive confidence, was not used because it is not implicated in models of social anxiety (Clark & Wells, 1995; Rapee & Heimberg, 1997), while factor 5, cognitive self-consciousness, was not used because it was already embedded in the CSCS-E.

In addition, the wordings of the items on the original MCQ-30 were slightly reworded so that participants’ anticipatory processing beliefs could be assessed. For example, instead of reading, “Worrying helps me cope”, this item from the original MCQ-30 subscale positive beliefs about worry read, “Before social situations, anxiety helps me cope.”¹⁰ On the MCQ-30, items are rated on a 1 (*do not agree*) to 4 (*agree very much*) scale, with scores ranging from 30-120. The MCQ-30 factors correlate meaningfully with measures of emotional vulnerability, in a similar fashion to the original data obtained in previous studies with the full version of the MCQ (Cartwright-Hatton & Wells, 1997; Wells & Cartwright-Hatton, 2004). The MCQ-30 also demonstrates good-excellent internal consistency (α s = positive beliefs about worry, .92; negative beliefs about the uncontrollability and danger of thoughts, .91; need to control thoughts, .72), good convergent validity, and acceptable test-retest reliability (Wells & Cartwright-Hatton).

⁹ On the MCQ-30, the term ‘anxiety’ or ‘anxieties’ was substituted for the term ‘worry’ or ‘worries’ on all three subscales.

¹⁰ On the TCQ and the CSCS-E, the same procedure was also used. For example, instead of reading, “I focus on my thoughts”, this item from the original CSCS-E read, “Before social situations, I focus on my thoughts.”

Cronbach alpha's of .82 (positive beliefs about anxiety), .86 (negative beliefs about the uncontrollability and danger of thoughts), and .61 (beliefs about the need to control thoughts) were obtained in this current sample, which are comparable to Wells and Cartwright-Hatton's alpha reliabilities.

The Cognitive Self-Consciousness Scale-Expanded (CSCS-E; Janeck, Calamari, Riemann, & Heffelfinger, 2003) includes the six-item cognitive self-consciousness subscale (Wells & Cartwright-Hatton, 2004) and the seven additional items that Janeck et al. (2003) added. New items on the CSCS-E include "I seem to be more conscious of thinking than others" and "I notice my thoughts even if I am busy with another activity" (Janeck et al., p. 192). Items are rated on a four-point Likert scale, with scores ranging from 14-56. Janeck et al. found that the CSCS-E was internally consistent ($\alpha = .94$) and moderately correlated with measures of general anxiety and depression. On the recommendation of Cohen and Calamari (2004), the two reverse scored items of the additional seven items added by Janeck et al. were straightforwardly worded. Cronbach's alpha of .94 (CSCS-E) was obtained in this current sample, which is identical to Janeck et al.'s alpha reliability.

General Anxiety and Depressive Symptoms. The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) and the Beck Anxiety Inventory (BAI; Beck & Steer, 1990) were previously described in Experiment 3.

Results

Correlations

Correlations between the TCQ and MCQ-30 subscales, and CSCS-E, BFNES-II, SIAS, SPS, BAI, and BDI-II are presented in Table 6.¹¹ The TCQ subscales anxiety, punishment, and social control, MCQ-30 subscales negative beliefs about the uncontrollability and danger of thoughts and beliefs about the need to control thoughts, and CSCS-E were all positively and significantly associated with BFNES-II, SIAS, SPS, BAI, and BDI-II (except social control). In

¹¹ Because of multiple comparisons among the multiple measures, I used a significance level of $p < .004$ (after a Bonferroni adjustment of $.05/13$). All comparisons were still significant at the .006 level, except that the MCQ-30 subscale negative beliefs about the uncontrollability and dangerousness of thoughts was no longer significantly associated with the TCQ subscales social control and distraction, while, the MCQ-30 subscale positive beliefs about anxiety was no longer significantly associated with CSC, the BFNES-II, or the TCQ subscale anxiety. Finally, the TCQ subscale social control was no longer significantly associated with the BFNES-II, SIAS, or the BAI.

contrast, the TCQ subscale distraction and the MCQ-30 subscale positive beliefs about anxiety were not significantly associated with any of the above trait social anxiety measures.

Table 6

Means, Standard Deviations, and Inter-Correlations for Thought Control Strategies, Metacognitive Beliefs, Cognitive Self-Consciousness, Trait Social Anxiety, and General Anxious and Depressive Symptom Measures (n = 152)

Measures	1(1)	1(2)	1(3)	1(4)	2(1)	2(2)	2(3)	3	4	5	6	7	8
1 TCQ subscales:													
(1) Punishment	-	.26**	.36***	-.09	.06	.56***	.56***	.50***	.45***	.42***	.53***	.45***	.44***
(2) Social control		-	.25**	.13	-.05	.23	.28***	.27**	.23***	.22	.33***	.20	.12
(3) Anxiety			-	-.11	.17	.33***	.25**	.51***	.43***	.48***	.43***	.48***	.24**
(4) Distraction				-	.02	-.22	-.13	-.01	-.10	-.14	-.11	-.14	-.06
2 MCQ-30 subscales:													
(1) ^a Positive beliefs about anxiety					-	.13	.08	.20	.16	.06	.11	-.03	.00
(2) ^b Uncontrollability and danger						-	.58***	.58***	.59***	.59***	.60***	.51***	.51***
(3) ^c Beliefs about control							-	.48***	.40***	.46***	.53***	.35***	.33***
3 CSCS-E								-	.51***	.47***	.51***	.47***	.45***
4 BFNES-II									-	.64***	.65***	.62***	.52***
5 SIAS										-	.80***	.64***	.55***
6 SPS											-	.62***	.68***
7 BAI												-	.61***
8 BDI													-
<i>M</i>	9.20	12.82	10.38	15.51	14.93	11.80	11.14	29.43	32.26	21.96	18.10	8.45	8.71
<i>SD</i>	2.41	2.05	2.78	3.06	5.06	4.27	2.76	9.24	11.91	13.41	10.89	8.28	7.35

TCQ, Thought Control Questionnaire; MCQ-30, Metacognitions Questionnaire; ^aPositive Beliefs about Anxiety, ^bNegative Beliefs about the Uncontrollability and Danger of Thoughts, ^cBeliefs about the Need to Control Thoughts; CSCS-E, Cognitive Self-Consciousness Scale-Expanded; BFNES-II, Brief Fear of Negative Evaluation Scale-Two; SIAS, Social Interaction and Anxiety Scale; SPS, Social Phobia Scale; BAI, Beck Anxiety Inventory; BDI-II, Beck Depression Inventory-Two. *M*, Mean; *SD*, Standard Deviation.

* $p < .05$, ** $p < .01$, *** $p < .001$, $p = .004$.

It was also predicted that the significant and positive associations between the metacognitive processes and trait social anxiety measures would remain after controlling for depressive and general anxious symptoms. Partial correlations between the TCQ subscales punishment, social control, and anxiety, MCQ-30 subscales negative beliefs about the uncontrollability and danger of thoughts and beliefs about the need to control thoughts, and CSCS-E, BFNES-II, SIAS, and SPS are presented in Table 7. As predicted, Table 7 shows that all of the metacognitive factors remained significantly correlated with BFNES-II, SIAS, and SPS when controlling for depression and general anxiety (apart from social control with the BFNES-II and the SIAS).

Table 7

Partial Correlations between Metacognitive Processes and Trait Social Anxiety Measures, after Controlling for Depression and General Anxiety (n = 152)

Subscale	BFNES-II	SIAS	SPS
<i>Controlling for depression</i>			
TCQ Subscale:			
1. Punishment	.24**	.20*	.36***
2. Social control	.20*	.18*	.33***
3. Anxiety	.23**	.16*	.24**
MCQ-30 Subscale:			
1. ^a Uncontrollability and danger	.40***	.40***	.42***
2. ^b Beliefs about controlling thoughts	.24**	.33***	.43***
CSCS-E	.31***	.25**	.31***
<i>Controlling for general anxiety</i>			
TCQ Subscale:			
1. Punishment	.28***	.23**	.40***
2. Social control	.15	.13	.27***
3. Anxiety	.36***	.30***	.27***
MCQ-30 Subscale:			
1. Uncontrollability and danger	.44***	.43***	.41***
2. Beliefs about controlling thoughts	.28***	.36***	.44***

CSCS-E	.36***	.30***	.31***
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TCQ, Thought Control Questionnaire; MCQ-30, Metacognitions Questionnaire; ^aNegative Beliefs about the Uncontrollability and Danger of Thoughts, ^bBeliefs about the Need to Control Thoughts; CSCS-E, Cognitive Self-Consciousness Scale-Expanded; BFNES-II, Brief Fear of Negative Evaluation Scale-Two; SIAS, Social Interaction and Anxiety Scale; SPS, Social Phobia Scale; BAI, Beck Anxiety Inventory; BDI-II, Beck Depression Inventory-Two.

* $p \leq .05$, ** $p < .01$, *** $p \leq .001$.

Regression Analyses for Trait Social Anxiety (using BFNES-II, SIAS, and SPS) and the Depressive and General Anxiety Symptom Measures

To examine whether the metacognitive factors predicted trait social anxiety and general anxious and depressive symptoms, five separate multiple regression analyses were conducted on the whole sample ($n = 152$) using BFNES-II, SIAS, SPS, BAI, and BDI-II scores as outcome variables and the three TCQ subscales punishment, social control, and anxiety, the two MCQ-30 subscales negative beliefs about the uncontrollability and danger of thoughts and beliefs about the need to control thoughts, and the CSCS-E as predictors. The TCQ subscale distraction and the MCQ-30 subscale positive beliefs about anxiety were not entered into the regression analyses because they were not significantly associated with any of the trait social anxiety or depressive and general anxious symptom measures (apart from the latter subscale with BFNES-II).¹²

In the three regression analyses predicting trait social anxiety (BFNES-II, SIAS, and SPS), the metacognitive factors and BDI-II and BAI scores were entered simultaneously. The BAI and BDI-II scores were entered into the analyses to permit a demonstration of incremental validity on the part of the metacognitive factors. Regression analysis was used because it allowed trait social anxiety and general anxiety and depressive symptoms to be investigated as continuous variables and to allow any possible impact of the latter two symptoms to be accounted for.

Table 8 summarizes the regression analysis predicting fear of negative evaluation. The total model accounted for 51.9% of the variance in BFNES-II. Both the MCQ-30 subscale negative beliefs about the uncontrollability and danger of thoughts, $t(143) = 3.03$, $p < .001$, $\eta^2 = 0.02$, and BDI-II, $t(143) = 3.99$, $p < .001$, $\eta^2 = 0.03$, uniquely predicted BFNES-II, accounting for 3% and 5% of the variance, respectively (indicated by the squared semi-partial correlation in Table 3). Neither the TCQ subscales punishment, $t(143) = 0.08$, $p = .94$, $\eta^2 = 0.00$, social control, $t(143) = 0.88$, $p = .38$, $\eta^2 = 0.00$, and anxiety, $t(143) = 1.73$, $p = .09$, $\eta^2 = 0.01$, MCQ-30 subscale

¹² Including the two subscales in the regression analyses did not change the results.

beliefs about the need to control thoughts, $t(143) = 0.20, p = .84, \eta^2 = 0.00$, CSCS-E, $t(143) = 0.87, p = .38, \eta^2 = 0.00$, or BAI, $t(143) = 1.37, p = .17, \eta^2 = 0.00$, were significant predictors of BFNES-II. The overall model was significant, $F(8, 143) = 19.26, p < .001, \eta^2 = 0.13$.

Table 8 also summarizes the regression analysis of variables predicting social interaction anxiety. The total model accounted for 53.8% of the variance in SIAS scores. The MCQ-30 subscales negative beliefs about the uncontrollability and danger of thoughts, $t(143) = 2.84, p < .01, \eta^2 = 0.02$, and beliefs about the need to control thoughts, $t(143) = 2.06, p < .05, \eta^2 = 0.01$, and BDI-II, $t(143) = 4.30, p < .001, \eta^2 = 0.03$, and BAI, $t(143) = 2.31, p < .05, \eta^2 = 0.02$, uniquely predicted SIAS scores, accounting for 3%, 1%, 6%, and 2% of the variance, respectively. Neither the TCQ subscales punishment, $t(143) = -0.10, p = .32, \eta^2 = 0.00$, social control, $t(143) = 0.63, p = .53, \eta^2 = 0.00$, and anxiety, $t(143) = 1.38, p = .17, \eta^2 = 0.00$, or CSCS-E, $t(143) = -0.05, p = .10, \eta^2 = 0.00$, were significant predictors of SIAS scores. The overall model was significant, $F(8, 143) = 20.78, p < .001, \eta^2 = 0.15$.

Table 8 summarizes the regression analysis of variables predicting public scrutiny fears. The total model accounted for 65.3% of the variance in SPS scores. The TCQ subscales social control, $t(143) = 2.06, p < .05, \eta^2 = 0.01$, and anxiety, $t(143) = 2.46, p < .05, \eta^2 = 0.02$, MCQ-30 subscale beliefs about the need to control thoughts, $t(143) = 3.05, p < .01, \eta^2 = 0.02$, and BDI-II, $t(143) = 2.72, p < .01, \eta^2 = 0.02$, and BAI, $t(143) = 5.66, p < .001, \eta^2 = 0.04$, uniquely predicted SPS scores, accounting for 1%, 1%, 2%, 2%, and 9% of the variance, respectively. Neither the TCQ subscale punishment, $t(143) = 0.37, p = .71, \eta^2 = 0.00$, MCQ-30 subscale negative beliefs about the uncontrollability and danger of thoughts, $t(143) = 1.86, p = .07, \eta^2 = 0.01$, or CSCS-E, $t(143) = -0.59, p = .56, \eta^2 = 0.00$, were significant predictors of SPS scores. The overall model was significant, $F(8, 143) = 33.60, p < .001, \eta^2 = 0.23$.

Finally, the specificity of the metacognitive factors to trait social anxiety was examined. Table 8 summarizes the regression analysis of variables predicting depressive symptoms. The total model accounted for 48.7% of the variance in BDI-II scores. The MCQ-30 subscales negative beliefs about the uncontrollability and danger of thoughts, $t(144) = 1.84, p = .07, \eta^2 = 0.02$, and beliefs about the need to control thoughts, $t(144) = 0.40, p = .69, \eta^2 = 0.00$, and TCQ subscales social control, $t(144) = -1.51, p = .13, \eta^2 = 0.00$, and punishment, $t(144) = 0.77, p = .45, \eta^2 = 0.00$, were not significant predictors of BDI-II, nor was CSCS-E, $t(144) = 0.60, p = .55, \eta^2 = 0.00$. However, the TCQ subscale anxiety, $t(144) = 3.27, p < .01, \eta^2 = 0.02$, and BAI, $t(144) = 5.82, p < .001, \eta^2 = 0.04$, uniquely predicted BDI-II, accounting for 4% and 12% of the variance. The overall model was significant, $F(7, 144) = 19.52, p < .001, \eta^2 = 0.14$.

Table 8 summarizes the regression analysis of variables predicting general anxious

symptoms. The total model accounted for 45.5% of the variance in BAI scores. The TCQ subscales social control, $t(144) = 1.29, p = .20, \eta^2 = 0.00$, punishment, $t(144) = 1.65, p = .10, \eta^2 = 0.00$, and anxiety, $t(144) = -1.74, p = .09, \eta^2 = 0.00$, were not significant predictors of BAI, nor was the MCQ-30 subscale beliefs about the need to control thoughts, $t(144) = -0.90, p = .37, \eta^2 = 0.00$. However, the MCQ-30 subscale negative beliefs about the uncontrollability and danger of thoughts, $t(144) = 2.13, p < .05, \eta^2 = 0.01$, and BDI-II depressive symptoms, $t(144) = 5.85, p < .04, \eta^2 = 0.02$, uniquely predicted BAI, accounting for 2% and 13% of the variance, respectively. The overall model was significant, $F(7, 144) = 17.20, p < .001, \eta^2 = 0.12$.

Thus, The MCQ-30 subscale negative beliefs about the uncontrollability and danger of thoughts was specific to trait social anxiety (i.e., BFNES-II and SIAS) and general anxiety, but not to depression. In addition, the MCQ-30 subscale beliefs about the need to control thoughts was specific to trait social anxiety (i.e., SIAS and SPS), but not to depression or general anxiety. Lastly, the TCQ subscale anxiety was specific to both trait social anxiety (SPS) and depression, while, the TCQ subscale social control was specific to SPS.

Table 8

Summary of Multiple Regression Analyses for Variables Predicting Trait Social Anxiety (i.e., the BFNES-II, SIAS, and SPS) and BDI-II Depressive and BAI General Anxious Symptoms

Variable	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ²	<i>sr</i>
BFNES-II					
Constant	4.97	5.01			
TCQ subscale:					
1. Punishment	0.03	0.39	.01	.00	.004
2. Social control	0.32	0.36	.06	.00	.05
3. Anxiety	0.53	0.31	.12	.01	.10
MCQ-30 subscale:					
1. ^a Uncontrollability and danger	0.72	0.24	.26**	.03**	.18**
2. ^b Beliefs about controlling thoughts	0.07	0.34	.02	.00	.01
CSCS-E	0.09	0.11	.07	.00	.05
BDI-II	0.47	0.12	.32***	.05***	.23***
BAI	0.18	0.13	.11	.01	.10

SIAS

Constant	-6.74	5.53			
TCQ subscale:					
1. Punishment	-0.43	0.43	-.08	.00	-.06
2. Social control	0.25	0.40	.04	.00	.04
3. Anxiety	0.46	0.34	.10	.00	.08
MCQ-30 subscale:					
1. Uncontrollability and danger	0.74	0.26	.24**	.03**	.16**
2. Beliefs about controlling thoughts	0.76	0.37	.16*	.01*	.12*
CSCS-E	-0.00	0.12	-0.00	.00	-.00
BDI-II	0.55	0.13	.34***	.06***	.25***
BAI	0.32	0.14	.18*	.02*	.13*

SPS

Constant	-14.90	3.90			
TCQ subscale:					
1. Punishment	0.11	0.30	.03	.00	.02
2. Social control	0.58	0.28	.11*	.01*	.10*
3. Anxiety	0.59	0.24	.15*	.01*	.12*
MCQ-30 subscale:					
1. Uncontrollability and danger	0.34	0.18	.13	.01	.10
2. Beliefs about controlling thoughts	0.80	0.26	.20**	.02**	.15**
CSCS-E	-0.05	0.08	-.04	.00	-.03
BDI-II	0.25	0.10	.19**	.02**	.13**
BAI	0.56	0.10	.38***	.09***	.28***

BDI-II

Constant	-5.87	3.55			
TCQ subscale:					
1. Punishment	0.21	0.28	.06	.00	.05
2. Social control	-0.40	0.26	-0.10	.00	-.10
3. Anxiety	0.69	0.21	.23**	.04**	.20**
MCQ-30 subscale:					

1. Uncontrollability and danger	0.31	0.17	.20	.01	.11
2. Beliefs about controlling thoughts	0.10	0.24	.03	.00	.02
CSCS-E	0.05	0.08	.05	.00	.04
BAI	0.48	0.08	.43***	.12**	.35***
<hr/>					
BAI					
Constant	-3.78	3.27			
TCQ subscale:					
4. Punishment	0.42	0.25	.14	.01	.10
5. Social control	0.31	0.24	.09	.00	.08
6. Anxiety	-0.34	0.20	-.13	.01	-.11
MCQ-30 subscale:					
3. Uncontrollability and danger	0.33	0.15	.20*	.02*	.13*
4. Beliefs about controlling thoughts	-0.20	0.22	-.07	.00	-.06
CSCS-E	0.11	0.07	.14	.01	.10
BDI-II	0.40	0.07	.45***	.13***	.36***

Note; $n = 152$; BFNES-II, $R^2 = .52$ ($p < .001$, $f^2 = 19.26$); SIAS, $R^2 = .55$ ($p < .001$, $f^2 = 20.78$); SPS, $R^2 = .65$ ($p < .001$, $f^2 = 33.60$); BDI-II, $R^2 = .49$ ($p < .001$, $f^2 = 19.52$); BAI, $R^2 = .46$ ($p < .001$, $f^2 = 17.20$); sr = semi-partial correlation; sr^2 = squared semi-partial correlation (represents the proportion of variance uniquely accounted for by each predictor, beyond that accounted for by all predictors at that step). TCQ, Thought Control Questionnaire; MCQ-30, Metacognitions Questionnaire-30; ^aNegative Beliefs about the Uncontrollability and Danger of Thoughts, ^bBeliefs about the Need to Control Thoughts; CSCS-E, Cognitive Self-Consciousness Scale-Expanded; BFNES-II, Brief-Fear of Negative Evaluation Scale-Two; SIAS, Social Interaction and Anxiety Scale; SPS, Social Phobia Scale; BAI, Beck Anxiety Inventory; BDI-II, Beck Depression Inventory-Two.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Discussion

This exploratory study examined the relationship between metacognitions about anticipatory processing and trait social anxiety, that is, fear of negative evaluation (using the BFNES-II), social interaction anxiety (using the SIAS), and public scrutiny fears (using the SPS), as well as depression and general anxiety. The metacognitive factors comprised the MCQ-30 subscales negative beliefs about the uncontrollability and danger of thoughts, beliefs about the

need to control thoughts, and positive beliefs about anxiety, the TCQ subscales distraction, punishment, social control, and anxiety, and the CSCS-E.

As expected, the MCQ-30 subscale negative beliefs about the uncontrollability and danger of thoughts uniquely predicted BFNES-II, SIAS, and BAI scores, accounting for 3%, 3%, and 2% of the variance, respectively. The MCQ-30 subscale did not predict SPS or depression scores, however, when I used the full sample ($N = 177$), negative beliefs about the uncontrollability and danger of thoughts uniquely predicted SPS scores, accounting for 1% of the variance. In addition, the MCQ-30 subscale beliefs about the need to control thoughts uniquely predicted SIAS and SPS scores, accounting for 1% and 2% of the variance, respectively. Lastly, the TCQ subscales social control and anxiety uniquely predicted SPS scores, accounting for 1% and 1% of the variance, respectively; with the latter subscale also uniquely predicting BDI-II scores, accounting for 4% of the variance. In addition, using the full sample, the TCQ subscale anxiety uniquely predicted SIAS scores, accounting for 1% of the variance. Like the findings of Experiment 3, the current results suggest the importance of including both males and females when examining relationships between predictor variables and measures of social anxiety.

These findings accord with the results of Abramowitz, Dorfin, and Tolin (2001), Wells and Carter (2001), and Dannahy and Stopa (2007), who found a specific link between social phobia and social anxiety and the MCQ-30 subscale negative beliefs about the uncontrollability and danger of thoughts and the TCQ subscales social control and anxiety. These findings are also consistent with the S-REF theory of cognitive disorder (Wells, 2000; Wells & Matthews, 1994, 1996) and Hartman's (1983) metacognitive model of social anxiety, which suggest that these metacognitive processes may increase vulnerability to psychological disorder and social anxiety, because they produce and maintain biases in information-processing. These biases are characterized by the triggering of negative beliefs, heightened self-focused attention, post-event processing, hypervigilance for threat, and self-regulation strategies that fail to change faulty beliefs. However, the findings are not consistent with Dannahy and Stopa's results, in which high socially anxious individuals reported higher cognitive self-consciousness than low socially anxious individuals did.

The current results also advance the conclusions drawn from the above studies by assessing a range of metacognitive processes (i.e., thought control strategies, positive and negative meta-beliefs, and cognitive self-consciousness) and multiple aspects of trait social anxiety (i.e., fear of negative evaluation, social interaction anxiety, and public scrutiny fears), whilst controlling for depressive and general anxious symptoms. However, note that depression was a larger predictor of trait social anxiety (BFNES-II, SIAS, and SPS) and general anxious

anxious symptoms (BAI) than the MCQ-30 subscales negative beliefs about the uncontrollability and danger of thoughts and beliefs about the need to control thoughts and the TCQ subscales social control and anxiety. Furthermore, general anxiety was a larger predictor of SIAS and SPS than the MCQ-30 subscale beliefs about the need to control thoughts and the TCQ subscales social control and anxiety. This is discussed in more detail below.

Depression was a unique predictor of BFNES-II, SIAS, and SPS, though controlling for it did not eliminate the contribution of the MCQ-30 subscales negative beliefs about the uncontrollability and danger of thoughts and beliefs about the need to control thoughts and the TCQ subscales social control and anxiety. This result might reflect the significant comorbidity of social anxiety and depression (Mineka, Watson, & Clark, 1998). One possible explanation as to why depression did not affect the above metacognitive factors is that they were about anticipatory processing, which is conceptualized as mainly future-orientated and with a greater compulsion to act, whereas depression is conceptualized as mainly past-oriented and with less compulsion to act (Papageorgiou & Wells, 1999). Alternatively, the lack of relationship between the metacognitive factors and depression may be because some of the factors were primarily concerned with anticipated threat or danger, in particular, the MCQ-30 subscale negative beliefs about the uncontrollability and danger of thoughts (e.g., ‘I can not ignore my anxious thoughts’ or ‘My anxiety could make me go mad’), whereas in depression, the principal cognitive themes revolve more around social loss and personal failure (Dozois & Frewen, 2006; Papageorgiou & Wells).

In addition, the MCQ-30 subscale negative beliefs about the uncontrollability and danger of thoughts, that is, people who believe that their own thoughts are uncontrollable and dangerous, uniquely predicted trait social anxiety (BFNES-II and SIAS), but did not predict depression. This suggests some specificity of this belief to an individual’s fear of negative evaluation and social interaction, but not to depressive symptoms. These findings suggest that the belief that one’s thoughts are uncontrollable and dangerous represents an enduring trait-like social anxiety vulnerability, which would lend support to this MCQ-30 subscale’s status as a trait measure (Cartwright-Hatton & Wells, 1997; Wells & Cartwright-Hatton, 2004). However, it is important to note that the belief that one’s thoughts are uncontrollable and dangerous has also been linked to generalized anxiety disorder (Cartwright-Hatton & Wells; Wells, 2005; Wells & Carter, 2001), proneness towards hallucinations and delusions (Jones & Fernyhough, 2006; Larøi & Linden, 2005), and post-traumatic stress symptoms (Roussis & Wells, 2006). Indeed, using the full sample (i.e., both males and females), in the current study, the MCQ-30 subscale negative beliefs about the uncontrollability and danger of thoughts uniquely predicted general anxious symptoms. Collectively, this research suggests that the belief that thoughts can be dangerous and

uncontrollable may be generally associated with psychopathology (i.e., trait social anxiety and general anxious symptoms). Future work could explore the stability of the MCQ-30 over time and across the anxiety disorders, in order to confirm or refute its trait status and/or specificity to social anxiety and/or social phobia.

How might the negative belief that it is necessary to control one's thoughts, in order to function well as a person contribute to an individual's social anxiety? Negative danger beliefs typically concern themes of mental (e.g., 'my feelings of anxiety could make me go mad') and physical (e.g., 'I could make myself sick with anxiety') disaster resulting from anxiety (Wells, 2005). Unconditional negative self-beliefs (e.g., 'I'm stupid') can also lead socially anxious individuals to appraise social situations as dangerous (Clark & Wells, 1995). Once such beliefs develop and situations are appraised in this way, the individual becomes anxious, and anxiety symptoms can themselves be interpreted as a sign of danger or loss of control due to anxiety. The coexistence of unconditional negative self- and meta-self-beliefs about the uncontrollability and danger of thoughts may then lead socially anxious individuals to engage in unhelpful mental and/or behavioural control strategies (e.g., thought suppression and/or the avoidance of social situations). In this way, social avoidance fails to disconfirm or modify the individual's negative metacognitive beliefs. For example, avoidance of feared social situations in social anxiety contributes to the failure to discover that situations are not dangerous.

How do we explain the contradictory finding that the CSCS-E, which assessed an individual's cognitive self-consciousness, that is, the degree to which he or she is aware of and/or is monitoring his or her own thinking, was not a significant predictor of BFNES-II, SIAS, or SPS, but was positively and significantly associated with all three trait social anxiety measures? Cartwright-Hatton and Wells (1997) found that cognitive self-consciousness, assessed by the Metacognitions Questionnaire (Cartwright-Hatton & Wells), was positively and significantly associated with the Private Self-Consciousness Scale (Fenigstein, Scheier, & Buss, 1975), a measure of the tendency to focus on thoughts and feelings, which is a weak predictor of social anxiety (Bögels, Alberts & de Jong, 1996), whilst public self-consciousness, a measure of the tendency to focus on appearance and behaviour, is a strong predictor of social anxiety (Spurr & Stopa, 2002). Thus, it is perhaps not surprising that cognitive self-consciousness did not predict trait social anxiety, since it appears to be more related to private self-concerns, whereas social anxiety is more related to public self-concerns. However, this account is speculative and no firm conclusions can be drawn until future research investigates directly the relationship between metacognitive factors and public and private self-consciousness in (anticipatory) social anxiety.

Admittedly, the current study has some drawbacks. First, the sample was female-only and

analogue, which may limit the generalisability of the results to a socially phobic male population. Replication of the study using a clinical sample of both males and females would significantly improve the existing evidence base. Second, the study was correlational in nature and it should be borne in mind that no firm conclusions on cause-effect relationships can be drawn. Longitudinal research in non-patient and patient samples is especially welcomed to validate the current findings. Third, the study relied exclusively on self-report measures to assess the study variables, and it is possible that shared method variance inflated the results obtained. Independent diagnostic or interviewer ratings of social anxiety, for example, alongside self-reported trait social anxiety, would have provided a more potent test of the model. Fourth, the TCQ, MCQ-30, and CSCS-E assessed metacognitive processes in response to anticipated hypothetical social scenarios, and it is therefore important to examine such processes in social anxiety in response to real social situations, in order to increase ecological validity. Lastly, the study relied exclusively on self-reports to measure metacognitive processes during a single period of assessment, which begs the question as to whether responses to subscale items tap into 'dynamic processing' and whether they are not a measure of 'content' to a significant degree. However, the goal of this study was not to examine metacognitive processes over time, but to establish that they are, in fact, a feature of anticipatory processing in social anxiety. Nevertheless, to assess dynamic cognitive processes in social anxiety, future studies will need to attempt to examine how metacognitive beliefs are modified over time as cognitive processing unfolds (e.g., by using a thought diary).

Another limitation of this study was that, on the three subscales comprising the MCQ-30 and the TCQ subscale worry, the word worry or worries was replaced with the word anxiety or anxieties. The purpose of this replacement was to reflect more precisely the nature of social anxiety; however, the mere replacement of a word was probably not a reasonable procedure. The original word 'worry' describes an activity that is actively controlled, which is necessary for being a thought control strategy. In addition, by changing positive beliefs about worry to positive beliefs about anxiety, the MCQ-30 may have failed to measure positive beliefs about anticipatory processing, which is more likely to be reflected in beliefs about the utility of worry than beliefs about anxiety, as anticipatory processing is a worry process. Whilst socially anxious individuals are likely to have positive beliefs about worry, they are unlikely to have positive beliefs about anxiety, because a key feature of social anxiety is a fear of showing anxiety symptoms. Nevertheless, a socially anxious individual might focus on less significant anxieties, such as those associated with paying household bills, in order to control more important or unwanted negative thoughts or images, such as those related to the fear of being negatively evaluated by other people during a future speech.

Despite these drawbacks, the results of the current study add to our understanding of the types of metacognitions about anticipatory processing in social anxiety. More specifically, the MCQ-30 subscale negative beliefs about the uncontrollability and dangerousness of thoughts appears to have a unique relationship to two important aspects of trait social anxiety (i.e., fear of negative evaluation and social interaction anxiety), but not to depression. This negative metacognitive belief, during anticipatory processing, may be involved in the triggering and/or maintenance of social anxiety, and may represent a unique cognitive vulnerability to social anxiety. Developments of our understanding of metacognitive processes could help to improve current treatments of social phobia.

Chapter 7: Experiment 5

Introduction

Experiment 4 examined metacognitive processing in social anxiety, which can be considered as a form of self-focused attention. Indeed, cognitive models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997) suggest that when socially phobic individuals fear negative evaluation by other people in social situations, they enter into a self-focused processing state, and whilst in this state, they use internally biased information about themselves to infer how they appear to others and to judge what others think about them. Clark and Wells' model refers to this as "processing of the self as a social object" (p. 72) and suggest that such processing locks individuals into a closed and distorted system, in which most of the evidence for their fears is self-generated and disconfirmatory evidence (e.g., positive social feedback) is either unavailable or ignored. However, currently, we do not fully understand exactly how the different processes contribute to a distorted self-view. Therefore, in the next section, processes that might underlie self-focused attention and a distorted self-view in social anxiety will be considered.

Self-focused attention is linked to social anxiety, negative self-judgments, and poor social performance in a number of studies (Woody, Chambless, & Glass, 1997). Woody (1996) examined self-focus in relation to anxiety and performance, in which half of the socially phobic participants were in an active role (giving a speech), while the other half were in a passive role (sitting in front of an audience while someone else was speaking). Self-focus was manipulated according to whether participants were talking about themselves (self-focus, active role), about someone else (non-self-focus, active role), whether they were being spoken about (self-focus, passive role), or just sitting in front of the audience (non-self-focus, passive role). Participants in the passive role reported significantly higher anticipated, self-rated, and observer-rated anxiety in the self-focus condition, compared to those in the non-self focus condition. Woody's results suggest that self-focus increases self-rated and observed anxiety. More recently, Woody and Rodriguez (2000) showed that self-focused attention increased anxiety in socially phobic participants and controls, but that this increase in anxiety affected self-ratings of performance differently in the two groups. Observers rated the performance of both groups equally, but the control group gave higher ratings of their performance than the patient group, whose ratings were closer to observer's ratings, indicating a positive bias in participants' ratings in the control group. A reduction in self-focused attention is also associated with improvements in anxiety after cognitive-behavioural therapy for social phobia (Woody et al., 1997; Hofmann, 2000).

Self-focused attention and the construction of the self as a social object involve input from both internal and external sources of information (Turk, Lerner, Heimberg, & Rapee, 2001).

Clark (2001) suggests that socially phobic individuals use three types of internal information to construct a negative self-impression. One, feeling anxious is associated with appearing anxious. Two, many patients with social phobia experience spontaneously occurring images in which they view themselves from an observer's perspective. Three, more diffuse types of 'felt sense' can add to a negative self-impression. Turk et al. (2001) also suggest that memories of actual self-images and prior social experiences both contribute to this self-impression. Nevertheless, clinical observations also suggest that, in addition to focusing on their internal states, some socially phobic individuals believe that other people can see or detect aspects of their internal selves; for example, their thoughts, images, or feelings.

Clark and Wells (1995) appear to be less clear about the types of external information that socially phobic individuals use to construct a negative self-impression. However, Turk et al. suggest that feedback from others about one's appearance (e.g., weight, clothes, and actual physical defects) and behaviour (e.g., posture, eye contact, and level of participation in conversations) add to a distorted self-impression. Collectively, it seems that both internal and external processes contribute to individuals' construction of themselves as a social object during social situations.

How can we advance our understanding of the respective roles of internal and external processes in developing a negative and distorted self-impression? There are two concepts developed in social psychology that might help to explain the processes that contribute to its development. These two concepts are the spotlight effect (Gilovich, Savitsky, & Medvec, 2000) and the illusion of transparency (Gilovich, Medvec, & Savitsky, 1998). The spotlight effect refers to the tendency for people to overestimate the extent to which they believe that others see and attend to their *external* appearance on a regular basis: people believe that the spotlight shines more brightly on them than it actually does (Gilovich et al., 2000). Gilovich et al. demonstrated the spotlight effect by asking participants to wear an embarrassing T-shirt (picture of Barry Manilow) and walk in on a group of people who were filling out questionnaires. When asked to guess how many people noticed their shirt, participants grossly overestimated the number. In other words, participants allowed their own focus on the shirt to distort their estimates of how much it would be noticed by others. This also led participants to overestimate the number of other people who would be able to identify them based on their T-shirt.

In contrast, the illusion of transparency refers to the tendency for people to overestimate the extent to which their *internal* thoughts, feelings, and attitudes 'leak out' and are seen by others. Some people feel that the self is transparent and is out there for the world to see. According to Gilovich, Medvec, and Savitsky (1998), some individuals feel that other people can

discern their internal states by noting signs of leakage in their external appearance and behaviour. Gilovich et al. (1998) also suggest that the illusion of transparency is a relatively transitory or visceral state, that is, it reflects brief episodes of nervousness, disgust, or alarm. In one set of studies, Gilovich and colleagues found that participants, who were asked to lie, overestimated the number of observers who would notice their deception. In another study, participants who sampled foul-tasting drinks in view of an observer believed that their disgust was more apparent than was actually the case (Gilovich et al.).

Both the spotlight effect and the illusion of transparency are typically measured by comparing an individual's predicted estimates of how apparent his or her internal and external states are to observers, with the actual estimates of observers. A significant difference between predicted and actual estimates is considered to derive from the individual's feelings of 'transparency' and/or being in the 'social spotlight' and his or her inability to form an accurate self-representation. Indeed, the way in which the spotlight effect and the illusion of transparency are measured is similar to studies showing a discrepancy between socially anxious individuals' self-ratings of performance and ratings provided by others (Abbot & Rapee, 2004; Alden & Wallace, 1995; Mansell & Clark, 1999; McEwan & Devins, 1983; Mellings & Alden, 2000; Rapee & Lim, 1992; Stopa & Clark, 1993).

Why might people be vulnerable to the spotlight effect and/or the illusion of transparency? Gilovich, Savitsky, and Medvec (2000) and Gilovich, Medvec, and Savitsky (1998) suggest that both effects result from an *anchoring and adjustment process*. People are typically quite focused on their own actions and appearance. They recognize that other people are likely to be less focused on them than they are themselves, and try to adjust for that fact, albeit insufficiently, when anticipating how they are seen by others. Thus, people overestimate how obvious their public and/or private selves are to others. Gilovich et al. (2000) demonstrated this anchoring and adjustment process by showing that the spotlight effect was significantly diminished when participants made their estimates after they had time to get used to wearing an embarrassing T-shirt. Because participants were less self-focused on the T-shirt, their estimates of how many other people would notice it began from a lower anchor, which resulted in a reduction of the spotlight effect. In contrast, for participants who entered the room straightaway, their judgments began with a powerful representation of how salient the T-shirt was in their own minds. The adjustment away from their self-representation thus started from a very high anchor. More concerned with the shirt themselves; they concluded it would be more noticeable to others too.

Gilovich, Medvec, and Savitsky (1998) have provided data in support of the anchoring

and adjustment interpretation of the illusion of transparency. First, they found that the illusion of transparency was greatest in participants who had the highest private self-consciousness scores; in other words, those who start from a higher anchor. These individuals, because of their self-focus, were likely to have an intense sense of their own internal experience. Second, Gilovich et al. (1998) found that the illusion of transparency existed only when participants were experiencing an obvious emotional state. Specifically, participants exhibited the illusion of transparency when they were lying, but not when telling the truth, and when they had sipped a foul tasting drink, but not a pleasant one. Thus, when there was no pronounced internal experience to adjust from, there was no illusion of transparency.

If the anchoring and adjustment process is applied to social anxiety, it suggests that individuals may use their own internal feelings of anxiety and the accompanying self-representation as an anchor, and insufficiently correct for the fact that others are less privy to those feelings than they are themselves. Consequently, they overestimate the extent to which their anxiety is obvious to onlookers. In fact, Clark and Wells (1995) suggest that socially phobic people enter social situations in a heightened self-focused state, namely, from a raised emotional anchor, which makes it difficult for them to set aside public and private self-knowledge and focus on the task.

In socially anxious individuals, the degree of public scrutiny is likely to be critical in triggering the spotlight effect and/or the illusion of transparency. This is because both effects are linked to enhanced accessibility of self-relevant information, for example, negative self-evaluative thoughts and self-images. This information will be most accessible under conditions of high public scrutiny. For example, in an unselected sample, Vorauer and Ross (1999) found that, participants reported higher levels of the illusion of transparency under high social-evaluative conditions, where they believed they would be evaluated by a conversational stooge, than under low social-evaluative conditions, where they were not given this expectation. Furthermore, Vorauer and Ross seem to suggest that the illusion of transparency is a stable trait. This contrasts with Gilovich, Medvec, and Savitsky's (1998) suggestion that the illusion of transparency is a relatively transitory state. If the illusion of transparency were more trait than state like, then it should be less prone to manipulation and vice versa.

Studies have not directly examined the relationship between social anxiety and the spotlight effect or the illusion of transparency. In addition, the spotlight effect and the illusion of transparency have not been investigated together in a single study. The main aim of this study was to investigate whether high socially anxious participants would report higher levels of the spotlight effect and the illusion of transparency during a memory task, which was performed

under high and low social-evaluative conditions. Overestimation of the features of one's public and/or private self would constitute evidence for the spotlight effect and/or the illusion of transparency, relative to an independent assessor's estimations. To assess the spotlight effect and the illusion of transparency, and aspects of task performance, the Self-Awareness and Task Performance Questionnaire (SATP-Q) was constructed. The SATP-Q contained a modified version of the Situational Self-Awareness Scale (SSAS: Govern & Marsch, 2001) that measures public and private self-awareness. Public self-awareness is a situational tendency to focus attention on observable aspects of self such as physical features (Govern & Marsch). Private self-awareness is a situational tendency to focus on internal aspects of self, such as memories and feelings of physical pleasure or pain (Buss, 1990).

The Clark and Wells (1995) model of social phobia focuses largely on the *content* of self-focused attention, for example, on negative thoughts and distorted images. However, it is also important for models to consider the *process* of self-focused attention. The spotlight effect and the illusion of transparency may help us to explain the processes that contribute to self-focused attention and the construction of the self as a social object in social anxiety. For instance, the illusion of transparency might help to explain why some socially phobic individuals believe that other people can read their internal states. Clark and Wells suggest that self-focused attention is a key maintaining factor in anxiety, because it prevents socially phobic individuals from noticing social feedback that might contradict their negative self-beliefs. Therefore, from a therapeutic viewpoint, improved knowledge about processes that are used in the construction of the self as a social object, may lead to a more effective way of modifying socially phobic individuals' mistaken impression of how the self appears to others; for example, by training them to 'anchor' on their own internal and/or external feelings of anxiety and/or processes of judgment in a more neutral fashion. In sum, the results of this study have the potential to both inform current cognitive models of social phobia and to help develop more effective treatments for the disorder.

In line with previous research (Vorauer & Ross, 1999) and with cognitive models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997), it was predicted that socially anxious participants would report higher levels of the spotlight effect and the illusion of transparency during a memory task that was performed under high compared to under low social-evaluative conditions. This prediction was based on the idea that, in the high social-evaluative condition, participants would be more likely to access self-relevant information, which would produce an overestimation of the visibility of their public and private selves. It was also predicted that participants would underestimate their task performance and evaluate it in a more negative way under high compared to under low social-evaluative conditions.

Method

Design

This study used a between-subjects design and participants were allocated to either the high or the low social-evaluative condition. In the high social-evaluative condition, participants performed a brief memory task that was openly videotaped. They were told that their task performance would be evaluated later by a group of experts in communication skills. Participants in the low social-evaluative condition performed the same memory task, but they were told that the experimenter was only interested in coding the number of ‘significant events’ they could recall. However, participants in the low social-evaluative condition were secretly videotaped with a hidden camera. Participants then completed the SATP-Q, as well as measures that assessed fear of negative evaluation and depression. An independent assessor, who was blind to the experimental conditions, watched videotapes of participants’ task performances and completed an assessor’s version of the SATP-Q.

Participants

Participants were students at the University of Southampton. They were recruited from a larger sample of students who had filled in the Brief Fear of Negative Evaluation Scale (BFNES; Leary, 1983) at screening. This scale was used to select individuals who had scores of ≥ 36 . This cut off point corresponded to the mean BFNES score ($M = 35.7$, $SD = 8.10$; Leary). To be included in the analysis, participants had to score ≥ 36 on this measure when re-tested just after the experiment. This produced a moderate to high socially anxious sample ($N = 60$), with 30 individuals in each social-evaluative condition (high social-evaluative condition: 27 female, 3 male; low social-evaluative condition: 26 female, 4 male).

Participants in the two conditions did not differ significantly on either age (high social-evaluative condition, $M = 20.16$, $SD = 3.68$; low social-evaluative condition, $M = 19.26$, $SD = 2.57$), $t(58) = -1.09$, *ns*, $\eta^2 = .01$ or on gender, $\chi^2(1, N = 60) = .162$, *ns*. Participants also completed the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996).

Given the small number of men (three in the high social-evaluative condition; four in the low social-evaluative condition), we report the results for the women only¹³ ($n = 53$; age, high social-evaluative condition, $M = 19.90$, $SD = 3.36$; low social-evaluative condition, $M = 18.77$, $SD = 0.91$), $t(51) = -1.64$, *ns*, $\eta^2 = .01$). A series of analyses of variance (ANOVAs) were performed on the descriptive data, with a between-group factor of social-evaluative condition (high and low). There were no significant differences between the two conditions on any of the

¹³ The results were the same whether we included women only or the full sample.

standardized measures of social anxiety or depression. It is worth noting that participants' BDI-II scores were in the mild to moderate range (see Table 9 for means). The BFNES scores at screening and at testing were strongly correlated, $r = .73, p < .001$.

Table 9

Participant Characteristic Means and Standard Deviations (in Parentheses) in each Social-Evaluative Condition

	LSE condition	HSE condition	$F(1, 52)$	p
BFNES (screen)	42.46 (5.24)	44.07 (5.22)	1.26	<i>ns</i>
BFNES (test)	44.30 (6.64)	46.11 (7.00)	0.97	<i>ns</i>
BDI-II	8.92 (7.06)	13.33 (10.82)	3.06	<i>ns</i>

Note. BFNES, Brief Fear of Negative Evaluation Scale (screening and testing); BDI-II, Beck Depression Inventory; LSE, low social-evaluative; HSE, high social-evaluative.

Descriptive Measures

The Brief Fear of Negative Evaluation Scale (BFNES; Leary, 1983) and the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) were previously described in Experiment 3.

Outcome Measures

Self-Awareness and Task Performance Questionnaire (SATP-Q). The SATP-Q contained a modified version of the Situational Self-Awareness Scale (SSAS; Govern & Marsch, 2001). The original SSAS is a nine item, 3 items per subscale, questionnaire that measures levels of public and private self-awareness and awareness of surroundings. In this study, only the three public and the three private subscale items on the SSAS were used, which were embedded in the SATP-Q. To ensure that the SSAS measured awareness during the memory task, the wording, "Right now, I am..." was changed to "During the memory recall task, I was..." Each item was accompanied by a 4-point scale, which ranged from 1 (*do not agree at all*) to 4 (*agree very much*). Two indices of public and private self-awareness were derived by aggregating responses to the three public and the three private subscale items. To measure the spotlight effect and the illusion of transparency, we compared participants' predicted self-ratings of public and private self-awareness on the modified SSAS with the assessor's ratings of how well he or she could detect participants' public and private self-awareness concerns during the memory task. The spotlight effect and the illusion of transparency thus reflect the discrepancy between the extent to which participants believe observers can see or detect their internal and external states, and the

observer's ability to do so. The internal consistency of the public and private self-awareness subscales on the original SSAS is good ($\alpha = .82$ and $.70$, respectively), while the test-retest correlations are $.78$ for the public self-awareness subscale and $.58$ for the private self-awareness subscale (Govern & Marsch). The SSAS can also detect differences in public and private self-awareness produced by laboratory manipulations, and is sensitive to changes in self-awareness within individuals over time and across situations (Govern & Marsch). Cronbach alpha's of $.81$ (public self-awareness subscale) and of $.67$ (private self-awareness subscale) were obtained in this study.

The SATP-Q also contained three items that assessed participants' performance during the memory task. These items were modified versions of items found in a questionnaire developed by Savistky and Gilovich (2003). The three items assessed task performance in terms of 'overall quality', 'effectiveness', and 'expressiveness.' The overall score on the task performance subscale was the sum of the three-task performance items, with positive behaviours reverse scored, so that low scores indicated better task performance. A fourth item asked participants to rate whether they evaluated their task performances in a positive or a negative way, on a +3 (*positive*) to -3 (*negative*) bipolar scale.

Assessor's SATP-Q. A psychology postgraduate, who acted as an independent assessor, watched videotapes of participants' task performances and completed an assessor's version of the 10-item SATP-Q. The internal consistency of the public and private self-awareness subscales on the assessor's SATP-Q was good ($\alpha = .85$ and $.81$, respectively). The assessor assessed participants' public self-awareness (i.e., their external or public features of self) by rating how anxious they looked during the memory task, how poorly they performed it, and by rating how much their overall performance was not up to scratch. The assessor assessed participants' private self-awareness (i.e., their internal or private aspects of self) by rating whether he could sense their innermost feelings and thoughts, and whether he could sense that they were reflecting on their lives. To assess reliability of the assessor's ratings on the SATP-Q, another psychology postgraduate also rated 20 participants' task performances (10 from each of the high and the low social-evaluative conditions). Neither assessor was aware of which condition the participant was in, and viewing of the videotapes was counterbalanced across the two conditions. Interrater reliability, based on Pearson correlations coefficients was $.61$, $.67$ ($p < .01$), and $.61$ ($p < .05$) for ratings of public and private self-awareness and task performance, respectively.

Materials

The following materials were used; wireless video and audio camera with radio AV receiver; combined colour television and videocassette recorder; video-camcorder and tripod

stand; tape-cassette recorder with microphone; and mock 2004 ‘Significant Life Events’ calendar.

Procedure

In the high social-evaluative condition, participants performed the memory task standing up in front of a video camera mounted on a tripod. In the low social-evaluative condition, participants performed the same task sitting down at one end of a table that was approximately four feet long. At the opposite end of the table, a number of box files, which were filled with papers, were positioned vertically on the table. The middle box file concealed the miniature ‘spy’ or covert camera, which was positioned so that it was directly in front of the participant and at head and shoulder level. Because participants in the low social-evaluative condition were told that the experimenter was only interested in coding the number of memories they could recall, they performed the recall task into an audiocassette recorder that was attached to a microphone. Because the memory task was a sham procedure, determining that memory recollection was correct was not necessary or relevant to the aims of the current study.

Participants reported to the laboratory individually. They first read and signed a consent form. Participants were then given the following instructions. The italicized text in brackets indicates instructions given to participants in the low social-evaluative condition:

This next part of the experiment assesses your memory recall. I will give you a 2004 calendar and ask you to choose a month that was significant for you. Then I will ask you to speak for two-minutes on the best and worst things that happened to you during that month. Your memory recall will be videotaped, so that, later, a group of researchers who are experts on communication skills can assess your recall performance [*What you speak about will be audiotaped, so that, later, I can code the number of memories you recalled for that month. I’m not interested in ‘how’ you perform the task, only the number of memories you recall*]. I am going to give you two-minutes to choose the month and think about what happened during that month. Please use the calendar, notepad, and pens provided, to aid you in your memory recall. However, I do not want you to use these aids during the task. I will leave the room for those two-minutes and I will come back into the room at the end of that time. After returning, I will start the video recorder [*tape recorder*] and leave the room again. Please start the recall task as soon as I leave the room. You will have two-minutes to perform the task and I will come back into the room at the end of that time. When you start the task, it is important that you try to keep it going for the entire two-minutes and remain focused on the camera. Do you have any questions?

After delivering the instructions, the experimenter left the room for the two-minute preparation period and went to an adjacent room that contained the TV/video combo, which was

connected to the covert camera in the first room via a receiver. After the preparation period, the experimenter returned to the first room to start either the audio or the videotape recorder. Participants performed the memory task alone. After the task, participants completed the SATP-Q and descriptive measures, and were debriefed.

Results

Manipulation Check

To help assess whether the experimental manipulation was successful, participants' anxiety levels during the low and high social-evaluative conditions were compared. Specifically, 'happiness', 'anger', 'depression', and 'anxiety' were measured on 0 (*not at all X*) to 100 (*extremely X*) visual analogue scales. Anxiety was the key measure and the other moods were used as filler scales. Participants' anxiety scores were positively skewed, so they were log-transformed, which was successful in achieving normality. An independent *t*-test showed that, as predicted, participants reported significantly more anxiety during the memory task that was performed in the high social-evaluative condition ($M = 68.52$, $SD = 22.31$) than in the low social-evaluative condition ($M = 40.00$, $SD = 10.95$), $t(51) = -5.47$, $p < .001$, $\eta^2 = -0.01$. These results suggest that the experimental manipulation was successful in directing the degree of social-evaluation (low or high) that participants faced during the memory task.

The Spotlight Effect and the Illusion of Transparency under Low and High Social-Evaluative Conditions

To create an index of the spotlight effect and the illusion of transparency, difference scores were calculated by subtracting participants' public and private self-awareness scores on the modified SSAS from the assessor's scores on the same measures. Higher positive difference scores thus indicated higher levels of the spotlight effect and the illusion of transparency. Assessor's scores on the public and private self-awareness subscales of the modified SSAS were positively skewed, so all scores on the modified SSAS were log-transformed, which was successful in achieving normality. However, the untransformed scores are reported in the figures, tables, and text, as these are easier to interpret.

Difference scores were analyzed using independent *t*-tests, and as predicted, participants in the high social-evaluative condition reported higher levels of the spotlight effect than participants in the low social-evaluative condition, $t(51) = -5.26$, $p < .001$, $\eta^2 = -0.01$. However, contrary to our prediction, participants did not significantly differ in levels of the illusion of transparency between the two conditions, $t(51) = -.31$, *ns*. Paired *t*-tests showed a significant difference between the spotlight effect and the illusion of transparency in the high social-evaluative condition (Spotlight effect, $M = 4.37$, $SD = 2.86$; Illusion of transparency, $M = 2.04$,

$SD = 2.46$), $t(26) = -4.25$, $p < .001$, $\eta^2 = 0.03$. Conversely, participants in the low social-evaluative condition reported higher levels of the illusion of transparency than the spotlight effect (Illusion of transparency, $M = 1.85$, $SD = 2.00$; Spotlight effect, $M = .69$, $SD = 2.17$), $t(25) = 2.00$, $p < .05$, $\eta^2 = 0.08$ (see Figure 4). Thus, the spotlight effect was only present under high social-evaluative conditions, whereas, the level of social-evaluation participants faced during the memory task did not influence the illusion of transparency, which was comparable under both conditions.

The use of bias scores, reflecting the discrepancy between participants and observer ratings, may mask interesting and differing patterns of results within participants and the observer separately (i.e., the difference across bias scores may reflect change in participants ratings across conditions, with no change in observer ratings; or vice versa). Thus, I conducted an ANOVA that included rater (i.e., observer vs. participant) as an additional factor.

The public and private subscales of the SSAS were analysed using a $2 \times 2 \times 2$ (Experimental condition \times Observer \times Participant) ANOVA. Although a number of main effects and two-way interactions reached statistical significance, they were of little interest because there was a significant three-way (Experimental condition \times Observer \times Participant) interaction, $F(1, 58) = 22.74$, $p < .001$, $\eta^2 = 0.39$. Post-hoc t -tests showed that in the low social-evaluative condition, participants reported higher levels of private, compared to public self-awareness ($M = 7.70$ vs. 6.53 , $t[29] = -2.36$, $p < .05$, $\eta^2 = .08$), whereas, in the high social-evaluative condition, participants public and private self-awareness scores did not significantly differ ($M = 8.80$ vs. 8.13 , $t[29] = 1.16$, $p = .25$, $\eta^2 = .04$). Conversely, in the low social-evaluative condition, the observer was equally aware of participants' public and private self-aspects ($M = 5.80$ vs. 5.37 , $t[29] = 1.13$, $p = .27$, $\eta^2 = .04$), however, surprisingly, in the high social-evaluative condition, the observer was more aware of participants' private self-aspects than their public self-aspects, ($M = 5.90$ vs. 4.53 , $t[29] = -3.54$, $p < .001$, $\eta^2 = .12$).

Independent sample t -tests, using a significance level of .01 (after a Bonferroni adjustment of $.05/4$) showed that participants reported significantly more public self-awareness in the high than in the low social-evaluative condition, $t(58) = -3.84$, $p < .001$, $\eta^2 = .07$, whereas, their private self-awareness scores did not significantly differ across the two conditions, $t(58) = -0.78$, $p = .44$, $\eta^2 = .00$. Conversely, the observer was significantly more aware of participants' public self-aspects in the low, compared to in the high social-evaluative condition, $t(58) = 3.19$, $p < .01$, $\eta^2 = .07$, whereas, the observer was equally aware of participants' private self-aspects across the two conditions, $t(58) = -1.50$, $p = .14$, $\eta^2 = .00$ (see Figure 5).

The above findings support the results of the spotlight effect and the illusion of

transparency (i.e., bias scores or the difference between participants and observer ratings). Neither participants nor the observer's private self-awareness scores differed across the high and low social-evaluative conditions; supporting the finding that participants' levels of the IOT did not differ across conditions. Likewise, participants reported significantly more public self-awareness in the high than in the low social-evaluative condition; supporting the finding that the spotlight effect was only present under high social-evaluative conditions. However, unexpectedly, the observer reported that he or she was more aware of participants' public self-aspects in the low than in the high social-evaluative condition. Surprisingly, the observer was also more aware of participants' private self-aspects in the high than in the low social-evaluative condition.

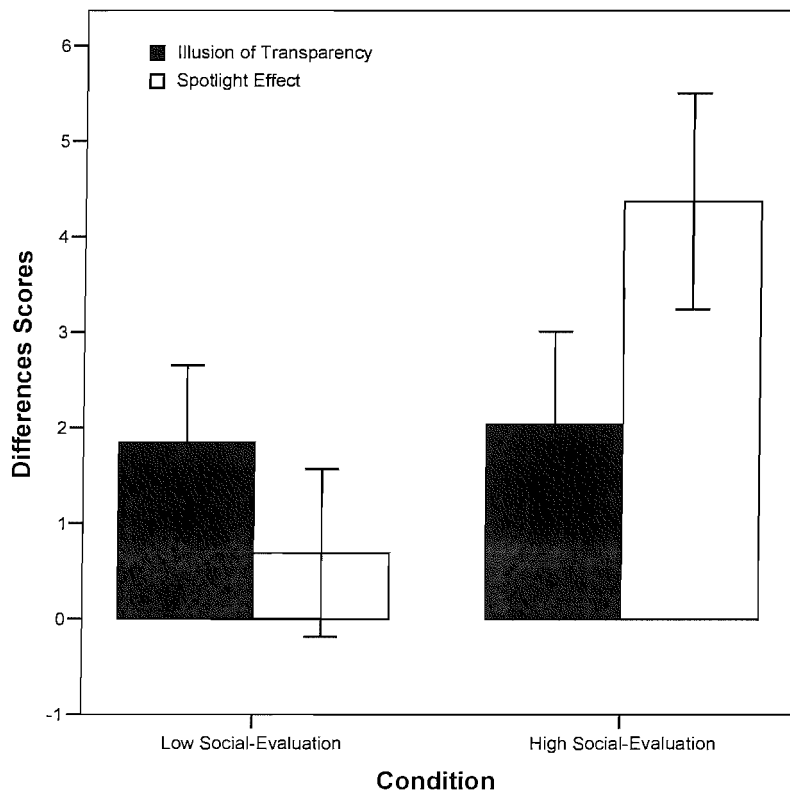


Figure 4. Mean ratings of the spotlight effect and the illusion of transparency, for participants in the low and in the high social-evaluative conditions.

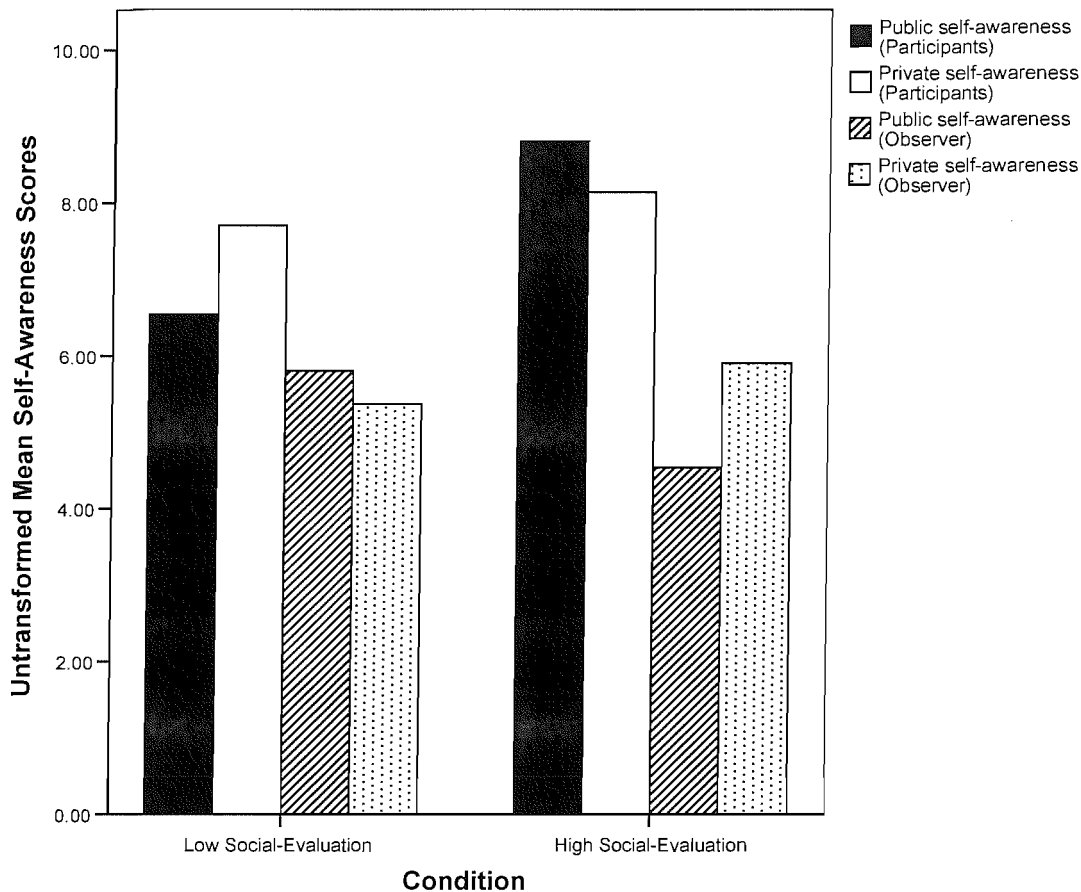


Figure 5. Mean ratings of public and private self-awareness scores on the SSAS, for participants and the observer, in the low and in the high social-evaluative conditions.

Task Performance and Evaluation of Task Performance (Positive and Negative)

Participants' performance quality, effectiveness, and expressiveness ratings, as well as the assessor's ratings of participants' performance ratings, were highly correlated with each other in both the low ($r = .77$; $r = .87$) and the high ($r = .83$; $r = .91$) social-evaluative conditions, respectively. Consistent with Savitsky and Gilovich's (2003) findings, these three items were collapsed into an index of self-and-assessor-rated task performance ($r = .80$; $r = .89$), respectively.

An index of participants' estimates of their task performances and evaluation of their task performances (positive and negative) were calculated in the same way that the spotlight effect and illusion of transparency scores were calculated. Difference scores were analyzed using an independent t -test. However, contrary to prediction, participants did not significantly underestimate their task performance in either the high ($M = 9.30$, $SD = 2.00$) or in the low ($M =$

8.46, $SD = 1.98$) social-evaluative conditions, $t(51) = -1.53$, *ns*.

An independent *t*-test, however, showed that, as predicted, in the high social-evaluative condition, participants evaluated their task performance in a more negative way ($M = -1.41$, $SD = 1.25$), whereas, in the low social-evaluative condition, they evaluated it in a more positive way ($M = 0.42$, $SD = 1.30$), $t(51) = 5.23$, $p < .001$, $\eta^2 = 0.10$; relative to the estimations of the assessor. Thus, participants did not underestimate their task performance, in terms of overall quality, expressiveness, or effectiveness; however, they did evaluate it in a more negative way in the high, compared to in the low social-evaluative condition.

Discussion

The aim of this study was to explore whether the spotlight effect and/or the illusion of transparency exist in social anxiety. That is, whether socially anxious individuals would overestimate the extent to which other people notice and attend to their internal and/or external states. The results are largely consistent with the prediction stated in the introduction. Socially anxious participants reported higher levels of the spotlight effect and evaluated their task performance in a more negative way in the high social-evaluative condition. However, contrary to prediction, there was no difference in the illusion of transparency or in task performance between the two conditions. Surprisingly, though, in the low social-evaluative condition, participants reported higher levels of the illusion of transparency than the spotlight effect, whereas, in the high social-evaluative condition, they reported the opposite. Participants also reported more positive evaluation of task performance in the low social-evaluative condition.

Gilovich, Savitsky, and Medvec's (2000) and Gilovich, Medvec, and Savitsky's (1998) findings showed that non-socially anxious individuals overestimate the extent to which other people can discern their internal and external states, indicating the illusion of transparency and the spotlight effect. The findings of this study demonstrate that the spotlight effect and the illusion of transparency also operate in socially anxious individuals and show that the level of social-evaluation influences the spotlight effect. However, the results are not consistent with Vorauer and Ross (1999), who found that the illusion of transparency was more evident under high, compared to under low social-evaluative conditions. In this study, the illusion of transparency was similar in both conditions. This finding is also inconsistent with Gilovich et al.'s (1998) idea that the illusion of transparency is a relatively transitory state and is prone to manipulation. In the current study, the illusion of transparency appeared to be constant across conditions, suggesting that it may be more enduring, and trait like. If this effect is replicated in subsequent studies, it suggests that private self-awareness and its effect, the illusion of transparency, are relatively stable traits. George and Stopa (in press) also found that high socially anxious participants'

private self-awareness did not change during two different types of conversations with stooges (one in front of a mirror and one in front of a video camera), whereas, low socially anxious participants' private self-awareness reduced during two conversations. George and Stopa's results suggest that high socially anxious participants stayed aware of their internal selves, whereas, low socially anxious participants shifted attention from internal aspects of themselves during the conversation.

On the one hand, the illusion of transparency might help to clarify why socially anxious individuals appear to remain aware of their internal selves in social situations. That could be because they believe that negative aspects of their private selves such as negative thoughts about the self and/or images manifest in their public exterior, so that, when they feel anxious, they infer that other people are privy to their internal selves, and therefore can see this anxiety. This assumption then causes them to shift and maintain attention on their internal states (Clark & Wells, 1995). Thus, they become trapped in a vicious circle, in which they are constantly checking for any signs that their internal states 'leak out' into their external appearance, and are available for others to see. In this way, anxiety is maintained because disconfirmatory evidence such as other people's positive responses becomes unavailable or is ignored (Clark & Wells).

On the other hand, in this study, how can the relative stability of the illusion of transparency across both the high and the low social-evaluative conditions be explained? It may be that the illusion of transparency represents a cognitive vulnerability to social anxiety. That is, although internal information can be experienced simply as a state elicitation, such information may also develop into a more durable cognitive disposition, namely, the illusion of transparency; that occurs independently of whether individuals believe they are being socially evaluated or not. The illusion of transparency may therefore be a phenomenon that precedes and predicts anxiety in time, and is not its result. Some support for this idea comes from the finding that the illusion of transparency showed no association with either trait social anxiety or situational anxiety.

How can elevated levels of the illusion of transparency in the low social-evaluative condition be explained? One possible explanation is that participants might not have felt under public scrutiny, and consequently, were less concerned about presenting a confident public self. Thus, they may have been more task focused, which is associated with lower levels of social anxiety (Bögels & Lamers, 2002). In support of this proposal, participants in the low social-evaluative condition reported less anxiety and evaluated their memory recall in a more positive way than those in the high social-evaluative condition, relative to the assessor's estimations of participants' recall. This focus on the private self, for example, in recollecting 'significant events' from memory, could explain higher levels of the illusion of transparency in this condition. In

contrast, in the high social-evaluative condition, participants were more likely to fear public scrutiny, and thus, to focus attention on observable aspects of self (Clark & Wells, 1995). This suggests that they may have been less task focused, which is associated with higher levels of social anxiety (Bögels & Tamers). In support of this proposal, participants in the high social-evaluative condition reported more anxiety and evaluated their memory recall in a more negative fashion than those in the low social-evaluative condition, relative to the assessor's estimations of participants' speech performance. This focus on the public self could explain higher levels of the spotlight effect in this condition.

What other factors might account for elevated levels of the spotlight effect in the high social-evaluative condition? Clark and Wells (1995) assume that socially phobic individuals develop a number of negative beliefs about themselves and their social world, for example, high standards for social performance such as, 'I must not show any signs of poor performance.' High standards create anxiety because they are hard to attain, and so individuals spend a lot of time worrying that they may fail to communicate their desired, positive impression to others. Doubting their ability to communicate a positive impression, socially anxious individuals mistakenly assume that others will negatively evaluate them. High levels of social-evaluation are likely to facilitate and intensify doubts about their public self, and thus leave them more susceptible to the spotlight effect. Future research could examine the relationship between dysfunctional beliefs and the spotlight effect in social anxiety.

In addition, Clark and Wells (1995) suggest that individuals with social phobia hold conditional beliefs concerning social-evaluation (e.g., 'If my memory recall is poor, then others will think I look stupid') and unconditional beliefs about the self (e.g., 'I'm an idiot'). The latter type of belief is assumed to be triggered, and seem most compelling, when individuals fear being socially evaluated. Such beliefs may have led participants in this study to appraise the high social-evaluative situation as threatening, and consequently result in them exaggerating the saliency of their public self-image; leading to higher levels of the spotlight effect.

It is also worth noting that the spotlight effect was positively associated with situational anxiety, but not trait social anxiety. This suggests that the spotlight effect may only be debilitating when accompanied by relatively high levels of situational anxiety. Thus, the spotlight effect seems to be relatively unstable or prone to change, depending on the level of anxiety and/or social-evaluation experienced. Characteristics of the audience (e.g., attractiveness or significance), as well as features of the situation (e.g., level of anonymity of the socially anxious individual) may influence the level of the spotlight effect and anxiety experienced.

As mentioned in the introduction, both the spotlight effect and the illusion of

transparency appear to derive from an anchoring and adjustment process (Gilovich, Savitsky, & Medvec's, 2000; Gilovich, Medvec, & Savitsky, 1998). People seem to be quite focused on their public or on their private selves. Certainly, they understand that others are usually less attentive to their appearance and behaviour or have less access to their internal states than they themselves have, and they consider that knowledge when trying to imagine how they appear to others. As is typically the case with such anchoring and adjustment processes, however, the adjustment is insufficient, and so people end up believing that the perspective of others is more like their own than is actually the case. This anchoring and adjustment process might help to explain how socially anxious individuals use internal and external sources of information to construct a negative impression of themselves as a social object. For instance, individuals might realize that other people are less focused on them than they are on themselves, but the adjustment they make in light of this knowledge begins from a higher emotional anchor (e.g., feeling anxious is associated with looking anxious). The net result is that the individual feels that his or her internal or external states are more visible to others than is really the case. Thus, the spotlight effect and/or the illusion of transparency may confer added veracity to the individual's belief that he or she is an object of others' attention.

One of the strengths of this study is that it examined two different processes that might contribute to the construction of the self as a social object, namely, the spotlight effect and the illusion of transparency, and showed that these processes change in response to the two social-evaluation manipulations. The results are consistent with Coles et al.'s (2001) proposal that socially anxious individuals function within a "multiple task paradigm" (p. 295), in which they have to simultaneously monitor their immediate surroundings for signs of public scrutiny, monitor their internal and external states for imperfections that may elicit public scrutiny from others, and engage in social interaction. While Clark and Wells' (1995) model provides a valuable framework for understanding the types of internal information that are used to generate a negative self-representation, it might benefit from a more dynamic and shifting view of a self-representation that includes a focus on both internal and external attention.

There are some limitations to this study. First, because of modifications made to the Brief Fear of Negative Evaluation Scale (BFNES), caution should be exercised when comparing this study's cut-off score for the BFNES with Leary's (1983) cut-off score for it. However, note that, the mean (straightforwardly worded) BFNES score used in this study is comparable to other non-clinical samples (Collins, Westra, Dozois, & Stewart, S. H., 2005; Rodebaugh et al., 2004; Weeks et al., 2005). Moreover, the reliability coefficient obtained in this study is comparable to levels reported in previous research with the BFNES (Leary), and current research using the

straightforwardly worded BFNES (Collins et al., 2005; Carleton, McCreary, Norton, & Gordon-Asmundson, 2006; Rodebaugh et al.; Weeks et al.). Nevertheless, additional research is required that compares Leary's total BFNES with the total straightforwardly worded BFNES in both clinical and non-clinical samples. Second, the public and private self-awareness factors on the SSAS only covered a small range of public and private concerns. Hope and Heimberg (1988) point out that those patients with social phobia participating in their study showed a wide range of public self-awareness. However, a longer instrument, on which participants respond to many self-related public and private items, could serve to induce self-awareness (Govern & Marsch, 2001).

A further question concerns the generalisability of the current findings to a wider population. The current sample was female and it is not known whether these effects would generalize to men. Further, this study examined a student population; therefore, research is needed to determine whether the same pattern of results would emerge with socially phobic individuals. Lastly, inter-rater reliability for ratings of public and private self-awareness was modest. However, the modest rating for private self-awareness is perhaps not surprising, considering the highly subjective nature of asking observers to rate whether they can sense individuals' internal states. Indeed, surprisingly, the observer reported that he or she was more aware of participants' private self-aspects in the high than in the low social-evaluative condition. This surprising result may reflect the fact that the observer found it difficult to detect the participant's private self-aspects (e.g., their thoughts and feelings), but instead projected their own ideas about what the participants were thinking or feeling during the memory task. However, it is more difficult to determine why the observer rated him or herself as more aware of participants' public self-aspects (e.g., appearance) in the low than in the high social-evaluative condition. Perhaps the memory task itself was too 'public' in nature (i.e., the recollection of significant events from memory), which caused the observer to view participants' private self-concerns in a more public fashion.

In summary, the present results suggest that the spotlight effect might be specific to social-evaluative concerns, whereas the illusion of transparency may reflect a more general feature of social anxiety concerns. The results provide support for Turk, Lerner, Heimberg, & Rapee's (2001) suggestion that socially anxious individuals use both internal and external sources of information to infer how they are coming across to others. However, a more precise understanding of how the spotlight effect and the illusion of transparency operate in social anxiety is needed. For example, concerning the illusion of transparency, it is not clear whether individuals believe that others can detect their internal states by reading their external appearance - as proposed by Gilovich, Medvec, and Savitsky (1998) - or whether it might operate in a

different way. For example, Kenny and DePaulo (1993) have suggested that people can assume their inner self is obvious - without referring to their behaviour at all. Further research is needed to clarify this question.

In addition, in order to be confident about the pattern of changes in the spotlight effect and the illusion of transparency found here, this study needs replication with different types of social situations and different clinical populations. For example, the spotlight effect might be greater for patients with social phobia than for patients with agoraphobia or blood/injury phobia, who apparently do not engage in processing of the self as a social object (Wells & Papageorgiou, 1999). Nevertheless, it does appear that, not only does the social spotlight shine brightly on socially anxious persons' public selves, but it also shines through to their private selves too.

Chapter 8: General Discussion

Overview

Current cognitive-behavioural models of social phobia (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997) propose a number of cognitive biases, which are believed to play a crucial role in the maintenance of the disorder. In particular, Clark and Wells' model suggests that social phobia is associated with biases in anticipatory processing, perspective-taking, and self-monitoring/self-focused attention. This thesis presented a series of studies with the aim of examining the extent to which these biases are present when socially anxious individuals anticipate and/or perform in social-evaluative situations. Some of the studies also used concepts developed in other fields of psychology, such as social-cognitive and evolutionary psychology, in order to investigate other possible cognitive biases in social anxiety such as biased estimates of intensifying danger or threat and biases in metacognitive knowledge or beliefs. This closing chapter starts with a summary of the main findings of these studies and then discusses theoretical and treatment implications regarding each of the cognitive biases investigated (namely, biased estimates of anticipated threat, perspective-taking, intensifying danger or threat, metacognition, and self-monitoring/self-focused attention).

Main Findings

Experiment 1 examined the effects of anticipatory processing on a subsequent speech in high and low socially anxious individuals ($N = 40$). In anticipation, high socially anxious individuals were more anxious and experienced more negative and unhelpful self-images than low socially anxious individuals. They also tended to use the observer perspective more in an anticipated speech, while in an unanticipated speech, they rated themselves as midway between observer and field perspectives, which may indicate the use of both perspectives. Low socially anxious individuals tended to use the field perspective in both speeches. Low socially anxious participants also reported *less* anxiety during the anticipated, compared to during the unanticipated speech. They also reported more negative thoughts during the unanticipated speech than during the anticipated speech. Furthermore, participants reported more anxiety, higher frequency and higher belief in negative thoughts, and predicted worse speech performances in the unanticipated speech than in the anticipated speech. Participants' actual performance ratings were also better after the anticipated speech than after the unanticipated speech.

Experiment 2 extended the preliminary findings of Experiment 1, as well as the results of Hinrichsen and Clarke's (2003) first study, by intensively exploring the phenomenology of

anticipatory processing in high socially anxious individuals ($N = 11$). Thematic analysis of the coded semi-structured interviews revealed seven broad *deductive* or predefined themes (i.e., themes derived from Clark & Wells' [1995] cognitive model of social phobia and previous research): (1) prior preparation; (2) catastrophic thoughts; (3) recollection of past similar social events; (4) impressions; (5) self-images; (6) avoidance of social situations; and (7) physical symptoms of anxiety. Thematic analysis also unearthed three *inductive* or novel themes (i.e., themes directly from the data): (1) bad dreams and nightmares; (2) biased estimations of intensifying danger or threat, which could be interpreted as 'loomingness'; (3) and metacognition.

Experiment's 3 and 4 used the findings of Experiment 2 as a catalyst to explore the relationship between two different cognitive styles, that is, 'looming vulnerability' and metacognition, respectively, and trait social anxiety and depression. In Experiment 3, volunteers ($n = 152$) completed the Looming Maladaptive Style Questionnaire-Two (LMSQ-II; Riskind, Williams, Theodore, Chrosniak, & Cortina, 2000), which assesses two types of looming vulnerability: *social* (i.e., looming appraisals in response to potentially threatening social stimuli, such as negative evaluation by others during a speech) and *physical* (i.e., looming appraisals in response to potentially threatening physical stimuli, such as experiencing a racing heart). Results showed that social looming uniquely predicted fear of negative evaluation, social interaction anxiety, and public scrutiny fears, accounting for 7%, 4%, and 3% of the variance, respectively. However, social looming did not predict depression. Physical looming was not a significant predictor of social anxiety or depression.

Experiment 4 investigated the relationship between metacognitions about anticipatory processing and trait social anxiety. Volunteers ($n = 152$) completed the Thought Control Questionnaire (TCQ; Wells & Davies, 1994), the Metacognitions Questionnaire-30 (MCQ-30; Wells & Cartwright-Hatton, 2004), and the Cognitive Self-Consciousness Scale-Expanded (CSCS-E; Janeck, Calamari, Riemann, & Heffelfinger, 2003). Results indicated that the MCQ-30 subscale negative beliefs about the uncontrollability and danger of thoughts uniquely predicted fear of negative evaluation and social interaction anxiety, accounting for 3% variance in each scale. However, the MCQ-30 subscale did not predict public scrutiny fears or depression.

Experiment 5 used two concepts developed in social psychology, that is, the *spotlight effect* (Gilovich, Medvec, & Savitsky, 2000) and the *illusion of transparency* (Gilovich, Medvec, & Savitsky, 1998), to investigate whether these two concepts might contribute to the construction of the self as a social object (a particular type of negative self-monitoring) in social anxiety (Clark & Wells, 1995). Moderate to high socially anxious participants ($N = 60$) performed a memory task under either a high (in the presence of a video camera) or a low (no video camera) social-

evaluative condition. In the high social-evaluative condition, participants reported higher levels of the spotlight effect, compared to participants in the low social-evaluative condition. There were no differences between the two conditions in levels of the illusion of transparency. However, surprisingly, in the low social-evaluative condition, participants reported higher levels of the illusion of transparency than the spotlight effect, whereas in the high social-evaluative condition, they reported the opposite. Results suggest that the spotlight effect may be specific to social-evaluative concerns, whereas the illusion of transparency may represent more general features of social anxiety concerns.

Implications for Theories of Cognitive Biases in Social Anxiety

Anticipatory Processing in Social Anxiety

In Clark and Wells' (1995) original cognitive-behavioural model of social phobia, the authors make several predictions regarding anticipatory processing in social anxiety. Specifically, the model suggests that many socially phobic individuals experience significant anxiety when anticipating a social situation. A revision of Clark and Wells' original model (Clark, 2001) predicts that, in anticipation of a social event, individuals' thoughts are often dominated by negative images of themselves during the event, recollections of past social failures, and by other predictions of rejection and impaired social performance. Furthermore, if the phobic individual enters the event, he or she is likely to remain in a negative self-processing state, and consequently is more likely to anticipate failure and less likely to notice any signs of approval by other people.

Several findings from this thesis are consistent with predictions from Clark and Wells' (1995) model and from Clark's (2001) model. As noted above, in anticipation of a speech, high socially anxious participants experienced more anxiety and more negative and unhelpful self-images than low socially anxious participants (Experiment 1). Additionally, in anticipation of other types of anxiety-provoking situations, high socially anxious participants seemed to experience images in which they were seeing themselves as if viewed from an 'observer's perspective', that is, entirely from an external point of view (Experiment 2). Moreover, these observer perspective images were negative (e.g., "I'm seeing [myself] negatively...that's my expectations of what I think [the audience] will see me as"), and distorted (e.g., "I'd imagine myself being so small in front of all those people"). The images often mirrored fears of negative evaluation (e.g., "I imagine...what they might be thinking...Bit of a geek really...stumbling over my words"), and increased self-focused attention (e.g., "Suddenly aware of any flaw that I might have...I might focus on it") (Experiment 2).

Furthermore, these anticipatory responses appeared to contribute to socially anxious individuals' negative experience of the situation itself. Individuals high in social anxiety tended to experience the observer perspective during an anticipated speech, whereas they may have been switching between an observer perspective and a field perspective during an unanticipated speech (Experiment 1). In contrast, low socially anxious participants tended to use the field perspective in both speeches (Experiment 1). The results of Experiments 1 and 2 thus appear to lend support to Clark and Wells' (1995) suggestion that "If [complete avoidance of the situation] does not happen [the social phobic] is likely to already be in a self-focused processing mode [and] to expect failure". These findings also add to a small, but growing body of research, which provides evidence to support the notion that anticipatory processing plays a key role in maintaining social anxiety (Cogle, Smits, Lee, Powers, & Telch, 2005; Hinrichsen & Clark, 2003; Hirsch, Mathews, & Clark, in press; Magee & Zinbarg, in press; Mansell & Clark, 1999; Tanner, Stopa, and De Houwer, 2006; Moscovitch & Hofmann, 2007; Vassilopoulos, 2004, 2005, in press). Collectively, the results of the above studies suggest that anticipatory processing does have some of the negatively biased characteristics proposed by cognitive-behavioural models of social phobia (e.g., Clark, 2001; Clark & Wells; Rapee & Heimberg, 1997).

Nevertheless, the above models have tended to overlook anticipatory processing that is *positive* or constructive. The findings of this thesis suggest that anticipatory processing may have some potential benefits for socially anxious individuals. That is, in Experiment 1, participants reported more anxiety, more frequency and higher belief in negative thoughts, and predicted worse speech performances in the unanticipated speech than in the anticipated speech. Participants' actual performance ratings were also better after the anticipated speech than after the unanticipated speech. In addition, low socially anxious participants reported more negative thoughts during the unanticipated speech, compared to during the anticipated speech. They also reported less anxiety during the anticipated speech than during the unanticipated speech.

Participants also rated memories of past speeches as somewhat neutral and as having a fairly useful influence on their speech preparation (Experiment 1). Similarly, Mellings and Alden (2000) found no evidence to support their prediction that socially anxious participants anticipating a second interaction would show signs of selective retrieval of negative information about an initial interaction. Moreover, in Experiment 2, 'April' described positive self-images in anticipation of giving a speech, "just it finished and everyone else clapping. And it looked like they had enjoyed it", whereas 'Simon' used positive self-images to 'distract' himself from worrying about starting University, "the positive image definitely helped me relax". 'Sharon' used positive self-images to 'solve' the negative ones, "I try and target them [negative self-

images] with positive ones to solve the problem that could arise...positive ones helping and then suppressing the negative ones” (Experiment 2). Paradoxically, ‘Sue’ expressed the apparent benefits of imagining ‘worst case scenarios’ during periods of anticipation before social interactions (e.g., “but then I find that if I don’t think of the worst case scenario and then it happens...[So,] it’s much more likely to happen if you don’t think about it...you’re less prepared”), whereas Simon said that if he was having a negative image of himself, he would talk to a friend about it, and thus he would be reassured about it, “So, maybe negative images in that way could be helpful...they did serve some purpose” (Experiment 2).

Thus, some socially anxious individuals who engage in negatively biased anticipatory processing may do so because they believe it helps them to solve or gain insights into their social anxiety. However, whether negatively biased anticipatory processing is *actually* helpful or not has still to be established. For example, people with generalized anxiety disorder believe that worry is helpful, but in fact it is not. A goal of future research therefore is to see whether such biased processing is really helpful or whether it is just a metacognitive belief.

Findings from other studies also provide evidence in favour of the occurrence of positively biased anticipatory processing in social anxiety and anxiety symptoms. Vassilopoulos (2004) found that, in anticipation, low socially anxious participants tended to recall far more positive than negative (unpleasant) events, and some of them reported that anticipatory processing actually decreased their anxiety. Additionally, high and low socially anxious participants were similarly engaged in trying to think of ways to deal with possible problems during periods of anticipation before a recent anxiety-provoking social event. Feldman and Hayes (2005) developed the self-report Measure of Mental Anticipatory Processes (MMAPs) to assess college students’ patterns of cognitive preparation that are productive (i.e., problem analysis and plan rehearsal) and unproductive (i.e., stagnant deliberation and outcome fantasy) in coping with future stressful events. Results indicated that the more participants engaged in problem analysis, that is, an active contemplation of the antecedents and meaning of future stressful situations (Feldman & Hayes), the more their anxiety symptoms and anxious arousal increased (measured by the anxiety symptoms and anxious arousal subscale of the Mood and Anxiety Symptoms Questionnaire [MASQ]; Watson, Clark, et al., 1995). However, the latter MASQ subscale was also positively associated with the two maladaptive thought processes of the MMAPs, that is, stagnant deliberation and outcome fantasy. Vassilopoulos (in press) used the MMAPs to investigate coping responses associated with anticipatory processing in high and low socially anxious participants. Findings showed that the social anxiety groups did not differ in the two productive anticipatory coping subscales, namely, problem analysis and plan rehearsal of the MMAPs, or in the

unproductive ‘outcome fantasy’ subscale of it. Nevertheless, participants in the high social anxiety group were more likely to engage in ‘stagnant deliberation’, that is, the tendency to ruminate on a stressful event, compared to participants in the low social anxiety group.

In sum, there is clear evidence to suggest that, in anticipation of social events, socially anxious individuals engage in several negatively biased cognitive processes, for instance, negative self-images and observer-perspective imagery, which enhance anticipatory and ‘on-line’ anxiety. Although there is evidence that socially anxious individuals engage in positive anticipatory processing, caution is necessary in interpreting these findings, because they may simply reflect methodological confounds. First, the majority of the studies cited above have relied largely on self-reported estimates of anticipatory processing in social anxiety; thus, it is not possible to rule out response demand biases. Second, the self-report data is typically retrospective, which may leave individual’s anticipatory processing susceptible to memory biases. For example, a socially anxious individual’s current sense of self, at the time of recall, may influence how they remember their past. In addition, people tend to assess their past in ways that allow them to view themselves positively (Wilson & Ross, 2000). These factors may affect the validity and reliability of the accounts. Third, these factors raise the possibility that what is being measured is not anticipatory processing, but post-event processing. As Vassilopoulos (2004) highlights: “There is a striking similarity between anticipatory and [post-event processing]....The two information-processing stages appear to have similar features in social anxiety (...observer-perspective imagery, and past event recollections)...with the difference that anticipatory processing is future-orientated whereas [post-event processing] is past orientated” (p. 309).

Indeed, evidence suggests that post-event processing has adaptive properties for some socially anxious individuals. Rachman, Gruter-Andrew, and Shafran (2000) and Field and Morgan (2004) found that high socially anxious individuals may find post-event processing helpful; while Mellings and Alden (2000) stress that prolonged post-event processing can help individuals to resolve their social concerns. Nevertheless, despite these methodological and conceptual concerns, the results of this thesis and of others suggest that the spotlight on the nature and consequences of anticipatory processing in Clark and Wells’ (1995) model could perhaps be broadened to include the positive or adaptive roles that it may play in social anxiety. For example, future studies could investigate whether negatively biased anticipatory processing involves the absence of a positive bias, an increase in a negative bias, or a combination of both.

Because of the potential limitations of using retrospective self-report to assess anticipatory processing, it is impossible to rule out memory biases. A key goal for future research will be to successfully measure anticipatory processing as it is happening, rather than after it has

occurred. For instance, one could measure physiological arousal whilst participants anticipate a stressful social event (i.e., evaluate their arousal 'in-situ'). If arousal, for instance, heart rate, was greater when anticipating a social situation than when not anticipating it, this might provide a marker for current anticipatory processing, and validation for subjective reports. Alternatively, participants could be asked to perform a 'think aloud task', in which, while anticipating a social task, they are instructed to say aloud into a tape recorder anything that went through their minds. Spoken thoughts data could then be categorized, for instance, into 'self' and 'other' categories, using both inductive and deductive approaches (see Chapter 2 for Tanner, Stopa, & De Houwer's [2006] use a think aloud task to assess current anticipatory social anxiety). Lastly, but more indirectly, in anticipation, participants' actions could be covertly video-taped and then be evaluated by independent observers (and participants themselves) at a later date, and ratings compared.

Looming Vulnerability and Metacognition in Social Anxiety

In this thesis, Experiment's 3 and 4 used the same sample of female only volunteers to explore whether two cognitive processing 'styles', that is, looming vulnerability (Riskind, 1997) and metacognitions about anticipatory processing operate in social anxiety. How do these findings contribute to our understanding of information-processing biases in social anxiety and what are their implications for cognitive models of social phobia (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997)?

The looming vulnerability model of anxiety (Riskind, 1997; Riskind, Williams, Gessner, Chrosniak, & Cortina, 2000). The looming model of vulnerability "...was designed to offer new insight into the role of time and anticipatory threat in anxiety and discrimination of anxiety from depression" (Riskind, p. 685). 'Looming vulnerability' concerns the individual's perceptions of threat movement: that is, his or her mental representations of dynamically intensifying danger and rapidly rising risk as he or she projects the self into an anticipated future. Riskind likened this dynamic process to playing or replaying a movie or videotape of a threat that is coming - a dynamic object in motion such as a threatening situation or event that is rapidly-changing and rearranging in time and space. The looming model proposes that individuals who appraise threats as rapidly rising or advancing have an agonizing sense of looming vulnerability to danger and become more anxious and threatened as a result. Thus, they have a 'confirmation-bias' that leads them to experience the fearful sense of looming vulnerability that they were already cognitively predisposed to expect (Riskind).

The looming vulnerability model accords with cognitive models of social anxiety and social phobia (e.g., Beck, Emery, & Greenberg, 1985; Clark & Wells, 1995; Rapee & Heimberg,

1997) in claiming that exaggerated appraisals of threatening information result in anxiety and fear. However, the looming model extends the above cognitive models with the idea that fear and anxiety happen most intensely when such exaggerated appraisals of threat involve *dynamic* self-representations of escalating risk and intensifying danger. In contrast, predominantly content-based cognitive models (e.g., Clark & Wells) do not seem to consider the dynamic properties of threat appraisals, but instead give the - likely unintended - impression that threat appraisals in social phobia occur in a 'static' or motionless fashion (i.e., they do not vary or are very slow to change). Riskind (1997) compared this motionlessness to the "...phenomenology of photographs of static objects at rest - only static aspects of threat are represented at a frozen or artificially arrested moment" (p. 691), while Riskind and Williams (2005) suggested that the static estimates of threat found in most cognitive models (e.g., Beck et al., 1985; Clark & Wells) provide a "...limited picture of the anxious individual's perceptions of threat, constituting a dim reflection and lifeless extract of the anxious individual's phenomenological experience" (p. 10). Thus, by not acknowledging the dynamic, variable properties of cognitive processes related to the threat of anticipated public scrutiny, embarrassment, or disapproval, contemporary cognitive models of social phobia may be lacking in ecological validity. According to Riskind and Riskind and Williams, if threatening events or stimuli are seen as simply static and predictable entities, then individuals are likely to habituate or stop attending to them, experience less anxiety, and experience less of a need for urgent defensive action. In contrast, if threatening events seem to be 'bodies in motion' that are always-varying, reorganizing and progressing, individuals will remain sensitized to them and feel more urgently challenged to cope with them. While dynamic and static threat appraisals are related (Riskind, Tzur, Williams, Mann, & Shahar, in press), evidence also indicates that looming vulnerability contributes unique variance to the prediction of anxiety over and above the effects of static threat content (Riskind, Williams, Gessner, Chrosniak, & Cortina, 2000; Riskind).

To support this idea, Dorfin and Woody (2006) investigated the role of cognitive appraisals in producing habituation to noxious stimuli. Undergraduates with subclinical fears of urine contamination had drops of sterilized urine placed on their arms, and three kinds of imagery of the urine were manipulated (i.e., moving harm, static harm, and safety). Dorfin and Woody found that individuals who received static imagery instructions, that is, they visualized urine as unmoving from its site of contamination, and those who received safety imagery, that is, it contained no harmful germs, showed habituation to the contamination and their emotional distress ratings decreased over a 30 minute exposure period. In contrast, individuals who received moving harm imagery instructions, for instance, visualized the urine as moving and spreading, steadily

increased in emotional distress ratings over time. Although Experiment 3 of this thesis did not assess looming vulnerability over time, its results nevertheless indicate a link between dynamic threat processes and social anxiety. That is, individuals experienced hypothetical mental representations of love affairs as rapidly progressing towards dissolution, scenarios of public speaking becoming progressively more difficult with each moment, and situations of public humiliation rapidly escalating in threat with each passing moment (i.e., social looming vulnerability). In Experiment 4, some participants' cognitions and physiology also suggested anticipated and dramatically changing train of events or scenes. For example, one participant described his physical symptoms of anxiety as intensifying or accelerating during an impending job interview, whereas another participants' awareness about a future event rapidly intensified, before going like the speed of a bullet ("whoosh!"). Thus, participants' concerns appeared to possess some *dynamic tension*, such that one's public self-image seems to be subject to change (Riskind & Williams, 1999).

In the present thesis, Experiment 3 examined two types of looming vulnerability, that is, social and physical looming, which together comprise the looming maladaptive or cognitive style. Experiment 3's results showed that social, but not physical looming predicted unique variance in three important aspects of trait social anxiety, namely, fear of negative evaluation, social interaction anxiety, and public scrutiny fears, over and above the influence of general anxious or depressive symptoms. Specificity of social looming to social anxiety, but not to depression, was also demonstrated, in that it predicted the former, but not the latter. These findings support recent findings that social looming vulnerability is specific to fear of negative evaluation (Williams, Shahar, Riskind, & Joiner, 2005), and to social phobia symptoms (Reardon & Williams, 2007). Other researchers have also found that the looming cognitive style tends to predict short-term changes in social audience anxiety, measured by the Audience Anxiousness Scale (Leary, 1983) over a one week interval (Riskind, Tzur, Williams, Mann, & Shahar, in press), and that performance anxious musicians generate mental scenarios and expectations of the rapidly intensifying danger of making humiliating mistakes (Riskind & Mizrahi, 2000). Hence, there is a small, yet growing body of evidence, which suggests that the sense of looming vulnerability may be an important feature of social anxiety. Certainly, to achieve a more precise understanding of threat appraisals in social anxiety, it is vital to understand threat in a more dynamic, ecologically valid and temporalised way. The looming vulnerability model's modification of standard cognitive models of social phobia (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997) identifies significant points of refinement and expansion for these models.

Metacognitions about anticipatory processing in social anxiety. Experiment 4 of the current

thesis explored the relationship between metacognitions about anticipatory processing and social anxiety. This experiment used the Self-Regulatory Executive Function (S-REF) model of cognitive disorder (Wells, 2000; Wells & Matthews, 1994, 1996) and Hartman's (1983) metacognitive model of social anxiety, to investigate whether metacognition, that is, any knowledge or cognitive process that is involved in the appraisal, control, and monitoring of thinking (Wells, 2006), is a feature of anticipatory processing in social anxiety. Experiment 4 assessed three types of metacognitions; the thought control strategies (distraction, punishment, social control, and worry/anxiety); negative and positive metacognitive beliefs; and cognitive self-consciousness.

The key finding of Experiment 4 was that negative metacognitive beliefs about the uncontrollability and dangerousness of thoughts uniquely predicted fear of negative evaluation and social interaction anxiety, accounting for a small, yet significant percentage of the variance (3% in each case). Specificity of the negative metacognitive beliefs to social anxiety was also demonstrated, in that it predicted social anxiety, but it did not predict depression; mirroring the findings for the construct of 'social looming vulnerability' in Experiment 3. In Experiment 2, some high socially anxious participants also described engaging in metacognitive processing when anticipating social situations. For example, 'Sue' described how worrying about worry (i.e., metaworry) made her ill, whereas 'Mark' explained a process of 'observing' his own thoughts during conversations with other people, and 'Jack' depicted how he would 'watch' his own thoughts and use them to infer what others might be thinking about him. The findings of Experiments 2 and 4 thus provide some preliminary evidence for negatively biased metacognitive processes, for instance, beliefs about the controllability of thoughts and corresponding danger and cognitive self-consciousness, when socially anxious individuals are anticipating anxiety-provoking events, and as such, the findings are consistent with metacognitive theory (e.g., Hartman, 1983; Wells, 2006; Wells & Matthews, 1994, 1996). Experiment 4's results also concur with those of Abramowitz, Dorfin, and Tolin (2001), Wells and Carter (2001), and Dannahy and Stopa (2007) who found a specific link between the negative belief that one's thoughts are uncontrollable and dangerous and social anxiety and social phobia. Noteworthy, however, is the fact that the latter belief is also linked to obsessive compulsive disorder and generalised anxiety disorder (Cartwright-Hatton & Wells, 1997; Wells, 2005; Wells & Carter, 2001), post-traumatic stress symptoms (Roussis & Wells, 2006), and proneness towards hallucinations and delusions (Cangas, Errasti, García-Montes, Álvarez, & Ruiz, 2006; Jones & Fernyhough, 2006; Larøi & Linden, 2005). Thus, taken together, these results suggest that the negative belief that one's thoughts are uncontrollable and dangerous may be a general feature of psychopathology. In other

words, metacognition might represent a transdiagnostic process that contributes to a range of different psychopathologies. Nevertheless, future studies examining the role of negative metacognitive beliefs among non-socially anxious and various clinically anxious populations are needed to determine whether there are also specific metacognitive beliefs that contribute to social anxiety.

The results of Experiment's 2 and 4 suggest that it is not only the 'lower order' or content of thought that may be relevant to understanding anticipatory processes in social anxiety, but also that the 'higher order' or metacognitive level may have functional significance, and consequences for information-processing and self-regulation. The S-REF model (Wells & Matthews, 1994, 1996) proposes that metacognitive processes may increase vulnerability to psychological disorder because they trigger and maintain cognitive biases. These biases are characterized by self-focused attention, threat monitoring, and on-line processing of negative self-beliefs, rumination, and attentional coping strategies. These characteristics keep socially anxious individuals 'locked' into self-focused attention that maintains psychological dysfunction. Consequently, the individual feels "psychologically removed from the situation" (Hartman, 1983, p. 442), resulting in impaired interpersonal performance. Indeed, the findings of Experiment 2 clearly illustrated that some socially anxious individuals can feel 'psychologically removed' from social interaction, because of excessive metacognition. For instance, 'Sue' described "not really...listening to people", whereas 'Mark' talked about the difficulties of attending to other people and his own thoughts simultaneously (i.e., he reported "becom[ing] detached from people, not engaging with them"). Mark also described not really being 'tuned' into what other people were saying, whereas 'Jack' described the metacognitive process as intrusive and invasive, and said that it distracted him from what was presently happening. Both the S-REF model and Hartman's model postulate that the metacognitive system can only process a limited amount of information at any given time. Thus, by engaging in excessive metacognition, an individual's scope for action and cognition is constrained by a loss of attentional resources, so that he or she is unprepared to deal with dysfunction and has difficulties in restructuring his or her cognition. Wells (2000) gives the example of the socially phobic patient who feels embarrassed, and who copes with this by diverting resources to processing and trying to prevent a facial blush. In this case, responses are limited by the resources available, and the patient reports problems in concentrating on task demands during acute anxiety.

The findings of Experiment's 2 and 4 and of others (e.g., Dannahy & Stopa, 2007) suggest a possible modification and extension of existing cognitive-behavioural models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997) to include metacognition as a dynamic process

that gives negative thoughts/images their salience. It is, however, important to note that the models of Clark and Wells and Rapee and Heimberg are grounded in S-REF theory, and although they do focus significantly on the content of cognition, they do focus on process as well.

Nevertheless, Clark and Wells' (1995) model does not appear to acknowledge explicitly the fact that many cognitive activities are dependent on metacognitive processes that monitor and control them. In focusing largely on the content of people's cognition at the knowledge (belief) and appraisal levels, the model appears to have missed explaining the reasons for their style of thinking. In Clark and Wells' model, for example, socially phobic individuals are said to hold negative assumptions/beliefs about themselves and their social environment, such as unconditional negative self-beliefs (e.g., "I'm boring", "I'm stupid", and "I'm a failure"). These assumptions lead individuals to judge situations as threatening, to expect that they will fail to attain their desired level of performance, and to interpret often ambiguous social cues as signs of negative evaluation by others. However, whether Clark and Wells are implying that it is the negative assumptions/beliefs themselves that are the main factors controlling and driving cognition is not clear. Moreover, in Clark and Wells's diagrammatical model of on-line processing in social phobia, the social situation itself is also assumed to activate beliefs about the self. Certainly, the social context is important in triggering assumptions about the self; however, there are other important and complex factors such as metacognitive processes that may be involved in the activation of dysfunctional beliefs or attitudes in social anxiety.

For example, the findings of Experiment's 2 and 4 of this thesis, and of other studies, suggest that metacognitions may be an important factor driving/controlling cognition in social anxiety. In Experiment 4, for instance, the MCQ-30 factor, 'beliefs about the need to control thoughts' (e.g., "I should be in control of my thoughts all of the time" and "Not being able to control my thoughts is a sign of weakness") uniquely predicted public scrutiny fears and social interaction anxiety. In addition, the metacognitive thought control strategies punishment (e.g., "I punish myself for thinking the thought"), social control (e.g., "I talk to a friend about the thought"), and worry/anxiety (e.g., "I focus on different negative thoughts") were positively associated with the three aspects of trait social anxiety, namely, fear of negative evaluation, social interaction anxiety, and public scrutiny fears. Most importantly, Experiment 4's results showed that the negative belief that one's thoughts are uncontrollable and dangerous may be driving the individual's anticipatory social anxiety concerns, that is, fear of negative evaluation and social interaction anxiety. However, it should be borne in mind that these findings are correlational in nature, and so no causal effects can be attributed.

The S-REF model refers to negative metacognitive beliefs about the self as "explicit

metacognitive knowledge” (Wells, 2000, p. 9), that is, the beliefs and theories that individuals have about their own cognitions. Thus, it might be interesting for future studies to investigate whether socially phobic individuals believe that their thoughts, such as those associated with having excessively high standards for social performance (e.g., “I must not show any signs of weakness”) and/or conditional beliefs about the consequences of performing in a certain way (e.g., “If I disagree with someone, they will think I’m stupid”) are uncontrollable and dangerous. Clark and Wells’ (1995) model does suggest that such negative beliefs about the self lead socially phobic individuals to appraise situations as dangerous; however, do individuals appraise the beliefs themselves as dangerous? Do they believe that their sensations, intrusive thoughts or images must be controlled or dreadful outcomes will result? Since control is often immediately implemented in social phobia, either by hiding, avoiding, or escaping, do control beliefs underlie the reliance on safety behaviours that serve to ‘protect’ the phobic individual from losing control? Lastly, do these beliefs about (un)controllability increase the sense of lack of control as intrusive thoughts and images cannot be eliminated? Basically, the more the individual attempts to control intrusive thoughts and images, the more uncontrollable and dangerous they appear. Future research is needed to address these important questions.

In sum, the results of Experiment’s 2 and 4 of the present thesis and of others (e.g., Abramowitz, Dorfin, & Tolin, 2001; Cogle, Smits, Lee, Powers, & Telch, 2005; Dannahy & Stopa, 2007; Fehm & Margraf, 2002; Magee & Zinbarg, in press; Wells & Carter, 2001) accord with the metacognitive approach, which views the construction of negative thoughts/beliefs about the social self as the result of recurrent dynamic patterns of processing guided by metacognitions; control processes or executive functions that occur at the metacognitive or superordinate level, not at the cognitive or subordinate level. The S-REF model of cognitive disorder and Hartman’s (1983) metacognitive model of social anxiety view processing in dynamic and multi-levelled and multi-faceted terms, whereas cognitive-behavioural models of social phobia (Clark & Wells, 1995) seem to view processing in more static and one-dimensional or simplified terms. Clark and Wells’ model could perhaps be expanded to include the dynamic and multi-faceted role that metacognitive processing may play.

The spotlight effect and the illusion of transparency.

The Clark and Wells (1995) cognitive model of social phobia postulates that when individuals fear negative evaluation, they enter into an internalized surveillance mode, in which they closely monitor themselves for any flaws or signs of imperfection that may be noticed by other people. They then use this self-monitoring information to infer what others think about them. Clark and

Wells refer to this as “Processing of the self as a social object” (p. 407), whereas Turk, Lerner, Heimberg, and Rapee (2001) refer to it as a “Mental representation of self as seen by [an] audience” (p. 295). This negative self-impression is typically distorted and is constructed using both internal (e.g., recollections of past social experiences) and external (e.g., reactions of others) sources of information. The problem with self-focused attention is that it ‘traps’ individuals into a perpetual cycle of self-examination, in which most of their evidence for their fears is self-generated and disconfirmatory proof, for instance, positive social feedback, becomes inaccessible.

The Clark and Wells (1995) and Turk, Lerner, Heimberg, and Rapee (2001) models of social phobia seem to present a rather static, perhaps vague, and largely content-based, that is, emphasis on images, thoughts, and feelings, conceptualisation of the negative self-impression that is constructed using public and private sources of information. Thus, in this thesis, the aim of Experiment 5 was to attempt to construct a more dynamic and process-orientated conceptualization of the different types of public and private information that may be used to create a negative self-impression. To attempt this, Experiment 5 used the *spotlight effect* (Gilovich, Medvec, & Savitsky, 2000) and the *illusion of transparency* (Gilovich, Medvec, & Savitsky, 1998) concepts. How might these two concepts contribute to our understanding of cognitive processes in social anxiety? The spotlight effect refers to the tendency for individuals to overestimate the extent to which they believe that other people can discern their *external* appearance on a daily basis. In terms of Clark and Wells’ model, an individual may equate feeling anxious with looking incredibly anxious; for instance, he may feel a slight warmth in his face and consequently assume that other people must be thinking that his face looks as if it’s on fire. The illusion of transparency refers to the tendency for individuals to overestimate the extent to which their *internal* thoughts, beliefs, and feelings ‘leak out’ and are discernable by others in their appearance and behaviour. In terms of Clark and Wells’ model, an individual may, for instance, infer that private information such as negative and distorted, observer perspective images can be easily and accurately discerned from his behaviour (e.g., because of fear of negative evaluation, he visualizes a distorted image in which he sees himself with a ‘frozen’ posture, looking like a ‘statue’ and consequently [wrongly] infers that this is how others are actually seeing him).

Hence, the spotlight effect and the illusion of transparency may offer a new ‘window’ into the ways in which socially anxious individuals process public and private sources of information in social situations, and how such processing is used in the construction of a self-impression that maintain social anxiety. In particular, both concepts explicitly account for people’s *overestimation* of the extent to which other individuals notice their internal and external features. In contrast, the models of Clark and Wells (1995) and Rapee and Heimberg (1997) appear to be

less explicit or clear about socially phobic individuals' ability to judge whether other people can discern their internal and external states, for example, from their overt actions.

The finding that the level of social-evaluation (high or low) did not affect the illusion of transparency is inconsistent with Vorauer and Ross's (1999) findings, who found that the illusion of transparency was more evident under high, compared to under low social-evaluative conditions, and with Gilovich, Medvec, and Savitsky's (1998) suggestion that the illusion of transparency is a relatively transitory state and is prone to manipulation. However, note that, in Vorauer and Ross's study, participants' feelings of transparency were assessed with specific, self-relevant traits, that is, traits deemed most important to the participant's self-concept, and most relevant in the current situation. In contrast, in Experiment 5, the illusion of transparency was assessed with the modified SSAS, which contains items phrased as more generalized declarative sentences (e.g., "During the memory recall task, I was aware of my innermost thoughts"). It is therefore perhaps not surprising that 'transparency' was unaffected by the level of social-evaluation that participants faced during the task, because the modified SSAS did not include those traits that were most relevant in the current situation or that were chronically important to the individual. Indeed, in social anxiety, the context manipulation is likely to exert a greater influence on feelings of transparency along self-relevant dimensions than along more generalised dimensions. It would be useful to examine whether including self-relevant and/or evaluative/context-relevant aspects exerts a greater influence on socially anxious individuals' feelings of transparency in social-evaluative situations in future studies.

Nevertheless, the findings from Experiment 5 concur with those of George and Stopa (in press), who found that high socially anxious participants' private self-awareness (measured by the SSAS) did not change from baseline during two conversations with stooges - one in front of a camera and one in front of a mirror. However, it is difficult to interpret George and Stopa's findings, as it is not clear whether the 'mirror' condition was designed to induce public or private self-awareness. Public self-awareness can be induced by exposing participants to a full-length mirror, whereas private self-awareness can be induced by exposing participants to a small mirror that reveals only the participant's head and shoulders (Govern & Marsch, 2001). If George and Stopa's mirror and video conditions both induced public self-awareness, then it is perhaps not surprising that high socially anxious participants' private self-awareness did not differ during the two conversations compared to baseline. Indeed, in the high socially anxious group, there was a trend towards reduced private self-awareness during the conversations compared to baseline.

In sum, whether private self-awareness and/or the illusion of transparency represent stable or trait features of social anxiety remains to be determined. If transparency overestimation is a stable

feature of social anxiety, then one might expect it to remain unchanged whether an individual is alone or is with other people. Future research could explore this possibility. It is also important that future studies assess transparency overestimation over time and by inducing private self-awareness in more ecologically valid ways, for example, by instructions to focus on personal thoughts and feelings (see Govern & Marsch [2001] for their use of guided personal memory recall instructions to assess private self-awareness).

Unsurprisingly, in Experiment 5, socially anxious participants reported higher levels of the spotlight effect in the high social-evaluative condition than participants in the low social-evaluative condition. This finding accords with the models of Clark and Wells (1995) and Rapee and Heimberg (1997) and with other research findings, for instance, Buss (1980), Hope and Heimberg (1988), McEwan and Devins (1983), and Smith, Ingram, and Brehm (1983), in which public self-consciousness is strongly related to social anxiety. Participants' apparent ability to overestimate the extent to which their actions and appearance are discerned by other people may contribute to their construction of an impression of themselves as a social object in social situations. In other words, because they believe that the social spotlight shines more brightly on them than it actually does, it enhances their fear of negative evaluation by others, which in turn triggers self-focused attention.

In addition, the 'anchoring and adjustment process', proposed by Gilovich, Medvec, and Savitsky (2000) to account for the spotlight effect and the illusion of transparency, may help to explain why socially anxious individuals construct a negative impression of their public selves. That is, they recognize that other people are likely to be less focused on them than they are themselves, and they try to 'adjust' for that fact when anticipating how they are seen by others. However, the adjustment tends to be insufficient or biased because people begin that adjustment from a raised emotional 'anchor', that is, a more anxious and self-focused state, causing them to overestimate the extent to which they are the object of others' public scrutiny. In this way, the spotlight effect and the anchoring and adjustment interpretation of it may actually confer vulnerability to developing social anxiety. Noteworthy, however, is that Experiment 5 did not explicitly assess the anchoring and adjustment interpretation of the spotlight effect and the illusion of transparency. Thus, more definitive support must await the outcome of studies explicitly designed to test the role of the anchoring and adjustment processes proposed by Gilovich et al. (2000).

In sum, it remains to be determined to what extent, and under what experimental conditions, socially anxious individuals' biased overestimations of the extent to which others can discern their public and private states occur. Instead of using self-report to assess public self-awareness,

participants could be exposed to a full-length mirror or a video-camera (e.g., Govern & Marsch, 2001, Study 3), before delivering a speech to a real audience. Furthermore, for those public states that individuals do not believe that their public self will be on show, one would predict less of the spotlight effect. For example, individuals may be less likely to believe that their exam-anxiety can be detected than to believe that their anxiety over giving a speech can be detected. Finally, it is important to consider the *intensity* of the spotlight effect and/or the illusion of transparency. Do socially anxious people experience the spotlight effect and/or the illusion of transparency more intensely under some conditions than under other conditions, for example, under structured (e.g., a speech) versus under unstructured (e.g., a party) conditions? As such, future studies wishing to extend the present results should consider the presence of two distinct biased cognitive processes that function together: One, the spotlight effect as a possible state feature of social anxiety and a second, the illusion of transparency as a possible trait feature of social anxiety.

Treatment Implications

Standard cognitive-behavioural therapies for social phobia are likely to be strengthened and expanded upon through the continued confirmation of cognitive processes hypothesised to be involved in the triggering and maintenance of the disorder. This is especially true since many patients with social phobia achieve a suboptimal response to standard cognitive behavioural therapy and only about 40% of treated patients fully recover (Smits, Powers, Buxkamper, & Telch, 2006). While the current results offer support for the presence of *apparently* negatively and in some cases positively biased cognitive processes in individuals with social anxiety, they do not show that social anxiety is triggered or maintained by such biases. Instead, future studies will need to experimentally control/induce these biases and demonstrate that such control changes the triggering or maintenance of social anxiety.

The findings of Experiments 1 and 2 suggest that targeting patient's anticipatory self-images may be helpful. Specifically, in Experiment 1, high socially anxious participants reported more anticipatory negative and unhelpful self-images than low socially anxious participants did. Thus, prolonged training of individuals to hold more positive self-images in mind during anticipatory processing may lessen their anxiety and help them to enter social situations in a more positive frame of mind. Indirect support for this idea was found by Hirsch, Clark, Matthews, Williams, and Morrison (2006), who asked confident public speakers to create either a positive or a negative self-image before giving a speech. Participants who had previously created a positive self-image were less anxious, believed that they had performed better, and had fewer negative thoughts during a speech, compared to participants who had previously created a negative self-image.

Hirsch, Clark, Williams, Morrison, and Matthews (2005) also found that positive or benign imagery, namely, holding an image as if from the perspective of a confident person, reduced high interview-anxious participants' access to threatening interpretations of ambiguous social situations. Positive self-imagery can be accessed, or the negative observer image modified, by video feedback with cognitive preparation as developed by Clark and Wells (1995) and tested by Harvey, Clark, Ehlers, and Rapee (2000). Lastly, training individuals to hold positive self-images in mind in anticipatory processing may decrease the likelihood of them experiencing negative observer perspective images during social interaction. Alternatively, training individuals to adopt a more positive or neutral 'field perspective' in anticipatory processing and/or to 'shift' from a negative observer perspective to a field perspective during interaction may result in making their experience of the interaction less negative and may boost self-esteem.

Experiment 2, 3, and 4's results also speculatively indicate possible innovative treatment strategies, all developed to target the presumed maintaining factors. Experiment 3 explored the theme of 'looming vulnerability' or rapidly rising risk in social anxiety, and found that 'social' looming vulnerability explained a significant amount of unique variance in different aspects of trait social anxiety, particularly fear of negative evaluation. Standard cognitive behavioural therapy may benefit from consideration of looming vulnerability and the looming vulnerability model of anxiety (Riskind, 1997), especially when therapists work with resistant patients or those for whom standard cognitive behavioural therapy is producing a suboptimal response (Riskind & Williams, 1999). Indeed, resistance to treatment and/or suboptimal responses may be partly accounted for the fact that standard cognitive behavioural therapy does not consider the dynamic or variable nature of biased cognitive processing.

Riskind and Williams (1999) coined the term 'looming management' to refer to the various therapeutic clinical uses of the looming model. Clinicians can modify four key ways that patients anticipate threat in mental representations; distance, either physical or temporal; motion; speed; and perspective, and four key aspects of the patient's responses to threat; generating alternative simulations; time structuring; proactive coping strategies; and the enhancement of personal efficacy for dealing with rapidly rising risk. For example, one technique might involve 'stretching out' patients' perceptions of distance from fear of negative evaluation in their mental scenarios, thereby affording extra time to consider adaptive coping strategies. Another variable that the clinician can modify is threat movement. The clinician, for instance, can use imagery-based techniques to arrest or 'freeze' the forward or approaching movement of perceived rapidly intensifying fear of negative evaluation. A third variable that a clinician can modify with cognitive restructuring is the 'velocity' or speed with which the individual perceives an

anticipated threat to be moving, changing, or rearranging itself in time and space. The aim of restructuring is typically to 'slow down' the patient's 'representational velocity' so that he or she has time to exercise control over events. For example, a socially phobic individual is likely to perceive the possible threat of social failure to be quickly rising, perhaps together with environmental triggers such as more people entering a room. Velocity could be modified using behavioural experiments, for example, the individual 'testing' the objective escalation of risk in a social situation. Looming management techniques have been successfully used in the treatment of social performance anxiety (Riskind & Mizrahi, 2002; Riskind, Long, Duckworth, & Gessner, 2004).

The results of Experiments 2 and 4 also suggest that adopting a metacognitive approach to treatment may accelerate cognitive change in social phobia. Metacognitive theory and therapy views the persistence of negative thoughts and beliefs about the social self as a result of recurrent and dynamic metacognitions controlling cognition (Wells, 2007). Metacognitive therapy offers a level of intervention that does not focus exclusively on the negative content of thoughts that are highlighted in standard cognitive behavioural therapy. Experiment 4 examined metacognitions about anticipatory processing in social anxiety. The main finding of Experiment 4 was that participants' negative beliefs about the uncontrollability and dangerousness of thoughts (e.g., 'my anxiety is dangerous for me') accounted for a small, yet significant proportion of unique variance in fear of negative evaluation symptoms and social interaction anxiety. The first target of treatment could therefore involve modification of uncontrollability metacognitions, for instance, focusing on challenging negative beliefs about the danger of worry/anxiety as a threatening agent. Other strategies might involve directing attention away from the self onto the external environment. Self-focused attention is a marker for the cognitive-attentional syndrome in the metacognitive theory, so removal of the syndrome should facilitate change. Using metacognitive therapy in a mean of 5.5 hourly sessions, Wells found that socially phobic patients achieved reduction in fear of negative evaluation that was comparable to those of the full cognitive intervention. The results of Experiment 4 and of other research (e.g., Dannahy & Stopa, 2007) also tentatively suggest that metacognitive therapy may facilitate cognitive change in social phobia.

Finally, Experiment 5 used the spotlight effect and the illusion of transparency, in order to investigate public and private processes of self-awareness in social anxiety. Treatment wise, the anchoring and adjustment interpretation of the above two concepts may be particularly amenable to modification. For example, using video-feedback techniques to adjust the strength of the initial anchor, for example, the individual's baseline levels of anxiety could prove beneficial. Harvey,

Clark, Ehlers, and Rapee (2000) showed that a socially anxious individual's normally biased perspective could be modified with video-feedback so that it is more consistent or less discrepant with the perspective of other people. However, other studies have showed that video-feedback of performance does not facilitate social anxiety reduction (e.g., Rodebaugh et al., 2004; Smits, Powers, Buxkamper, & Telch, 2006). Despite these inconsistent findings, video-feedback can allow individuals to see their true, observable self directly, and increases the likelihood of them detecting corrective responses. Socially anxious individuals' processes of judgment could therefore start from a lower anchor value, that is, adjust downward from the anchor of their own rich emotional experience. When there is no obvious internal and/or external anxiety or experience to adjust from, there is unlikely to be any of the spotlight effect and/or the illusion of transparency.

Issues for Future Research

The current thesis has developed and used a number of tried (e.g., anticipatory processing) and untried (e.g., the spotlight effect) experimental concepts, in order to better understand socially anxious individuals' biased cognitive processing before and during social situations. In doing so, high and low socially anxious individuals have completed social-evaluative tasks and several self-report measures, many of these assessing anticipatory and on-line cognitive processing. Besides specific research questions relative to specific theories (see earlier discussions), this thesis raises a number of broad issues related to future examinations of cognitive processing biases in social anxiety and social phobia.

First, the studies of the current thesis have used analogue or non-patient samples. Thus it is unclear to what extent the results of the current thesis can be generalised to patients with social phobia. Nevertheless, in Stopa and Clark's (2001) review of the validity and viability of the analogue approach to studying social anxiety, the authors suggest that the cognitive processes that distinguish high and low fear of negative evaluation scores are basically the same as those that distinguish socially phobic patients from non-patient controls. Furthermore, there seems to be no demonstrations of differences between socially phobic patients and controls that have failed to be demonstrated in comparison between high and low fear of negative evaluation groups. As Stopa and Clark highlight, the advantages of the analogue approach to studying social phobia are that it facilitates piloting, permits the use of large numbers of subjects, and allows data to be collected more quickly (as illustrated in Experiment's 3 and 4). Thus, while it is always important to confirm or replicate novel results in patient samples, the studies in the current thesis show the

value of the analogue approach in developing/piloting new ways to illuminate the maladaptive cognitive processes/biases suggested to trigger and maintain social anxiety.

Second, because of recruiting analogue and predominantly psychology undergraduate samples, gender composition of the studies in the current thesis was unsurprisingly biased in favour of females (average male/female ratio $\approx 1/6$). Indeed, in Experiment's 3 and 4, the main analyses consisted of females only. While this disparity obviously exceeds reported gender differences in lifetime prevalence rate of social phobia (e.g., 11.1/15.5; data from Kessler et al., 1994), such disparity is not uncommon in analogue studies of cognitive biases in social anxiety (e.g., Spurr & Stopa, 2003 and Dannahy & Stopa, 2007). Noteworthy, in the current thesis, is the fact that high and low socially anxious participants in Experiment 1 and medium to high socially anxious participants in the two experimental conditions in Experiment 5 did not significantly differ in gender composition.

Although women are more likely to receive a diagnosis of social phobia in epidemiological studies, men and women present for treatment of social phobia in roughly equal numbers (Turk et al., 1998). Thus, it is clear that future analogue studies should recruit samples that more closely mirror the demographics of the populations under examination, for instance, prevalence, age of onset, comorbidity, ethnicity, gender, education, and familial factors, as often seen in patient studies of negative self-appraisals in social phobia (e.g., Moscovitch & Hofmann, 2006). Future studies could also examine situational differences in social behaviour that may exist between socially phobic men and women. For example, Turk et al. found that gender differences emerged when specific social situations were examined. Women reported greater fear than men in work settings (e.g., entering a room), while men reported greater fear than women in public settings (e.g., urinating in public toilets).

Third, future research should attempt to examine *interactions* between the various biased cognitive processes, believed to be involved in the maintenance of social phobia. In this light, Hirsch, Clark, and Mathews (2006) proposed the 'combined cognitive biases hypothesis', which postulates that cognitive biases do not operate in isolation, but work together, thus augmenting the impact of each bias on other variables (e.g., social anxiety and depression). Hirsch et al. (2006) examined the combined cognitive biases hypothesis in relation to imagery and interpretations in social phobia. Via these two mechanisms, Hirsch et al. suggest that the combined effects of cognitive biases may have a greater effect on maintaining a disorder, that is, a more synergistic impact, compared to if the biases operated in isolation. Hirsch, Mathews, and Clark (in press) found evidence consistent with the hypothesis that interpretation biases and self-imagery interact in a synergistic way to maintain social anxiety. That is, low socially anxious

participants trained to access negative interpretations of ambiguous social events subsequently produced more negative self-images than participants trained to access positive outcomes, as rated by both participants and independent observers. Participants trained to access negative outcomes also rated their anticipatory anxiety in an imagined social-evaluative situation as being higher, and their anticipated social performance as being poorer than participants trained to access positive outcomes. These findings and the combined cognitive biases hypothesis accord with cognitive-behavioural models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997), which imply that cognitive processes combine to maintain or even contribute to the development of social phobia. As such, future studies of social anxiety are encouraged to investigate the combined effects of cognitive biases, for example, reciprocal relationships between biases in intensifying danger or threat and observer perspective imagery or biases in interpreting one's own thoughts and private and public self-discrepancies.

Concluding Thoughts

To conclude, the current thesis has explored a number of hypothesised cognitive biases that occur when socially anxious individuals anticipate and/or perform in social-evaluative situations. Two of the biases, that is, anticipatory processing and self-focused attention, were derived from cognitive models of social phobia (Clark & Wells, 1995; Rapee & Heimberg, 1997). The thesis also used concepts developed in other areas of psychology, namely, the model of looming vulnerability (Riskind, 1997), the metacognitive or S-REF model of cognitive disorder (Wells, 2000), and the spotlight effect (Gilovich, Medvec, & Savitsky, 2000) and illusion of transparency (Gilovich, Medvec, & Savitsky, 1998), in an attempt to further elucidate the types of information processing biases that may operate in social anxiety.

Findings from the above paradigms suggest that social anxiety is characterised by negatively biased anticipatory processing and as a result by observer perspective imagery during social-evaluative situations. Anticipation in social anxiety may also be a dynamic cognitive processing style, in which individuals generate mental scenarios of rapidly unfolding and escalating danger in response to potentially threatening social stimuli such as fear of negative evaluation by other people. Moreover, anticipation may contain a metacognitive component, in particular, individuals' negative beliefs about the uncontrollability and dangerousness of thoughts. Finally, regarding self-focused attention and the construction of the self as a social object, socially anxious individuals may overestimate the obviousness of both their internal (the illusion of transparency) and external (the spotlight effect) selves, with the former representing a trait or enduring aspect and the latter representing a state or transient aspect. Collectively, these findings

provide validation for some key aspects of contemporary cognitive models of social phobia and suggest the need for a broader, that is, focus on content *and* process and more ecologically valid, that is, acknowledging the *dynamic* or shifting nature of cognitive processing, understanding of the maladaptive cognitive processes involved in the aetiology and maintenance of social anxiety.

Appendix
Interview Questions

Q1. *Prior preparation.*

- When you were thinking about having to..., did you prefer for it in any way?
- In general, do you spend a lot of time
- Preparing before hand what might happen to you in social situations?
- What was your goal or what did you hope to achieve in carrying out this preparation?

Q2. *Catastrophic thoughts.*

- Can you tell me all about what you considered to be the worst thing(s) that could happen to you at anytime when you were thinking about having to...?
- Did you spend a lot of time thinking about the worst thing(s) that could happen to you at anytime when you were thinking about having to...?
- In general, is it normal for you to spend a lot of time thinking about the worst thing(s) that could happen to you before entering into social situations?

Q3. *Recollection of past similar social events.*

- I would now like you to tell me all about whether you remembered previous instances of..., at anytime when you were thinking about having to...?

Q4. *Impressions.*

- I would now like you to talk about whether you thought about how you would appear in front of other people at any time when you were thinking about having to...?
- Can you describe to me how you thought you would come across to other people at any time when you were thinking about having to...? In other words, what kind of impression did you want to make in front of them?

Q5. *Self-images.*

- At any time before the..., when you were thinking about how you would come across to other people, did you have any images of yourself...?
- Were those images of yourself..., linked to a particular event or events?
- Did you view those images of yourself in a helpful or an unhelpful way?

- Can you now please tell me whether at any time when you were thinking about having to..., that you experienced images of yourself from an observer perspective or a field perspective, or whether you experienced more of a felt sense?
- Did you find yourself switching between observer and field perspectives?
- I am also interested in whether the images you experienced were exaggerated (i.e., embellished) in any way. For example, you may have over stated or even understated particular aspects of the content of images, or made certain features of the content of the images larger or smaller than life. So, did you exaggerate an image in a particular way?
- Can you now tell me all about whether you experienced images of yourself..., in a particular way? For example, did those images have a strong visual component, or where there particular sounds, smells, or tastes associated with the images?
- Were the images you described particularly vivid, that is, did they stand out, were they clear and distinct?
- What do you think those self-images you experienced when you were thinking about having to...say about your own self-image in general?
- How important is your own self-image to you? What does it say about you as a person?

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