

## **Chapter One**

### **Introduction**

#### **Aims of the Thesis**

The aim of this study is to add to the literature exploring how children develop social fears and anxiety. The focus of the research is based on the premise that parents have a role to play in how children develop social anxiety. This study will explore the hypothesis that mothers' threat-interpretations in social situations are transmitted to their children. Specifically, this study will investigate whether mothers' social anxiety symptoms and interpretation biases are associated with their children's social anxiety symptoms and interpretation biases. Previous research in this area has mainly focused on the link between threat biases and general anxiety symptoms in parents and their children. This research will examine whether the same processes are present for social fears and anxieties.

The current chapter describes key epidemiological data on childhood social anxiety, cognitive theories of social phobia, and developmental models of anxiety and social anxiety. Research investigating the link between parental threat-interpretations and child threat-interpretations in anxiety will be reviewed and finally the rationale for the present study and the study hypotheses will be outlined.

#### **Childhood Anxiety**

Childhood fears and anxieties are commonplace. Over the course of childhood, children experience some form of fear or anxiety. Childhood is full of things that children might be fearful of or anxious about, such as starting at a

new school, taking tests, meeting new people, and moving house. While many children overcome their fears with time, some children do not and such fears can cause significant distress and interfere with daily life.

Anxiety disorders are the most common psychological disorder of childhood, with 5-18% of all children and adolescents experiencing some form of an anxiety disorder (Angold & Costello, 1995). Moreover anxiety is reported as the most common psychological disorder of childhood (Cartwright-Hatton, McNicol, & Doubleday, 2006). According to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 1994), anxiety disorders in childhood can be classified using the same criteria as used for adults (with the exception of separation anxiety disorder) and are typically viewed as downward extensions of adult disorders (Schniering, Hudson, & Rapee, 2000). Beidel, Turner, & Morris (1999) argue that fears are only considered problematic and in need of intervention when: they interfere with functioning; are not developmentally appropriate; lead to avoidance; persist for an extended period of time; and are out of proportion to the demands of the situation. Green, McGinnity, Metler, Ford, and Goodmann's (2004) survey of British young people observed developmental trends in the presentation of anxiety disorders finding that young children (5-10 years) were more likely to present with separation anxiety than older children (11-16 years) and older children were more likely to present with social phobia and generalised anxiety disorder

### **Common Childhood Fears**

The frequency and content of fears and worries vary with age. Muris, Merckelbach, Gadet, and Moulaert (2000) interviewed 190 children; 75.8%

reported a fear of an object or situation, 67.4% endorsed the presence of worry and 80.5% reported “scary dreams”. The most common fears included animals, imaginary creatures, being kidnapped and social-threats. Fears and scary dreams were common among the 4 to 6 year olds, increased in frequency in 7 to 9 year olds, and then decreased in frequency in 10 to 12 year olds when worries become more prevalent. Childhood fears are common across cultures (e.g., Reynolds & Richmond, 1978). However, Ollendick, Yang, King, Dong, and Akande (1996) observed some international variation across groups of children from America, Australia, China and Nigeria. Nigerian children reported more fears than the other groups, while American, Australian, or Chinese youth did not differ from one another. Additionally, Nigerian and Chinese youth reported higher levels of social-evaluative and safety fears than did children from America and Australia. The authors suggested that this result is consistent with the idea that Nigerian and Chinese cultures put more emphasis on self-control, emotional restraint, and compliance to social rules than American and Australian cultures.

### **Social Phobia (Social Anxiety Disorder)**

The focus of this research is social fears and social anxiety. Social phobia refers to the persistent fear of situations involving social interaction or social performance in which there is potential for scrutiny by others and is characterised by pervasive social inhibition and timidity (APA, 1994). Other key diagnostic criteria include: intense anxiety provoked by exposure to feared social situation(s), and avoidance, anxious participation or distress in feared situation(s). For a diagnosis, these responses must interfere significantly with the person’s normal routine, occupational/academic functioning, or social activities. Unlike other phobias, avoidance is not necessary for a diagnosis of social phobia.

In a diary study, Beidel, Turner, and Morris (1999) found that the most feared situations for children with DSM-IV diagnoses of social phobia (7-13 years) were those that involved performances in front of others (e.g., reading, musical or sports performances) and everyday social interactions (e.g., starting a conversation, talking on the telephone, and playing with other children). Children reported experiencing almost five distressing events per week.

There are three points of difference in the diagnosis of social phobia in children and adults. The first refers to differences in how children react and express signs of distress in social situations as compared to adults. For instance, children may express their distress by crying, tantrums, freezing, or shrinking from social encounters. Secondly, children need not necessarily recognise that their fear is excessive or unreasonable but this is necessary for a diagnosis in adults. Third, the fears must present for at least 6 months to avoid diagnosing a temporary distress as a result of adjustment to change, such as moving to a new neighbourhood or a new school. To meet diagnostic criteria based on the DSM-IV, the child must be able to develop age-appropriate social relationships with familiar people. In addition, the social or performance fears must be present in situations involving peers and not just in interactions with adults (APA, 1994).

### **The Prevalence and Epidemiology of Social Phobia in Childhood**

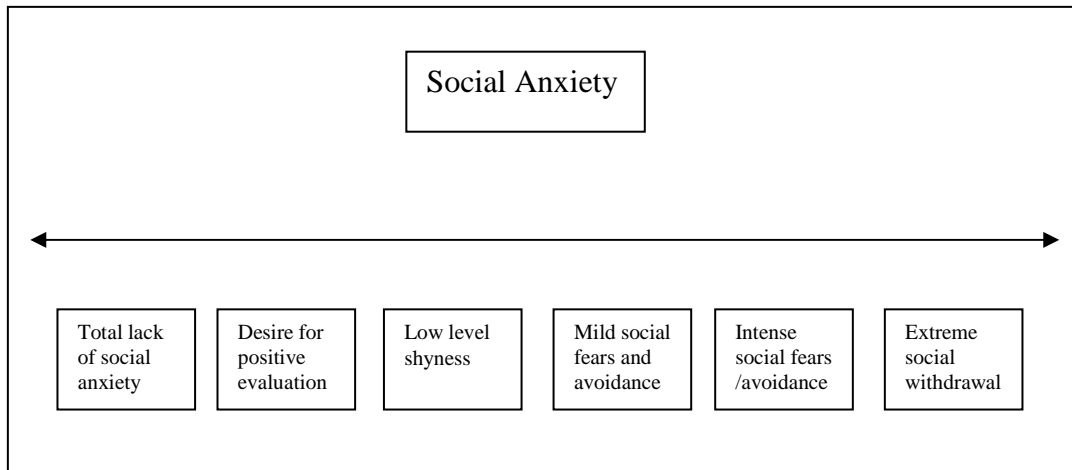
Typically social phobia is seen as lying at the top end of a social anxiety continuum (Figure 1) with less severe social fears at the lower end of the continuum and more intense and more disabling social fears and avoidance at the upper end (Rapee, 1995). According to Rapee and Spence (2004), although high levels of social anxiety on this continuum are associated with social phobia (e.g., Chavira, Stein, & Malcarne, 2002), in order to meet criteria for a diagnosis the

symptoms must significantly interfere with and cause distress in an individual's life (APA, 1994).

Lifetime prevalence of social phobia is between 7% and 13% in western society (Fehm, Pelissolo, Furmark, & Wittchen, 2005; Furmark, 2002; Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005; Ruscio et al., 2008).

Childhood social phobia may affect between 0.22% and 6% of children while many more children present with high levels of social anxiety such as shyness and milder social fears and avoidance (e.g., Essau, Conradt, & Petermann, 1999; Ford, Goodman, & Meltzer, 2003; Van Roy, Kristensen, Groholt, & Clench-Aas, 2009; Rapee & Sweeney, 2005). Furmark (2002) concluded that the significant variation in prevalence rates across studies can largely be explained by methodological factors (e.g., measures used) and by cultural differences in the samples used.

Social phobia typically first emerges in the early to mid teens (Rapee, 1995; Last, Perrin, Hersen, & Kazdin, 1992; Otto et al., 2001). Changes in children's cognitive and social development may account for the typical onset of social phobia at this age (Rapee & Spence, 2004). By early adolescence, children have typically developed the cognitive capacity to see themselves as others perceive them and have begun to make social comparisons (Cole, Jacquez, & Maschman, 2001). In addition, during adolescence the child's social interactions with their peer group become increasingly important as they gradually increase their independence from their family (Ingersoll, 1989). Thus, the increasing importance of social interactions in adolescence and the capacity to evaluate their social performance have been hypothesised as a significant contributory factor in the onset of social phobia (Rapee & Spence, 2004).



*Figure 1.* Continuum of social anxiety

Furmark (2002) observed that more adult females meet criteria for social phobia in community samples. Similarly, Gren-Landell et al. (2009) found that more girls (6.6%) than boys (1.8%) met criteria for probable social phobia in a community sample of Swedish 12-14 year olds. In contrast, Last, Perrin, Hersen, and Kazdin (1992) clinical sample of youths who were referred for mental health services demonstrated that social phobia affected boys and girls equally. This is consistent with gender similarities in adult clinical samples of adults who have been referred for mental health services (Rapee, 1995). Rapee (1995) interpreted this discrepancy between the equal numbers of women referred to mental health services as compared with the higher numbers of women meeting diagnostic criteria in the community as reflecting a possible greater functional impact of social anxiety on the lives of males in many societies. For children, parents or teachers may be more likely to refer a boy than a girl with social anxieties due to cultural expectations of boys and girls social roles in western society (Rapee & Sweeney, 2005). Boys in western societies may be expected by adults to socialise in bigger groups more than girls, and be more confident in social situations than girls (Rapee & Sweeney, 2005). Therefore deviation from these expectations by boys may be viewed as more problematic or unusual and result in an increased likelihood of making a referral to a mental health service (Rapee & Sweeney, 2005).

### **Functional Impact of Social Phobia**

Childhood social phobia is highly co-morbid both with other anxiety disorders (e.g. Last et al., 1992; Rapee & Sweeney, 2005) and depression (Strauss & Last, 1993). In a large longitudinal study, Beesdo et al. (2007) found that social phobia was consistently associated with depression later in life,

independent of age of onset and sex. In addition, the persistence and severity of the social anxiety were observed as risk factors for subsequent depression. Last and Perrin (1993) observed that among anxious children, social phobia is much more likely to precede the onset of depression rather than depression preceding the onset of social phobia.

Social phobia impacts on academic and social functioning in childhood. Beidel, Turner, and Morris (1999) observed that children with social phobia often presented as lonely, socially isolated and leading restricted social lives. In addition, a robust relationship exists between self-reported childhood social anxiety and peer problems, such as peer rejection, peer neglect and lower quality friendships (e.g., La Greca & Stone, 1993; Ginsburg, La Greca, & Silverman, 1998; Vernberg, Abwender, Ewell, & Beery, 1992). Verduin and Kendall's (2008) experimental study found that children with social phobia were less liked by unfamiliar peers than other children and this association was independent of whether or not their anxious symptoms were perceived by peers. Interestingly, children with other anxiety disorders were not rated as less popular than the control group, suggesting that social phobia might be a specific risk factor in the development of peer problems.

Social skills deficits have also been reported in referred children with social phobia (Spence, Donovan, & Brechemn-Toussaint, 1999) although this has been inconsistently demonstrated (Cartwright-Hatton, Hodges, & Porter, 2003; Cartwright-Hatton, Tschernitz, & Gomersall, 2005). Finally, Essau, Conradt, and Petermann (1999) reported that 60% of adolescents with social phobia endorsed impairments at school, and Last, Hersen, Kazdin, and Orvaschel



(1991) reported that school refusal is common amongst socially anxious children.

### **Summary**

Social phobia is a disorder of early onset (typically in early to mid adolescence) with significant associated psychological and functional impairments. Clinically, how symptoms are maintained is important for intervention and treatment. The dominant maintenance models of social phobia are cognitive models, and are most frequently used in clinical practice with the strongest evidence base. The next section will review these models.

### **Cognitive Models of Social Phobia**

Cognitive models of anxiety highlight the role of interpretations and expectations in the maintenance of anxiety (Beck, 1976). Beck (1976) suggests that anxious people over-estimate potential danger in certain situations and under-estimate their ability to cope in these situations. Beck (1976) proposes that these cognitions activate a set of physiological, behavioural and cognitive responses. These responses include: changes in autonomic arousal in order to prepare for flight fight or fainting; inhibition of current behaviour; and selectively scanning the situation for possible sources of danger. In anxiety disorders, Beck suggests that fear responses are often interpreted as a further source of threat leading to a series of vicious circles which maintains or exacerbates the anxiety.

Due to the unique core components (e.g., fear of scrutiny by others, social inhibition, and timidity) evident in social phobia, a number of specific cognitive models have been developed as a framework to understand the maintenance of social phobia.

### **Beck's Cognitive Model of Social Phobia**

Beck, Emery, and Greenberg (1985) postulates that social phobia is driven by cognitions that people hold about themselves and standards for their behaviour in social situations, including: excessively high standards for social performance (e.g., "I must always sound intelligent and fluent"); conditional beliefs concerning the consequences of performing in a certain way (e.g., "If I disagree with someone, they will think I am stupid/will reject me"); and (3) unconditional negative beliefs about the self (e.g., "I'm odd/different", "I'm unlikeable/unacceptable"). According to the model, these cognitions are triggered by social situations and contribute to the maintenance of social phobia through a series of vicious circles.

In addition to these cognitions, when the socially anxious person enters a perceived threatening social situation, he/she will experience a set of physiological and behavioural symptoms of anxiety that are taken by the individual as evidence of social incompetence. As a result, he/she then begins to closely monitor these internal changes, which subsequently interferes with the person's ability to process and respond to social cues. This may then elicit less friendly behaviours from those other individuals in the social situation, thus confirming his/her fears about being socially incompetent. Even if others do not respond differently to the person, he/she may make an interpretative error and detect criticism/rejection even when it is absent. Clark and Wells (1995) and Rapee and Heimberg (1997) furthered this model by taking into account other aspects of cognitive models.

**Clark and Wells (1995)**

The Clark and Wells (1995) model (Figure 2) also highlights the influence of negative beliefs in the maintenance cycle of thoughts, behaviours and physiological responses in social phobia (Beck et al., 1985). Clark and Wells propose that self-focused attention and safety behaviours are additional processes that maintain social anxiety. Clark and Wells posit that the negative interpretation of the social situations as 'dangerous' is partly maintained by an increased engagement in self-focused attention. Self-focused attention involves a detailed monitoring and observation of themselves and a decrease in the observation of other people and their responses. The individual may then use misleading internal information (feelings and self-images) to make excessively negative conclusions about how they appear to others without the benefit of observing other people and their responses. As posited by Beck et al. (1985), the individual's focus on internal information interferes with the person's ability to process and respond to social cues which may then elicit less friendly behaviours from other individuals in the social situation, thus confirming his/her fears about being socially incompetent.

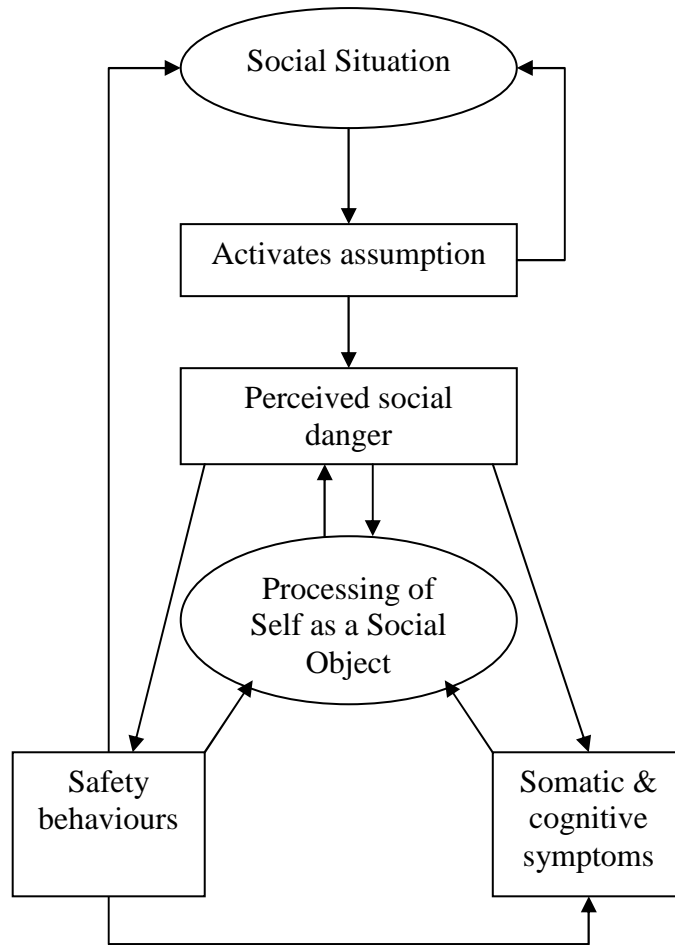


Figure 2. A cognitive model of social phobia (Clark & Wells, 1995)

A second process that maintains social anxiety is safety behaviours. Safety behaviours (Salkovskis, 1991; 1996) are behaviours (including internal mental processes) that people use to prevent or minimise feared outcomes. The use of safety behaviours prevents anxious individuals learning that fears are exaggerated or unwarranted. For example, if an individual with social phobia uses a safety behaviour (such as memorising what to say before speaking to avoid sounding stupid) in a social situation and then the feared catastrophe does not occur (such as not getting a negative response), the individual ascribes this to the safety behaviour rather than rethinking the dangerousness of the situation. Safety behaviours in social phobia are hypothesised to lead to further self-monitoring and self-focused attention, and therefore enhancing the salience of the individual's negative self-image and reducing attention to others' behaviour (Clark & Wells, 1995).

A final process described by the model is the occurrence of negatively biased pre and post event processing. Before an event, people with social phobia think about what might happen and become anxious. The model proposes that prior to a social situation the person's thoughts are dominated by recollections of past failures, negative images of themselves in the event, and by predictions of poor performance and rejection (Clark & Wells, 1995). This may then lead the person to avoid the situation completely or alternatively to begin participating in the event in a self-focused processing way. This self-focus makes it less likely that the individual will notice any signs of being accepted by other people. After the event, the person might then conduct a "post-mortem" of the event in which they recall their anxious feelings and negative self-perception, and subsequently review the event in a negatively biased way (Clark & Wells, 1995). This

interpretation of the event strengthens the person's belief in his/her social inadequacy.

### **Rapee and Heimberg (1997)**

The Rapee and Heimberg (1997) model of social phobia shares many similarities with the Clark and Wells (1995) model. Rapee and Heimberg propose that individuals with social phobia hold a negative mental representation of themselves in social situations. This mental representation is made up of the individual's beliefs about how they are seen by others. However their representation of themselves is at odds with what they think other people expect of them in social situations. Because of this mismatch in their representations, the individual presumes that they are being negatively evaluated by others which maintains the individual's negative self-beliefs about their social competencies.

As the Clark and Wells (1995) model has been considered more in its application to both children and adults than the Rapee and Heimberg (1997) model, the former model is of most relevance here.

### **Evidence for Cognitive Models of Social Phobia**

Many components of the Clark and Wells (1995) model have been supported in research with non-clinical and clinical samples of adults (for reviews see Clark & Wells, 1995; Heinrichs & Hofmann, 2001; Hirsch & Clark, 2004; Musa & Lepine, 2000). There is strong evidence for a negative interpretation bias for social information and social performance, and for an attentional bias towards threatening social stimuli in social phobia in experimental and correlational studies (Heinrichs & Hofmann, 2001; Hirsch & Clark, 2004). A memory bias in encoding and retrieving more social-threat information in social situations as predicted by Clark and Wells has not been

consistently supported (Heinrich & Hofmann, 2001; Hirsch & Clark, 2004; Rapee, McCallum, Melville, Ravenscroft, & Rodney, 1998).

The extent to which the Clark and Wells (1995) model of social anxiety can be applied to children and adolescents is of interest to clinical practice. It is important for clinicians to know whether childhood social phobia is driven and maintained by the same factors noted in adults, or whether there are developmental differences in how social phobia presents, develops and is maintained in childhood and adolescence. Clinically, this understanding has implications for formulation, treatment, and prevention of childhood social phobia.

In comparison with the adult literature, few studies have examined whether the same components of the model can be applied to childhood social anxiety. Hodson, McManus, Clark, and Doll (2008) collected retrospective questionnaire data on self-reported pre- and post-event processing, safety behaviours, and self-focused attention in a community sample of 11-14 year olds. As predicted, socially anxious children displayed more negative pre- and post-event processing, a great use of safety behaviours, and more self-focused attention as compared with children with low levels of social anxiety. In a more ecologically valid study, Schmitz, Kramer, Blectert, and Tuschen-Caffier (2010) found that children with social phobia reported more negative post-event processing immediately after and 2.5 hours following a social-evaluative stressor. Hignette and Cartwright-Hatton (2008) examined self-focused attention using a in a three-minute video-camera task and found that as self-reported social anxiety increased children were more likely to demonstrate self-focused attention. Higa and Daleiden (2008) also reported a positive association between

social anxiety and biases in self-focus and threat-interpretation (as measured by ambiguous stories).

A greater number of studies have explored what the Clark and Wells model refers to as “perceived social danger” or social-threat interpretation in children and adolescents. This is the most widely researched aspect of the cognitive models of social anxiety in childhood and the findings will be reviewed in the following section.

**Social-threat interpretations in childhood.** In line with cognitive models, research with socially anxious adults has consistently found that they interpret ambiguous social information as more threatening than non-anxious adults (e.g., Amir, Foa, & Coles, 1998) and that they overestimate the probability of experiencing a negative social event and the cost of such an event as higher (e.g., Foa, Franklin, Perry, & Herbert, 1996). In line with the cognitive specificity hypothesis (Beck et al., 1985), there is also good evidence to suggest that the interpretation bias evident in social phobia is specific to social situations and related to a person’s underestimation of their social competence and overestimation of social-threat (Amir et al., 1998; Stopa & Clark, 2000; Foa et al., 1996; Lukock & Salkovskis, 1998). Comparable studies have observed that symptoms of social anxiety are also correlated with negative interpretation biases in non-clinical children and young people (Magnusdottir & Smari, 1999; Smari, Petursdottir, & Porsteinsdottir, 2001), and children with elevated social anxiety have more negative interpretation biases than children with no social anxiety symptoms (Bögels, van Dongen, & Muris, 2003; Miers, Blote, Bögels, & Westenberg, 2008). In clinical samples, Rheingold, Herbert and Franklin (2003) found that adolescents with social phobia rated negative social events as more



likely to occur and as more distressing than non-anxious adolescents. In addition, Muris, Merckelbach, and Damsma (2000) found that children with a social phobia diagnosis interpreted ambiguous social stories as more threatening than a control group of children with low levels of social anxiety and presented with a lower threshold for threat perception.

Cognitive theory proposes that the interpretation biases present in anxiety are specific to the particular anxiety disorder. Each anxiety disorder is hypothesised to present with a specific set of dysfunctional interpretations that are activated in specific situations (Beck, Emery, and Greenberg, 1985). Cognitive theory postulates that people with social phobia demonstrate an interpretation bias in relation to social situations only. The specific content of the threat-interpretations in social phobia are an underestimation of their social competence and performance and an over-estimation of the likelihood of them being socially rejected (Beck et al., 1985). Therefore it is necessary to examine whether the observed biases in social phobia are specific to social situations only, and that the content of the interpretations are related to an underestimation of their social competence and performance and an over-estimation of the likelihood of them being socially rejected (Beck et al., 1985).

There is some evidence suggesting that the interpretation biases observed in childhood social anxiety are specific. Magusdottir and Smari (1999) found that social anxiety symptoms were more strongly related to the appraisal of negative social events rather than to other negative events, and that social anxiety symptoms were more strongly related to low perceived social competence and social-threat appraisals than symptoms of depression. These specificity findings are consistent with the adult literature (e.g., Amir et al., 1998; Butler & Mathews,

1983; Foa et al, 1996). However, cognitive specificity has not always been found in the child literature (e.g., Barrett, Rapee, Dadds, & Ryan, 1996; Bögels et al., 2003). Bögels et al. only found partial support for specificity of threat-interpretations. In this study, children with high levels of social phobia reported increased overestimations of criticism and rejection and underestimation of their social competence in comparison with children with high levels of separation anxiety, but this difference was not found when compared with children with high levels of generalised anxiety. Barrett et al. found no evidence for specificity of threat-interpretations.

Few studies have employed an experimental design to examine the causal nature of this association, with the exception of Vassilopoulos, Banerjee, and Prantzalou (2009) who found that highly socially anxious children who received training to interpret ambiguous situations as benign rather than as negative demonstrated change in their interpretations of ambiguous situation and a decline in trait social anxiety. These results suggest that a social-threat interpretation bias may play a causal role in the maintenance of social anxiety symptoms as predicted by Clark and Wells (1995) however further research is clearly warranted.

The methods used to assess interpretation biases in relation to social anxiety in children have almost exclusively been a series of vignettes depicting either potentially aversive events (e.g., the Appraisal Inventory; Magnusdottir & Smari, 1999) or vignettes depicting more ambiguous situations (e.g., Barrett et al., 1996; Bögels et al., 2003). A number of studies have used questionnaires that include equal numbers of physical-threat scenarios and social-threat scenarios (e.g., Barrett et al., 1996; Magnusdottir & Smari; Smari et al., 2001). These

questionnaires are build on Campbell and Rapee's (1994) conceptualisation that feared negative outcomes in anxiety are organised in terms of two primary factors: social and physical. These questionnaires allow researchers to test for specificity in any observed interpretation biases by comparing participants' responses to the physical-threat scenarios and the social-threat scenarios in relation to social anxiety. Alternative methods to investigate interpretation biases successfully used in the adult literature, such as homophones and homographs, have not yet been used.

### **Efficacy of Treatment using the Clark and Wells (1995) model**

Despite the limited evidence supporting the Clark and Wells (1995) in childhood, the treatment model is increasingly recommended for use with children and adolescents (Ahrens-Eipper & Hoyer, 2006; Melfsen et al., 2011). In a single case study, Ahrens-Eipper and Hoyer (2006) demonstrated that using the model was effective in the treatment of social anxiety of an 11 year old boy. Melfsen et al. (2001) used a small scale wait-list control design (CBT n = 21; Control n = 23) to examine the efficacy of treatment based on the Clark and Wells (1995) model for childhood social phobia. Treatment included manipulation of self-focused attention and safety behaviours, training in externally focused attention, techniques for restructuring self-images and behavioural experiments. Compared with the control group, significantly more children participating in the active treatment were diagnosis free at post-treatment and had significantly less symptoms of social phobia.

**Conclusions.** Vulnerability to social anxiety and its maintenance may be influenced by cognitive biases, with interpretation biases being the most widely aspect of the cognitive models studied in relation to social anxiety. There is some

evidence suggesting that socially anxious children and adolescents interpret ambiguous social information as more threatening than non-anxious children, and that symptoms of social anxiety correlate with interpretation biases of social situations in non-clinical samples of youth.

As social phobia is a disorder of early onset, researchers have begun to consider the development of paediatric social anxiety and the associated cognitive biases. The following section will review the research examining the genetic and environmental factors implicated in the development of social phobia, with a specific emphasis on the influence of parents in the aetiology of social phobia.

## **The Development of Social Anxiety**

### **Anxiety in Families**

Parental anxiety is one of the strongest predictors of childhood anxiety. Children who have an anxious parent are around 3.5 times more likely to develop anxiety than are children of non-anxious parents (e.g., Turner, Beidel, & Costello, 1987). Fyer, Manuzza, Chapman, Marti, and Klein (1995) reported that adults with a specific phobia, social phobia, or panic disorder were more likely to have first-degree relatives with the same anxiety disorder. Similarly, Stein et al. (1998) found a higher rate of social phobia among relatives of people with generalised social phobia, with this familial liability only extending to generalised social phobia and not avoidant personality. A number of studies employing community samples have also demonstrated significant concordance between parental and child symptoms of social anxiety (Lieb et al., 2000; Merikangas, Lieb, Wittchen, & Avenevoli, 2003).

Beatty, Heisel, Hall, Levine, and La France (2002) conducted a meta-analysis of twin studies to determine the relative impact of genes and environment on the development of social phobia. They reported a heritability estimate for social anxiety of .65 which is likely to be an over-estimate as the studies reviewed included a range of methods from self-report levels of anxiety to observer rating of shyness. However the review did not address the impact of co-morbidity. This is important as there is considerable overlap for genetic heritability for anxiety disorders and depression (Eley, 1999) making it harder to be specific about which genes only influence the development of social anxiety. Mosing et al.'s (2009) adult twin study investigated the genetic and environmental influences on the co-morbidity between depression, panic disorder, agoraphobia, and social phobia, and found a heritability estimate for social phobia of .39 (CI: .16-.65) with no evidence for any variance explained by the common environment shared by twins. In addition, social phobia shared less genetic concordance with agoraphobia than other phobia disorders share with each other suggesting that variance in the heritability of social anxiety may be related to specific social anxiety genes, similar to research by Kendler, Myers, Prescott, and Neale (2001) and Low, Cui, and Merikangas (2008).

Few twin studies have recruited children and adolescents. Moderate heritability and large non-shared environmental influences have been found for shyness/social anxiety in preschool children (Eley et al., 2003) and in six year olds with social phobia diagnoses (Eley et al., 2008). Thus non-shared environmental influences seem to play a large role in the aetiology of social phobia in childhood. However, Plomin, DeFries, McClearn, and McGuffin (2001) posited that some environmental factors typically considered as part of

the shared environment, such as parental factors, differ considerably across siblings. Therefore the influence of some parental factors might be child specific (non-shared environment) (Eley et al., 2007). Given the early onset of social phobia, parental factors, such as parenting behaviours and parental cognitive biases, have been hypothesised to be important environmental influences in the development of social phobia. The following section will outline these theories, with a particular emphasis on the hypothesised role of parents in the development of social phobia.

### **Developmental Models of Anxiety and Social Anxiety in Children**

Rapee (2001) outlined a psychological model to explain the development of generalised anxiety (Figure 3). He suggests that a child who inherits a genetic predisposition for anxiety is likely to have an “anxious vulnerability” characterised by high levels of physiological arousal and emotionality in the child. This may give rise to an increased tendency to interpret situations as threatening, and lead to avoidance of threat as a means of coping. These responses subsequently help maintain the child’s vulnerability to developing an anxiety disorder.

In addition to these individual factors, the child’s anxious behaviour may elicit specific behaviours and interactions from other people, such as parents, siblings, and teachers. In particular, parents of a child with an anxious temperament may become over-involved and overprotective in an effort to reduce and prevent the child’s distress. This parental overprotection may then enhance the child’s anxious vulnerability by reinforcing their avoidance of threat, increasing their perceptual bias to danger and underestimating their coping ability.

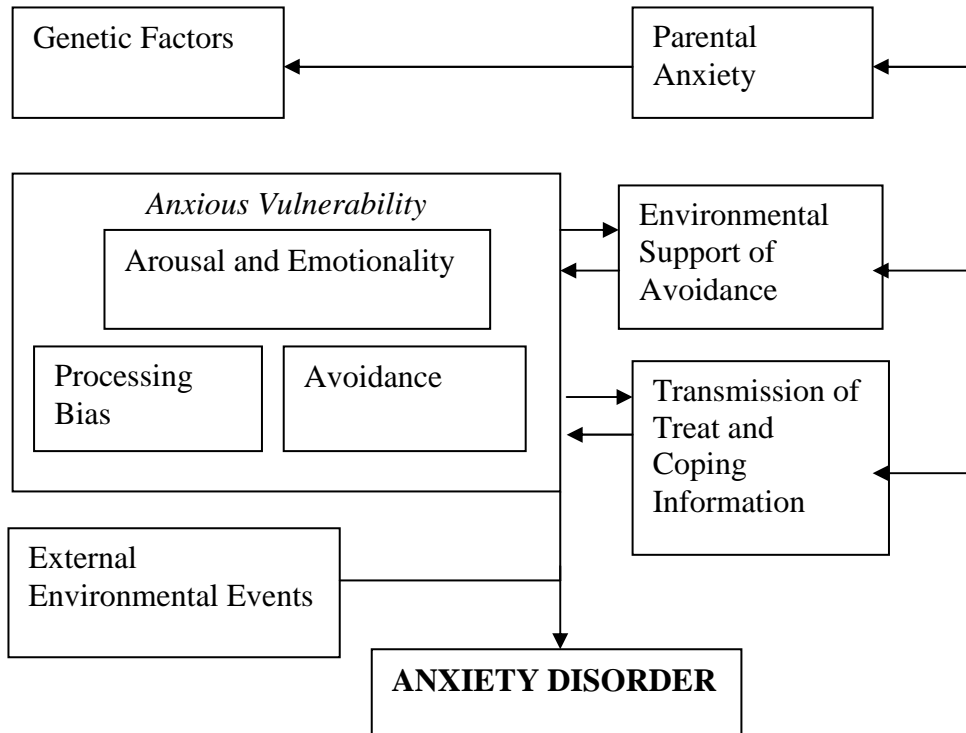
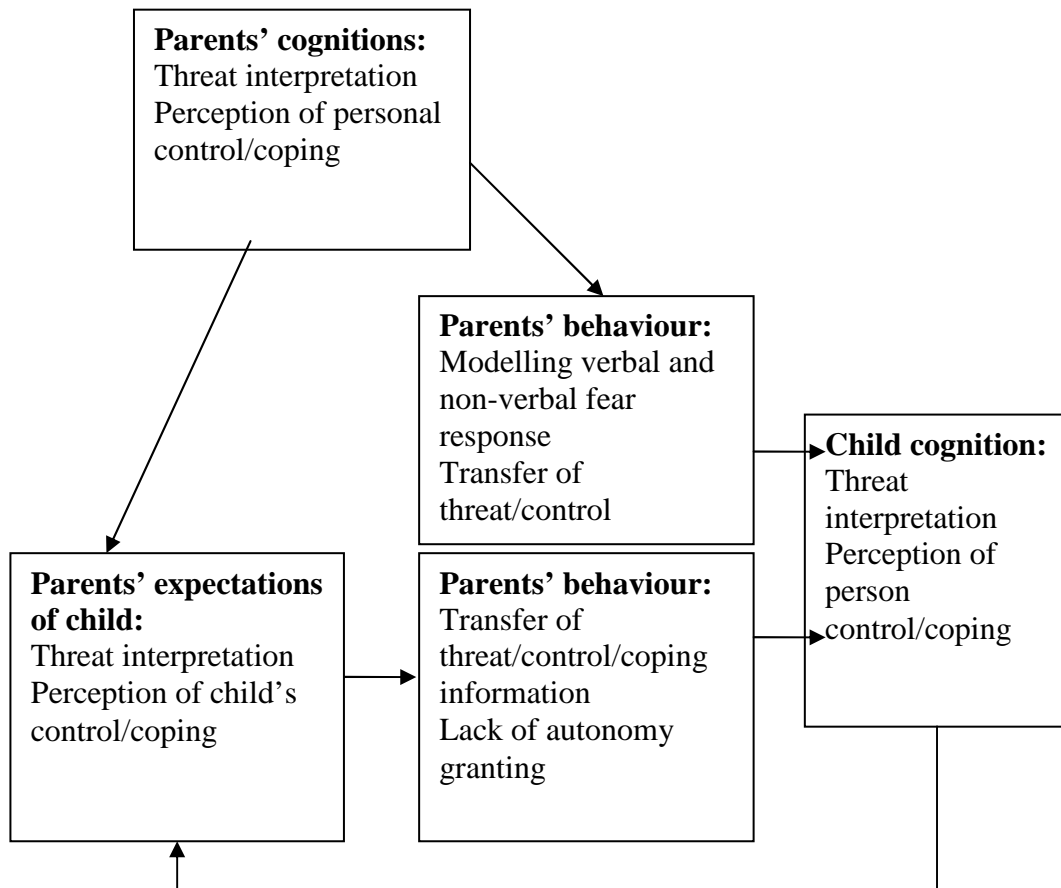


Figure 3. An aetiological model of anxiety (Rapee, 2001)

Rapee also proposed that parental anxiety may augment anxious vulnerability through social learning processes (Bandura 1978). Specifically, parents may model anxious behaviour and give their child specific information about threat and danger. This may reinforce the message that the world is dangerous and enhance the child's tendency to avoid. Notably, parents of anxious children are also likely to be anxious themselves and to display a cognitive bias toward threat. This increased perception of danger may lead the anxious parent to be increasingly sensitive to distress in their child and overprotect their child. The onset of anxiety disorder may be triggered by unfamiliar events for example, starting at a new school.

Following additional research in the area, Creswell, Cooper, and Murray (2010) furthered Rapee's (2001) hypothesis that parental anxiety and parental cognitive biases may influence anxiogenic parenting behaviours. Creswell et al.'s (2010) model (Figure 4) propose that parents' own interpretative biases towards threat may influence their behaviour with their child directly through processes such as modelling anxious behaviours, and through conveying or reinforcing threat information. Parents' own cognitive biases may also influence their expectations of their child, such as expecting their child to be distressed and perceive threat in certain situations. Creswell et al. posit that these expectations may elicit parenting behaviours through overprotection and the transfer of information about situations being threatening. These anxiogenic parenting behaviours, driven by parental cognitions, are thought to promote the development and maintenance of child's own anxious cognitions. The authors also propose a feedback cycle in which parents' expectations of their child are enhanced by their experience of parenting an anxious child.





*Figure 4.* A cognitive-behavioural model of the intergenerational transmission of anxious interpretation biases (Creswell, Cooper, & Murray, 2010).

Rapee and Spence (2004) developed a model to account for specific risk factors in the aetiology of social phobia (Figure 4). This also implicates parental anxiety as a key factor in the development and maintenance of childhood social anxiety through genetic and parent/child interactional influences. In contrast to the Rapee (2001) model, the authors argue that as part of a broader genetic vulnerability to emotional disorders, a small proportion of variance is accounted for by genetically mediated factors more specific to social concerns. According to the Rapee and Spence (2004) model, parental overprotection and modelling of sociability and interactional concerns are implicated in the development of social anxieties in children through influences on cognitive and attitudinal development. Although parental overprotection and modelling are implicated in Rapee's (2001) model, the authors suggest that these parenting processes might have a highly specific role to play in social anxiety. Very little research has been completed looking at specific parenting behaviours in social anxiety. However Murray, Cooper, Creswell, Schonfield, and Sack (2007) found mothers with social phobia were more anxious and less engaged when speaking to a stranger and less encouraging of their infants' interaction with the strangers than non-anxious mothers. Infants of mothers with social phobia were also less socially responsive to the stranger, as compared with non-anxious controls and children of mothers with generalised anxiety disorder. These findings suggest that specific social learning processes may play a role in the development of social phobia. Infant social responsiveness was predicted by neonatal irritability and the degree to which their mother encouraged the infant to interact with the stranger. This suggests that anxious children and their parents reciprocally influence each other's behaviour thus maintaining anxious thinking and behaviour.



**Literature search strategy.** Literature searches were carried out using PsycINFO, MEDLINE, ASSIA, and ERIC. All available years were searched.

The key search terms and Boolean connectors were entered as follows:

1. threat bias or interpretation bias or threat-interpretation or cognitive bias or social-threat
2. parent\*<sup>1</sup> or mother\* or father\* or maternal or paternal or primary caregiver
3. child\* or adoles\* or pediatric\* or paediatric\*
4. anxiety or social anxiety or social phobia
5. 1 AND 2 AND 3

The search was supplemented by the hand search of the following journals: Behavioural and Cognitive Psychotherapy and Behaviour Research and Therapy. The reference lists of the selected journal articles were also conducted to identify any further relevant studies, and key authors.

This search produced eight relevant articles that are divided according to the pathways hypothesised in Creswell et al.'s (2010) model: 1) the association between parent anxiety or parent threat-interpretations and child interpretation biases; 2) the association between parental expectations and children's interpretation biases; and 3) the association between parent anxiety or threat-interpretations and parental expectations of their child.

#### **Parent threat-interpretations and child interpretation biases.**

Creswell et al. (2010) hypothesised that parents' own interpretation biases may influence children's cognitions about threat, distress and coping ability.

Creswell, Schniering, and Rapee (2005) presented 60 children (clinically anxious

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<sup>1</sup> \* = truncated words entered into the search engine.

n = 27, non-clinical n = 33) and their mothers, with 12 ambiguous situations and were asked to choose between two potential interpretations (one threat and one non-threat). Mothers completed two ambiguous situation questionnaires: one related to their child and the other related to themselves in adult situations. Anxious children chose more threat-interpretations than non-anxious children, mothers of anxious children made more threat-interpretations of themselves and their child, and mother and child threat-interpretations were positively associated. Creswell, O'Connor, and Brewin (2006) also found a relationship between mothers' own interpretation biases and children's interpretation biases in a community sample. The researchers suggested that the data could be interpreted as supporting the hypothesis that children's information processing style may develop as a result of the internalisation of parental threat interpretation (e.g., Barlow, 1988).

Bögels et al. (2003) used nine ambiguous situations to explore parental anxiety and interpretation bias on interpretation bias in their children. They recruited 25 children (clinically anxious n = 6, non-clinical n = 19). Before a family discussion, parents' self-reported anxiety and negative interpretation biases were positively correlated with children's negative interpretation biases. However, irrespective of parental anxiety and parental interpretation bias, children interpreted the ambiguous stories as less negative after discussing them with their parents. The authors concluded that their results were inconsistent with the hypothesis that parents maintain or enhance the interpretation bias of their children through transfer of verbal information. However, the large age range and small sample size recruited in this study may also account for the non-significant effect of family discussions. Alternatively, it is possible that other

parenting behaviours, such as modelling an anxious response, might be responsible for the transmission of intergenerational links in interpretation biases.

**Child anxiety and child interpretation biases, and parent expectations of their child.** Creswell et al. (2010) argue that parenting an anxious child might lead to parents developing expectations that their child will feel threatened in certain situations and that they will not be able to cope. These parental expectations might then lead to anxiogenic parenting and thus further enhance a child's threat-interpretations and anxiety about these situations.

Kortlander, Kendall and Panichelli-Mindel (1997) used an ecologically valid method to assess maternal expectation of their child's coping ability in a stressful situation. The authors exposed 40 clinically anxious children (mixed diagnoses) and 40 non-clinical control children to a mildly stressful situation (giving a 5 minute talk which was video recorded). Mothers rated their expectations and feelings about their child's performance prior to the task. Mothers of anxious children rated their child as more likely to get upset and less able to cope with the task compared to the control group. Kortlander and colleagues suggested that mothers' lower expectations of their child's coping ability may be linked to protective parenting, which in turn may maintain anxious behaviour in children. Cobham, Dadds, and Spence (1999) also used video performance method. The researchers compared a group of non-anxious mothers with clinically anxious children but were not anxious themselves to a group of anxious mothers with anxious children. Only anxious mothers predicted that their child would show higher levels of anxiety and task avoidance and there was no between group differences in predicted skill, anxiety or participation

following a family discussion. These results suggest that not all mothers of anxious children had negative expectations of their child thus this pathway might not always be necessary in the development of anxiety.

In a longitudinal study, Creswell et al. (2006) explored the development of an association between mothers' expectations of their child and children's cognitive biases over a one year period. Cross-sectional analysis revealed consistent correlations between mother's expectations of their child's cognitions and children's threat cognitions and anticipated distress in response to ambiguous situations. Moreover, the longitudinal data found evidence for a reciprocal relationship for girls. Specifically the level of anxious cognitions that girls presented with predicted changes in maternal expectations over time, and mothers' expectations of their girls' anxious cognitions predicted changes in children's anxious cognition. Taken together these studies suggest that a bi-directional relationship may be present between parent expectations of their child and children's cognitive biases. However, Cobham et al.'s (1999) study employing a clinical sample suggested that negative parental expectancies may not be a necessary factor in the development of childhood anxiety.

#### **Parent anxiety and threat-interpretations, and parental expectations.**

Creswell et al. (2010) posited that parents who are anxious and view the world as threatening may also expect their child to view the world in the same way.

Creswell and O'Connor (2006) examined this hypothesis in a community sample of 10-11 year olds and observed significant correlations between mothers' interpretations of threat and anticipated distress in self-relevant situations and mothers' expectations of their child's threat-interpretation and distress in ambiguous situations. A limitation of this study was the correlational analysis.

Gallagher and Cartwright-Hatton (2009) extended the findings using an experimental task with 3-9 year olds. In this study, parental anxiety was experimentally increased. When the parent was anxious, they interpreted child-related ambiguous situations as more threatening, generated a greater proportion of negative outcomes to neutral events, and predicted that these outcomes would be more distressing for both the child and themselves. These results suggest that parental anxiety may lead to an increase in child-related cognition characterised by threat and distress. Lester, Field, Oliver, and Cartwright-Hatton (2009) extended these findings further by investigating parent's own interpretive biases in ambiguous situations. As predicted, parents with higher anxiety reported more negative interpretative biases about situations in their own and their child's environment. Lester and colleagues concluded that anxious parents may come to view their child's world in accordance with the way they view their own world. Notably all three studies used community samples meaning that a degree of caution should be exercised in generalising the present findings to clinically anxious parents.

### **Summary and Conclusions**

As detailed in the above review, there is preliminary evidence to support Creswell et al.'s (2010) hypothesised pathways explaining the intergenerational transmission of anxious interpretation biases. Specifically, links has been observed between: child threat-interpretation and parent threat-interpretation; child anxiety/threat-interpretation and parental expectations of their child; and parent anxiety/threat-interpretation and parental expectations of their child (e.g., Creswell et al., 2005; 2006; Kortlander et al, 1997; Lester et al., 2009). However all the research to date has investigated these constructs in relation to anxiety



more generally and no study has explored whether the same processes apply to other anxiety disorders or symptoms, such as social phobia or separation anxiety disorder.

### **Rationale for the Present Study**

Rapee and Spence's (2004) developmental model of social phobia implicates parents as playing a role in the development and maintenance of social anxiety. Rapee and Spence (2004) propose that many of the same parenting factors, such as anxiogenic parenting behaviours and interpretation biases, may contribute to the development of social anxiety in children as proposed for generalised anxiety. While Creswell et al.'s (2010) model of the intergenerational transmission of anxious interpretation biases has gained some preliminary support in trait anxiety symptoms and generalised anxiety, no study has directly tested whether the same pathways apply to childhood social anxiety.

The purpose of the present study is therefore to test out whether Creswell et al.'s (2010) hypothesised pathways to intergenerational anxious interpretation biases apply to social anxiety. Specifically, the research will explore the associations between: child and parent social-threat interpretation; child social anxiety/social-threat interpretation and parental expectations of their child; and parent social anxiety/social threat interpretation and parental expectations of their child. In addition, as social anxiety is hypothesised to present specifically in social situations (Beck et al., 1985), the research will explore whether any links observed between social anxiety symptoms and parental biases in their expectations of their child are specific to social situations rather than physical situations.

This study will recruit a non-clinical sample of children in late childhood and their mothers. Non-clinical participants will be targeted for recruitment as social anxiety and cognitive biases are thought to exist on a continuum from non-clinical to clinical samples (Harvey, 2004; Rapee, 1995). A community sample also makes it possible to focus on children who fall within a narrow age range (9-11 year olds) in order to minimise the potential confounding effect of cognitive development at different points in children's development. This is typically more difficult in clinical samples.

The particular age group was chosen as in late childhood children begin to make social comparisons and have the capacity to see themselves as others perceive them (Cole et al., 2001). In addition, children in late childhood are on the cusp of the typical time of onset for social anxieties (e.g., Last et al., 1992) thus a suitable time to ask them about their social fears and anxieties. Finally, in late childhood parents are still highly influential in a young person's life, whereas as children get older young people gradually become more influenced by their peers than their parents (Coleman, 1980). Therefore it is arguable that the current sample age was highly suitable for exploring the intergenerational transmission of cognitive biases and social anxiety.

Only mothers will be targeted for recruitment to this study as preliminary evidence Bögels and Phares (2008) suggests that that mothers and fathers may influence children's development of anxiety symptoms and cognitions in different ways (e.g., Cooper, Fearn, Willetts, Seabrook, & Parkinson, 2006; Bögels, Stevens, & Majdandzi, 2010). As fathers are typically more difficult to recruit into research projects, the mother-child dyad was chosen as the focus of the current study.

## **Research Hypotheses**

Using an ambiguous situations questionnaire, the current study will examine the associations between social anxiety and interpretation bias across mothers and their children.

### **Maternal Anxious Cognitions and Child Anxious Cognitions**

Hypothesis One (A): It is hypothesised that mothers' threat-interpretations in self-relevant social situations will be positively correlated with children's social-threat interpretations.

Hypothesis One (B): It is hypothesised that mothers' cognitions about distress in self-relevant social situations will be positively correlated with children's cognitions about social-distress.

### **Child Anxiety and Child Anxious Cognitions, and Maternal Expectations**

Hypothesis Two (A): It is hypothesised that child-reported social anxiety symptoms will be positively correlated with mothers' anxious expectations of their child's threat- interpretations in social situations.

Hypothesis Two (B): It is hypothesised that child-reported social anxiety symptoms will be positively correlated with mothers' anxious expectations of their child's distress in social situations.

Hypothesis Three: It is hypothesised that child social anxiety will be more strongly positively correlated with maternal expectations of child social-threat interpretations than with physical-threat interpretations.

Hypothesis Four (A): It is hypothesised that children's social-threat interpretations will be positively correlated with mothers' expectations of their child's threat-interpretations in social situations.

Hypothesis Four (B): It is hypothesised that children's social-distress will be positively correlated with mothers' expectations of their child's distress in social situations.

### **Maternal Anxiety and Maternal Anxious Cognitions, and Maternal Expectations**

Hypothesis Five (A): It is hypothesised that maternal symptoms of social anxiety will be positively correlated with mothers' expectations of their child's interpretations of social situations.

Hypothesis Five (B): It is hypothesised that maternal symptoms of social anxiety will be positively correlated with mothers' expectations of their child's distress in social situations.

Hypothesis Six: It is hypothesised that maternal social anxiety will be more strongly associated with mothers' expectations of child social-threat interpretations than with mothers' expectations of child physical-threat interpretations.

Hypothesis Seven (A): It is hypothesised that mothers' own threat-interpretations in self-relevant social situations will be positively correlated with mothers' expectations of their child's threat-interpretations of social situations.

Hypothesis Seven (B): It is hypothesised that mothers' own distress in self-relevant social situations will be positively correlated with mothers' expectations of their child's distress in social situations.

## **Chapter 2**

### **Method**

#### **Overview**

This chapter outlines the method used to conduct the present study. Specifically, the study design is described, in addition to the characteristics of the participants who took part in the research and the recruitment procedure is outlined. The measures used in the study are described with details regarding the relevant normative data and psychometric properties and a detailed account of how the study was conducted is provided. This section concludes with a discussion of the ethical considerations relevant to this study.

#### **Design**

The current study used a non-experimental correlation design. Participants (child and mother dyads) completed questionnaires at one time point. The use of mother-child dyads allowed the researcher to explore both within and between groups investigations. The within-groups design examined the links between maternal social anxiety and maternal interpretations of social threat, and maternal expectations of child social-threat interpretations. The between groups analysis examined associations between maternal and child social anxiety, maternal and child interpretations of social situations, and maternal expectations.

#### **Participants**

##### **Sample Size**

The sample size calculation was based on data in Creswell et al. (2005). The authors reported a medium effect size of  $d = .36$  (Cohen, 1988) between

child anxiety and child threat interpretation, and a correlation of  $r = .36$  between child threat interpretation and mother threat interpretation.

Using G\*Power 3.0 (Faul, Erdfelder, Lang, & Buchner, 2007) for a correlation with a medium effect size ( $r = .30$ ), power of 0.8 and an error probability of  $< .05$ , a sample size of 64 mother-child dyads was required.

### **Target Sample**

Non-clinical children aged 9–11 years and their mothers were recruited in order to explore relationships between social anxiety and cognitive biases across a range of social anxiety symptom levels. It was hoped that the recruitment procedure would result in the recruitment of participants with a range of social anxiety symptoms (from low to high). See results section for spread of scores.

### **Recruitment of Sample**

Participants were recruited through schools in Cambridgeshire, Suffolk and Norfolk. A list of schools was accessed via county council websites and via the Director of Learning at Cambridgeshire County Council. Invitation letters were then systematically sent out to the head teachers of 24 primary schools providing information about the research and seeking consent to recruit children and their mother through their school. Schools were contacted one by one until the sample size was achieved. The researcher telephoned each school a week after sending out the invitation letter to discuss the research and answer any questions the head teacher had. Following permission from the head teacher to recruit from the school, research packs were sent home to mothers of children in years 5 and 6. The packs contained an invitation letter to the mother (Appendix A), information sheets for the child and mother (Appendix B and C), and a consent form for the mother (Appendix D). Those mother-child pairs interested

in participating in the research project returned the consent form to the school, in addition to a contact phone number and preferable time to be contacted by the researcher. Envelopes were then collected from the school's main office approximately a week after packs were distributed. For each child that took part, the school received a £4 book token.

### **School Characteristics**

In total 24 schools were invited to participate in the research and 10 schools agreed to participate (42%). Socio-demographic information was obtained for the 10 participating schools using the schools' most recent Ofsted report. This revealed that most children in these schools were White British with a small proportion from different ethnic backgrounds. For most children in these schools English was their first language.

### **Exclusion Criteria**

This research sought to recruit typically developing children. Therefore, children were excluded if they had a learning disability, a specific learning difficulty, a statement of educational needs, a diagnosis of an autism spectrum disorder, behavioural problems, or if they were currently in contact with mental health services. Eligibility was assessed during the initial telephone contact with mothers when possible but more typically at the beginning of the testing interview. Attention and behavioural problems were assessed using the parent version of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997).

Children with significant behavioural problems were excluded as research suggests that oppositional children are more likely to interpret ambiguous scenarios in a threatening manner in comparison to the control group (Barrett, Rapee, Dadds, & Ryan, 1996). Therefore, children with behavioural

problems might present with higher threat cognitions related to oppositional behaviour rather than symptoms of anxiety. In addition, to ensure that performance would not be impaired by problems of concentration or attention, children with scores in the abnormal range on the hyperactivity subscale on the SDQ were also excluded.

### **Sample Characteristics**

A total of 54 consent forms (6% consent rate) were returned to the school by the invited families. Of these, 43 children aged 9 to 11 years (22 girls, mean age = 10.42 years,  $SD = .56$ ) were included in the analysis. No significant difference was observed between boys and girls in terms of age,  $t(41) = -.87, p > .05$ . The research also recruited their mothers ( $n = 43$ , mean age = 43 years,  $SD = 5.23$ , age range = 30–50 years) to complete the research interviews. Of the excluded mother-child dyads, two families were un-contactable and three families returned their consent forms after data collection had been completed. Six dyads were excluded as the child met the exclusionary criteria.

Of those who met exclusionary criteria, two child scored in the ‘abnormal’ range for hyperactivity (SDQ) and another child scored in the ‘abnormal’ range for conduct problems (SDQ); another child scored in the ‘abnormal’ range for hyperactivity (SDQ), had a diagnosis of ADHD and had special educational needs; another child scored in the ‘abnormal’ range for hyperactivity (SDQ), had a diagnosis of ASD and had special educational needs; and a final child scored in the ‘abnormal’ range for hyperactivity (SDQ), had special educational needs and was receiving support in a mental health service. Please refer to the recruitment flowchart in Figure 3 that illustrates the recruitment procedure.



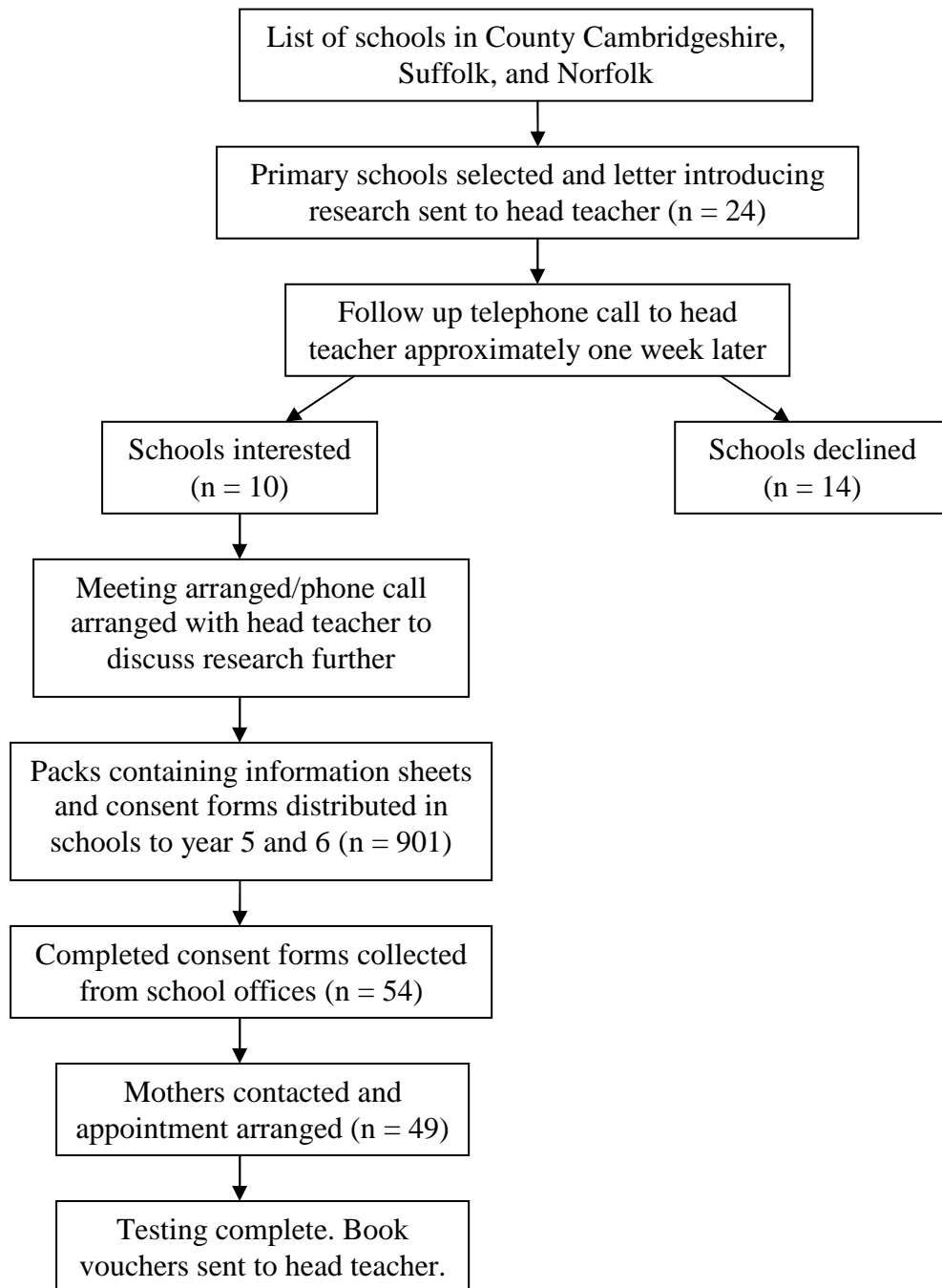


Figure 6. Recruitment flowchart

## Measures

### **Strengths and Difficulties Questionnaire (Goodman, 1997)**

The parent version of the SDQ was completed by the mother and was used to identify children with behavioural problems. The SDQ is a 25 item screening questionnaire, designed for children aged 3-16 years. It assesses psychological difficulties in five areas; emotional symptoms, conduct problems, hyperactivity/inattention, peer/relationship problems and pro-social behaviour. Parents rate each item about their child's behaviour over the last six months as not true (0), somewhat true (1), or certainly true (2). The total difficulties score is based on the sum of all the subscales with the exception of the pro-social subscale. Children who scored seven or over on the hyperactivity subscale and of four and above on the conduct problems subscales were excluded as these are the cut-offs for 'abnormal' functioning (Goodman, 1997).

Norms for the SDQ have been obtained from a large British survey of 5-15 year olds (Goodman, Simmons, Gatward, & Meltzer, 2000). Goodman (2001) reported acceptable internal consistency for the hyperactivity subscale ( $\alpha = .77$ ) and the conduct problems subscale (parent report) ( $\alpha = .80$ ). Goodman and Scott (1999) reported found that, the SDQ correlated highly with the Child Behaviour Checklist (Achenbach & Edelbrock, 1983) and a semi-structured parent interview the Parental Account of Child Symptoms (PACS; Taylor, Schachar, Thorley, & Wieselberg, 1986).

### **The Spence Children's Anxiety Scale - Child version (SCAS-C; Spence, 1998)**

The SCAS-C is a 45 item self-report measure that assesses: panic/agoraphobia, social anxiety, separation anxiety, generalised anxiety,

obsessions/compulsions and fear of physical injury. Children rate items as: never (0), sometimes (1), often (2), or always (3). Spence (1998) assessed the psychometric properties of this measure in a sample ( $n = 2052$ ) of 8-12 year olds and reported high overall internal consistency ( $\alpha = .92$ ), and variable subscale reliability (physical injury subscale  $\alpha = .60$ , social phobia scale  $\alpha = .70$ , separation anxiety social phobia scale  $\alpha = .70$ , obsessive-compulsive social phobia scale  $\alpha = .73$ , generalised anxiety social phobia scale  $\alpha = .73$ , and panic-agoraphobia). The test-retest reliability was also acceptable ( $r = .60$ ) over a six month period. Muris, Schmidt and Merckelbach (2000) also found the SCAS-C to have good internal consistency (full scale  $\alpha = .92$ ), test-test reliability ( $r = .60$ ).

Spence (1998) reported a correlation of ( $r = .71$ ) between the overall SCAS-C score and the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1978). Spence (1998) reported that the SCAS-C total scores were significantly higher among children with a diagnosis of social phobia and comorbid social and separation anxiety than in a non-clinical sample. In addition, children diagnosed with social phobia scored significantly higher on the social phobia subscale of the SCAS-C than the non-clinical children. Muris et al. (2000) similarly reported good construct validity for this scale. Notably, Spence observed significant age trends in the SCAS-C data with the mean scores declining with age for separation anxiety, obsessive-compulsive symptoms, and panic/agoraphobia symptoms. In contrast, the mean scores for the social phobia subscale increase between the ages of 9-11 years. Spence also found a predicted gender difference in the data, with girls presenting with higher overall scores on

the SCAS-C and on all the subscales with the exception of the obsessive-compulsive subscale.

**The Spence Children's Anxiety Scale – Parent version (SCAS-P; Spence, 1998)**

Mothers completed the 38 item SCAS-P which is rated in the same way as the SCAS-C. Nauta et al. (2004) reported that the SCAS-P had high internal consistency (total scale) in clinical and typically developing Australian and Dutch children aged 6-18 years (both samples  $\alpha = .89$ ). The subscale reliability scores were acceptable in the clinical sample (separation anxiety  $\alpha = .76$ , social phobia  $\alpha = .77$ , generalized anxiety  $\alpha = .75$ , panic/agoraphobia  $\alpha = .81$ , obsessive-compulsive disorder  $\alpha = .78$ , and physical injury fears  $\alpha = .61$ ). In the non-clinical group, these scores were not as high but acceptable (separation anxiety  $\alpha = .74$ , social phobia  $\alpha = .74$ , generalized anxiety  $\alpha = .67$ , panic/agoraphobia  $\alpha = .61$ , obsessive-compulsive disorder  $\alpha = .74$ , and physical injury fears  $\alpha = .58$ ). The SCAS-P demonstrated good construct validity as compared with diagnostic interviews with over 80% of the children's diagnoses correctly identified. Inter-correlations between mother and child ratings of anxiety across the subscales varied from .23 to .66 in the clinical and non-clinical samples, with the correlations were slightly higher in the non-clinical group. On the social anxiety subscale, a correlation of .55 was observed between child and parent ratings in the non-clinical group.

**The Social Phobia and Anxiety Inventory for Children (SPAI-C; Beidel, Turner & Morris, 1995)**

Children completed this 26 item self report questionnaire which assesses cognitive, somatic and behavioural aspects of social phobia in relation to a range

of social situations which children and adults. Each item is scored on a three point scale. Beidel et al. (1995) suggested that a score of over 18 indicates that social phobia is likely. Beidel et al. examined the psychometric properties of this scale in a sample of 154 children aged 8-17 years. In addition, diagnostic interviews based on DSM-III criteria were carried out with 122 children in this sample. The scale produced good internal consistency ( $\alpha = .95$ ) and good test-retest reliability ( $r = .86$ ) over a two week period. Beidel et al. reported that the scale differentiated between socially anxious children and children with other anxiety disorders. Convergent validity was also demonstrated by strong correlations between the SPAI-C and maternal reports of child anxiety on the Child Behaviour Checklist (Achenbach & Edelbrock, 1983). The SPAI-C was also observed to have good discriminative validity with 60% of children with other anxiety disorders correctly identified as not having social phobia and 87% of the social phobia group correctly identified as having social phobia.

**The Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, Dancu & Stanley, 1989)**

The SPAI was completed by mothers as a measure of self-reported social anxiety. The 45 item questionnaire was rated on a 7 point scale. The SPAI has two subscales: social phobia and agoraphobia. Turner et al. suggested that scores above 39 on the agoraphobia subscale are indicative of “possible panic disorder”. After the agoraphobia subscale is deducted from the social phobia subscale, a difference score of over 80 indicates “probable social phobia”, and a difference score of between 60 and 79 indicate “possible social phobia”.

In a non-clinical sample of 173 college students, Turner et al. (1989) reported that the SPAI had good test re-test reliability ( $r = .86$ ) and good internal

consistency on both scales (social phobia scale  $\alpha = .96$ ; agoraphobia scale  $\alpha = .85$ ). Osman et al. (1996) also reported acceptable internal consistency and confirmed the factor structure in two non-clinical samples. Amongst clinical populations, the scale demonstrated good discriminative validity (Turner et al.). In non-clinical samples, Osman et al. (1996) observed that the SPAI had good convergent validity due to significant correlation with other measures of social anxiety.

### **The Ambiguous Situations Questionnaire (ASQ; Creswell et al., 2005, 2006)**

In order to assess social-threat interpretation in children and their mothers, three versions of the Ambiguous Situations Questionnaire (Barrett et al., 1996; Butler & Mathews, 1983: as modified by Creswell et al., 2005, 2006) were used. The ambiguous situation method involves reading ambiguous situations to the participant. An example of an ambiguous situation is “You are staying over at a friend’s house and their parents seem to be very angry”. The participant is then asked how upset they would be, what they would think is happening and what they would do in that situation. The interpretations of what is happening are coded as either a threatening or a non-threatening interpretation. In this example, a threatening interpretation might be “They don’t want me to be there and are angry at me”, and a non-threatening interpretation might be “They had an argument and are upset with each other”. In addition, participants are also asked to choose between two forced choice interpretations of what is happening in the situation, one of which is a threatening interpretation and the other is a non-threatening interpretation.

This study employed three versions of the task including a child self-report (ASQ-c), a parent-report on expectations of their child (ASQ-pc), and a

parent self-report (ASQ-p) as used by Creswell et al. (2005, 2006). Each questionnaire consisted of 12 ambiguous situations. Half referred to physical threats (e.g., “On the way to school you start to feel sick in the tummy”) and half to social threats (e.g., “You see a group of children from another class playing a great game. When you walk over to join in they are laughing”). These situations were read in random order to the children and mothers separately and four questions are asked:

- “How upset are you about this?”/“How upset is [child’s name] about this?” [distress score]
- “What do you think is happening?”/“What would [child’s name] think is happening?” [free-choice threat score]
- “What will you do about it?” “What will your child do about it?” [behaviour/avoidance score]
- “Which of the following explanations do you think is most likely?” [forced-choice score; one threat and one neutral interpretation was read to the child/each mother in random order]

The child self-report version of the task asked the child to imagine that they are in the situation. In the parent-report on exceptions of their child version of the questionnaire, the mother was asked to imagine that her child was in the situation and to guess what the child would think and do in the situation. The parent self report used adult-appropriate scenarios (Butler & Mathews, 1983). Creswell et al. (2005, 2006) reported that all three versions of this measure have demonstrated acceptable internal reliability ( $\alpha = .82 - .90$ ), were significantly inter-correlated and were significantly correlated with child anxiety. The internal consistency of these scales is presented in the results section. In addition, a

second independent rater (a trainee clinical psychologist) rated 50% of the free-choice threat score across all three questionnaires and inter-rater reliability analysis using the Kappa statistic was performed to determine consistency among the raters (see results section).

### **Procedure**

After receiving the signed consent form from the mother through their school, the researcher made the initial telephone call to the mother at a convenient time. The researcher gave the mother more information about the research and answered any questions the mother had. If the mother was still interested in getting involved in the study, an appointment was arranged with the mother to complete the research. Half of the schools expressed a preference for the interviews to be completed in the child's family home due to space restrictions at the school and all participants were happy to complete the questionnaires with the researcher in the family home. On meeting the child, the child completed an assent form (Appendix E) after reminding them of the information in the information sheet (Appendix B). The child then completed the SCAS-C and the SPAI-C with help from the researcher when necessary. The researcher then administered the ambiguous situation task. Mothers completed the SDQ, SCAS-P, the SPAI and the two versions of the ambiguous situations task (ASQ-p and ASQ-pc) themselves unless they required assistance.

At the end of testing the mother was asked if she would like to be sent a summary of the research findings once it was completed. If the head teachers and mothers requested them, a summary of the findings was sent to them on the completion of the research. For each child that took part, their school received a £4 book token.



## **Ethical Considerations**

### **Ethical approval**

Ethical approval was granted through the University of East Anglia Faculty of Health ethics committee in July 2010 (Reference 2009/10-054). In November 2010, an amendment was requested and accepted to allow the research to also recruit from schools in Suffolk. In April 2011 an amendment was requested and accepted to allow the research to also recruit from schools in Norfolk.

### **Confidentiality**

Participation was voluntary, as detailed in the mother and child information sheets. Initial contact with the mother was made after they returned their consent form and the child was asked to complete an assent form before taking part. Participant names were replaced with numerical codes on all research documents to ensure confidentiality. The key to the codes was kept in a locked cabinet and no identifying information was included in any study reports.

### **Consent**

Full information about the study was sent to the child and mother to ensure consent was informed. Written consent was obtained from mothers before telephone contact was made. Consent was also confirmed with the child and the mother at the start of the research interview.

### **Research Risks**

There were no known risks to the families taking part in this research. The content of the measures was not believed to cause any significant harm.

### **Data Storage**

Hard copies of the consent and assent forms and completed questionnaires were kept in a locked cabinet at the researcher's home whilst the research took place. Only anonymised data was entered into the computer software SPSS, thus participants were unidentifiable. After the research is completed consent and assent forms containing personal data will be shredded to protect confidentiality. Hard copies of participant data (i.e. questionnaire responses) and all electronic data will only be identifiable by a participant number, and will be kept for five years after submission (UEA Faculty of Health Guidelines, 2010).

### **Data Analysis Procedure**

Prior to testing the hypotheses outlined in the introduction, the raw data was initially screened for anomalous results and missing data. The raw data was then imputed anonymously into a Statistical Package for the Social Sciences (SPSS) spreadsheet for analysis.

The distribution of scores on each scale was then assessed by investigating the plots for shape, checking skewness and kurtosis values and using the Shapiro-Wilk statistic to test for non-normal distribution. If a scale was not normally distributed, I attempted to transform the scale. If the transformation was unsuccessful, a non-parametric analysis was employed during hypothesis testing. Descriptive data was computed for each scale also. Gender differences on the scales were investigated using t-tests for the data normally distributed and using the Mann Whitney *U* test for the data not normally distributed. Gender differences in reported anxiety symptom levels above the clinical cut off were investigated using the Fisher's Exact Probability test.

To analyse hypotheses one, two, four, five, and seven (as outlined in the introduction), one-tailed correlations were used to assess the association between the variables. A parametric statistical test (Pearson's  $r$ ) was applied to the normally distributed data and a non-parametric test (Spearman's  $\rho$ ) to the not normally distributed data. For hypotheses three and six, initially correlations between social anxiety and maternal expectations of child social-threat interpretations, and correlations between social anxiety and physical-threat, were calculated. These correlation coefficients were then compared using a standardised score ( $z$ ) as recommended by Meng, Rosenthal, and Rubin (1992). The differences between compared coefficients were used to investigate whether social anxiety was more strongly associated with either social-threat or physical-threat.

## **Chapter 3**

### **Results**

#### **Overview**

This chapter presents the results of the current study. The chapter begins by reporting descriptive data on the symptom measures and on the three ambiguous situations tasks. The distributions of each scale were assessed and data transformations reported when data were not normally distributed. The research hypotheses are then addressed in turn.

#### **Anxiety Symptoms Measures**

##### **Missing Values**

There was no missing data across the scales assessing anxiety symptoms, namely the SCAS-C (Spence, 1998), the SCAS-P (Spence, 1998), the SPAI-C (Beidel et al., 1995) and the SPAI (Turner et al., 1989).

##### **Children's Questionnaire Scores**

Children completed the SCAS-C (Spence, 1998) and the SPAI-C (Beidel et al., 1995). Table 1 shows the means, standard deviations, ranges, and percentage of children scoring at or above the elevated cut-offs for boys and girls on both measures. The distribution of scores on the SCAS-C and the SPAI-C were assessed by investigating the plots for shape, checking skewness and kurtosis values and using the Shapiro-Wilk test for non-normal distribution.

Table 1

*Descriptive Data for the Spence Children's Anxiety Scale and Social Phobia**Inventory*

<b>SCAS-C</b>								
	All ( <i>n</i> = 43)		Boys ( <i>n</i> = 21)			Girls ( <i>n</i> = 22)		
	Mean ( <i>SD</i> )	Range	Mean ( <i>SD</i> )	Range	% over cut- off	Mean ( <i>SD</i> )	Range	% over cut- off
Total	28.0 (11.7)	9-59	25.8 (9.8)	10-47	9.5%	30.1 (13.1)	5-59	9%
Panic/ago raphobia	3.2 (2.7)	0-10	3 (2.1)	0-10	4.8%	3.3 (3.2)	0-10	9%
Separatio n anxiety	4.2 (2.7)	1-11	3.6 (2.6)	1-11	9.5%	4.7 (2.7)	1-11	13.6%
Physical injury	4.1 (3.0)	0-13	3.5 (2.8)	0-9	28.6%	4.7 (3.1)	0-13	31.8%
Social phobia	5.0 (2.6)	1-14	4.7 (1.8)	1-8	4.8%	5.2 (3.2)	1-14	9%
OCD	5.7 (2.8)	0-10	5.8 (2.6)	1-10	9.5%	5.7 (3.0)	0-10	13.6%
GAD	5.8 (2.6)	1-14	5.2 (2.1)	1-10	9.5%	6.5 (3.0)	2-14	13.6%
<b>SPAI-C</b>								
	All ( <i>n</i> = 43)		Boys ( <i>n</i> = 21)			Girls ( <i>n</i> = 22)		
	Mean ( <i>SD</i> )	Range	Mean ( <i>SD</i> )	Range	% over cut- off	Mean ( <i>SD</i> )	Range	% over cut- off
Total	15.1 (8.2)	0-32	15.9 (7.2)	0-29	24%	14.5 (9.3)	0-32	27%

All scales and subscales were normally distributed except the social phobia subscale of the SCAS-C. This subscale demonstrated positive skew, evident by looking at the plots, and confirmed by a significant Shapiro-Wilk statistic,  $W(43) = .92, p < .01$ . The subscale was transformed using a square root transformation and following this a logarithm transformation, both of which were unsuccessful, therefore the original scale values were used in a non-parametric analysis. On the SCAS-C (Spence, 1998) and the SPAI-C (Beidel et al., 1995), the group means were in the non-elevated range. There were no significant gender differences observed across the subscales of the SCAS-C or the SPAI-C (Table 2). Table 1 shows that more girls than boys reported symptoms above the clinical cut off but this was not significant (Fisher's Exact Probability test: Table 3).

Table 2

*Non-significant Gender Differences on Self-report Measures of Anxiety*

Measure	Boys Mean score	Girls Mean score	T value	Significance value (2 tailed)
Panic/agoraphobia*	3	3.3	-.40	.700
Separation anxiety*	3.6	4.7	-1.43	.162
Physical injury*	3.5	4.7	-1.27	.211
Social phobia*	4.7	4.8	-	.753**
OCD*	5.8	5.7	.09	-.927
GAD*	5.2	6.5	-1.60	.118
Total SCAS-C score	25.8	30.1	-1.22	.228
Total SPAI score	15.9	14.5	.55	.583

*Note.* \* = subscale score from SCAS-C. OCD = obsessive compulsive disorder, GAD = generalised anxiety disorder, SCAS-C = Spence Children's Anxiety Scale (child version), SPAI = Social Phobia and Anxiety Inventory. \*\* = A Mann Whitney *U* test was used to investigate gender difference on the social phobia subscale as the distribution did not meet criteria for normal distribution.

Table 3

*Fisher's Exact Test Significance Values for Boys and Girls Elevated Scores on all Self-Report Measures*

Measure	Boys elevated scores count	Girls elevated scores count	Fisher's Exact Test significance value (2 tailed)
Panic/agoraphobia*	1	2	1.000
Separation anxiety*	2	3	1.000
Physical injury*	6	7	1.000
Social phobia*	1	2	1.000
OCD*	2	3	1.000
GAD*	2	3	1.000
Total SCAS-C score	2	2	1.000
Total SPAI score	5	6	1.000

*Note.* \* = subscale score from SCAS-C. OCD = obsessive compulsive disorder, GAD = generalised anxiety disorder, SCAS-C = Spence Children's Anxiety Scale (child version), SPAI = Social Phobia and Anxiety Inventory.



## Mothers' Questionnaire Scores

Mothers completed the SCAS-P (Spence, 1998) in relation to their child's symptoms of anxiety and the SPAI (Turner et al., 1989) to assess their own symptoms of social anxiety. The means, standard deviations, and ranges on both measures are presented in Table 4 and Table 5. There are no published clinical cut-offs available for the SCAS-P, therefore the percentage of children scoring at or above the elevated cut-offs for boys and girls could not be calculated. The distribution of scores was assessed by investigating the plots for shape, checking skewness and kurtosis values and using the Shapiro-Wilk test for non-normal distribution. Only the physical injury subtest of the SCAS-P was normally distributed. The total SCAS-C subscales were all positively skewed. Square root transformation successfully transformed the total scale and the separation, social phobia and GAD subscales. As this transformation was unsuccessful for the panic/agoraphobia and OCD subscales, a logarithm transformation was used; this was not successful. Therefore non-parametric statistics were used with the panic/agoraphobia and OCD subscales. There was no significant gender difference in mother's assessments of their child's level of anxiety or any of the SCAS-P subscales (Appendix I, Table J3). A series of Pearson's  $r$  and Spearman's  $\rho$  correlations were conducted to explore relationships between the SCAS-C and SCAS-P total scales and subscales (Appendix I, Table J4). There were significant correlations between mothers' and children's ratings of child anxiety on the SCAS-C and SCAS-P; total scores,  $r(43) = .32, p < .05$ , social phobia subscale,  $\rho(43) = .39, p < .01$ .

For the SPAI (Turner et al., 1989) three scores were calculated; a social phobia score, an agoraphobia score and a pure social phobia score (the difference

left after agoraphobia symptoms are subtracted from the initial social phobia score). More mothers scored above the cut-off for elevated social phobia than for elevated agoraphobia. This difference was examined using a 2x2 Fisher's Exact Probability test and was significant,  $p < .01$ . There was no significant correlation between the SPAI pure social phobia score and the SPAI-C total score.

### **Severity of Anxiety Scores**

The percentage of participants who scored above the clinical cut-off could be calculated on the SPAI-C, the SCAS-C, and the SPAI. On the SPAI-C, 24% of boys and 27% of girls scored above the clinical cut-off for "likely social phobia". On the social phobia subscale of the SCAS-C, 4.8% of boys and 9% of girls scored above the clinical cut-off for symptoms of social phobia. On the full SCAS-C, 9.5% of boys and 9% of girls scored above the clinical cut-off for anxiety symptoms. Although more girls than boys reported symptoms above the clinical cut off but this was not significant on the SPAI-C or the SCAS-C (Fisher's Exact Probability test: Table 6) Finally, 18.6% of mothers scored above the clinical cut-off for "probable social phobia".

Table 4

*Descriptive Data for the Spence Children's Anxiety Scale (Parent Report)*

	All ( <i>n</i> = 43)		Boys ( <i>n</i> = 21)		Girls ( <i>n</i> = 22)	
	Mean ( <i>SD</i> )	Range	Mean ( <i>SD</i> )	Range	Mean ( <i>SD</i> )	Range
Total	18.4 (10.0)	4-44	16.7 (7.6)	4-36	20.1 (11.8)	5-44
Panic/agoraphobia	1.2 (1.5)	0-5	0.9 (1.3)	0-4	1.5 (1.6)	0-5
Separation anxiety	3.5 (3.0)	0-13	2.9 (1.9)	0-8	4.1 (3.7)	0-13
Physical injury	3.3 (2.3)	0-9	2.9 (1.9)	0-7	3.6 (2.6)	0-9
Social phobia	5.4 (2.9)	0-13	5.3 (2.4)	1-11	5.5 (3.3)	0-13
OCD	1.4 (1.5)	0-6	1.3 (1.2)	0-3	1.6 (1.8)	0-6
GAD	3.7 (2.1)	0-9	3.4 (2.0)	0-8	3.9 (2.3)	1-9

Table 5

*Descriptive Data for Mothers' Social Phobia and Anxiety Inventory*

Scale	Mean	Standard Deviation	Range	% above Cut-Off
Overall Social Phobia	71.5	40.0	10-188	-
Agoraphobia	17.6	16.2	0-77	9.3%
Pure Social Phobia (difference score)	53.9	28.6	-7-135	18.6%

Table 6

*Non-significant Gender Differences in Mothers' Report of Children's Anxiety*

Measure	Boys mean score	Girls Mean score	T value	Significance value (2 tailed)
Panic/agoraphobia*	0.9	1.5	186.50**	.250**
Separation anxiety*	2.9	4.1	-.43	.671
Physical injury*	2.9	3.6	-1.11	.272
Social phobia*	5.3	5.5	.19	.853
OCD*	1.3	1.6	224.50**	.869**
GAD*	3.4	3.9	-.70	.491
Total	16.7	20.1	-.89	.378

*Note.* \* = subscale score from SCAS-P. OCD = obsessive compulsive disorder, GAD = generalised anxiety disorder, SCAS-C = Spence Children's Anxiety Scale (parent report), SPAI = Social Phobia and Anxiety Inventory. \*\* = A Mann Whitney *U* test was used to investigate gender difference on this subscale as the distribution did not meet criteria for normal distribution.

## **Ambiguous Situations Questionnaires**

### **Missing Values**

There were six missing values for one dyad's ASQ (p) and four missing values for another dyad's ASQ (pc). These cases were excluded from analysis using these data.

### **Data Management and Parametric Assumptions**

Following the scoring system used by Creswell et al. (2006), a 'distress' score was calculated for each questionnaire by totalling all twelve distress scores (range 0–120) and an average score was used in the analysis. Two 'threat' scores were calculated; the first by totalling the number of free-threat responses, and the second by totalling the forced-choice threat responses across the twelve situations. Creswell et al. (2006) combined the total free-threat responses and the forced-choice threat responses to create a 'combined threat' score as the responses from the free-threat and forced-choice responses were highly correlated ( $r = .70$  to  $.84$ ). Similarly in this study, the free-threat scores correlated highly with the forced-choice scores across the three questionnaire ( $r = .82$  to  $.84$ ; Table 7), and were therefore combined in the analysis. An 'avoidance' score was calculated by summing all twelve responses to the behaviour question.

Table 7

*Correlations between SCAS-C and SCAS-P Total Scale and Subscales*

	SCAS-P Total	SCAS-P Panic	SCAS-P Separation	SCAS-P Physical injury	SCAS-P Social phobia	SCAS-P OCD	SCAS-P GAD
SCAS-C Total	.32*						
SCAS-C Panic		-.03					
SCAS-C Separation anxiety			.34*				
SCAS-C Physical injury				.42**			
SCAS-C Social phobia					.39**		
SCAS-C OCD						.17	
SCAS-C GAD							.14

\* = correlation significant at 0.05 level (one-tailed)

\*\* = correlation significant at 0.01 level (one-tailed)

To assess specific interpretations of social-threat, a 'social situations' subscale was created using the responses from the six social items on each scale and a 'physical situations' subscale was created using the responses for the six physical items on each scale. The same scores were calculated (distress, free-threat, forced-choice threat and avoidance) for each subscale. Similarly a combined threat score was created for the subscales as the free-threat scores and forced-choice score correlated ( $r = .65 - .88$ ; Table8). As there was no published data testing the reliability of the various indices on the social situations subscale physical situations subscale, the Cronbach alpha coefficients for distress, combined threat avoidance across the subscales were investigated (Table 9). Distress and combined threat scores demonstrated acceptable internal consistency on all three measures, with the exception of the ASQ (c) combined threat score on the physical situations subscale ( $\alpha = .64$ ). The avoidance score was reported as reliable for the ASQ (p) only, and demonstrated unacceptable internal consistency across the subscales on the ASQ (c) and the ASQ (pc). The avoidance scales of the ASQ (c) and the ASQ (pc) could not be used in the analysis due to unacceptable reliability scores.

Table 8

*Correlations between Free-threat and Forced-choice Threat-interpretations on the Ambiguous Situations Questionnaires*

Scale	Total Items		Social Items		Physical Items	
	Pearson's $r$ (Spearman's $\rho$ )	$p$	Pearson's $r$ (Spearman's $\rho$ )	$p$	Pearson's $r$ (Spearman's $\rho$ )	$p$
ASQ (c)	.88 (.88)	.000	.75 (.75)	.000	.82 (.82)	.000
ASQ (p)	.82 (.84)	.000	.82 (.79)	.000	.65 (.67)	.000
ASQ (pc)	.88 (.85)	.000	.82 (.79)	.000	.85 (.80)	.000

*Note.* \* = the correlation between the free threat and forced threat responses was non-significant.



Table 9

*Scale Reliability Information for the Ambiguous Situations Questionnaires*

Scale	Total Items	Social Items	Physical Items
	Cronbach's Alpha	Cronbach's Alpha	Cronbach's Alpha
<i>Child Measure</i>			
ASQ distress (c)	.80	.70	.74
ASQ combined threat (c)	.80	.78	.64*
ASQ avoidance	.35*	.18*	-.005*
<i>Mother Measures</i>			
ASQ distress (pc)	.80	.72	.77
ASQ combined threat (pc)	.84	.81	.80
ASQ avoidance (pc)	.66*	.60*	.56*
ASQ distress (p)	.89	.76	.81
ASQ combined threat (p)	.88	.77	.87
ASQ avoidance (p)	.80	.84	.76

*Note.* \* = scales demonstrating unacceptable reliability for analysis.

High inter-rater reliability was found for the free-choice threat response across all three versions of the ASQ. For ASQ (c), Kappa = .92, 95% C.I. 87-94,  $p < .001$ ; for ASQ (p), Kappa = .96, 95% C.I. .92-.98,  $p < .001$ , and for ASQ (pc), Kappa = .93, 95% C.I. 88-.96,  $p < .001$ . The distribution of scores on the three ASQ scales and subscales was assessed by investigating the plots for shape, checking skewness and kurtosis values and using the Shapiro-Wilk test for non-normal distribution. The distress and combined threat scores were normally distributed across all subscales of the three ASQs. The ASQ (p) avoidance scores were positively skewed. Square root and log transformations were unsuccessful; therefore the ASQ (p) avoidance scores scale was analysed using non-parametric statistics.

### **Descriptive Data**

Table 10 presents descriptive data for the three ASQ subscales. ASQ (c) and the ASQ (pc) means were higher for distress, threat and avoidance on the social situations scale than the physical situations scale. On the ASQ (c), this difference was significant for distress,  $t(42) = 5.83$ ,  $p < .001$ , but not for threat. On the ASQ (pc), the difference was significant for distress,  $t(41) = 3.25$ ,  $p < .01$ , and non-significant for threat. On the ASQ (p), means were also higher on the social situations scale for the avoidance score, however on the distress and threat scores means were higher on the physical situations scales than social situations scales. On the ASQ (p) a significant difference was observed for distress,  $t(41) = -8.41$ ,  $p < .001$ , but was not significant for threat. Using a Wilcoxon Signed Rank for non-parametric samples, a significant difference were observed on the ASQ (p) for avoidance with mothers displaying more avoidance in the social situations than physical situations,  $t(42) = -1.61$ ,  $p < .001$ . a series

of independent t-tests revealed no significant child gender differences across distress and threat-interpretations scores across the total scales and subscales of the ASQ(c) and the ASQ (pc) (Table 11).

Table 10

*Descriptive Data for the Ambiguous Situations Task (Child Self-report version, Child Parent-report, and Parent Self-report)*

Scale	Total Items		Social Items		Physical Items	
	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range
<i>Child Measure</i>						
ASQ (c) distress	48.7 (18.7)	10-103	29.0 (10.1)	7-57	19.7 (11.1)	0-46
ASQ (c) combined threat	9.1 (5.0)	1-22	5.0 (3.2)	0-11	4.1* (2.7)	0-12
<i>Mother Measures</i>						
ASQ (pc) distress	60.7 (18.4)	22-105	33.4 (10.8)	11-57	27.3 (11.1)	4-56
ASQ (pc) combined threat	10 (5.3)	1-23	5.0 (3.3)	0-12	4.9 (3.0)	0-12
ASQ (p) distress	61.3 (20.6)	16-114	20.6 (9.6)	1-46	40.7 (12.4)	5-58
ASQ (p) combined threat	10.3 (5.8)	0-24	3.5 (2.1)	0-9	9.7 (4.7)	3-23
ASQ (p) avoidance	2.0 (2.5)	0-11	1.2 (1.4)	0-5	.8 (1.4)	0-6

*Note.* \* = This subscale score needs to be interpreted with caution as it did not meet an acceptable score for internal consistency. ASQ (c) = Ambiguous Situations Questionnaire Child Report; ASQ (pc) = Ambiguous Situations Questionnaire Parent Report on Child (Expectations); ASQ (p) = Ambiguous Situations Questionnaire Parent Report on self-relevant situations.

Table 11

*Non-significant T-tests examining Gender Differences Across the Ambiguous Situations Questionnaires*

Measure	Boys mean score (SD)	Girls Mean score (SD)	T value	Significance value (2 tailed)
<i>ASQ (c)</i>				
Total Distress	4.21 (1.31)	3.91 (1.78)	.65	.52
Total Threat	9.38 (4.57)	8.86 (5.47)	.34	.74
Social Distress	5.02 (1.53)	4.65 (1.83)	.71	.48
Social Threat	4.95 (2.71)	5.05 (3.63)	-.10	.92
Physical Distress	3.41 (1.67)	3.16 (2.09)	.44	.66
Physical Threat	4.429 (2.675)	3.82 (2.81)	.73	.47
<i>ASQ (pc)</i>				
Total Distress	5.19 (1.39)	4.93 (1.69)	.56	.58
Total Threat	10.05 (5.08)	9.95 (5.67)	.06	.95
Social Distress	5.52 (1.64)	5.58 (1.99)	-.11	.92
Social Threat	5.00 (2.98)	4.90 (3.70)	.10	.92
Physical Distress	4.86 (1.53)	4.25 (2.12)	1.07	.29
Physical Threat	5.05 (3.02)	4.70 (3.11)	.36	.72

## Hypothesis Testing

This section addresses the hypotheses outlined at the end of the introduction.

### Maternal Anxious Cognitions and Child Anxious Cognitions

Hypothesis One (A): It is hypothesised that mothers' threat-interpretations in self-relevant social situations will be positively correlated with children's social-threat interpretations.

There was a significant correlation between mothers' interpretations of their own social environment and children's social-threat interpretations,  $r(42) = .54, p < .001$  (one-tailed).

Hypothesis One (B): It is hypothesised that mothers' cognitions about distress in self-relevant social situations will be positively correlated with children's cognitions about social-distress.

There was a significant correlation between maternal distress and child distress in ambiguous social situations,  $r(42) = .38, p < .01$  (one-tailed).

### Child Anxiety and Child Anxious Cognitions, and Maternal Expectations

Hypothesis Two (A): It is hypothesised that child-reported social anxiety symptoms will be positively correlated with mothers' anxious expectations of their child's threat- interpretations in social situations.

There was a significant positive correlations between children's social anxiety on the SPAI-C and mothers' expectations of child social-threat,  $r(42) = .48, p < .001$  (one-tailed). The same relationship was also found between the social phobia subscale of the SCAS-C (Spence, 1998) and mothers' expectations of child social-threat,  $r(42) = .46, p < .001$  (one-tailed). Finally, the social

phobia subscale on the SCAS-P (Spence, 1998) was also associated with mothers' expectations of child social-threat,  $r(42) = .64, p < .001$  (one-tailed).

Hypothesis Two (B): It is hypothesised that child-reported social anxiety symptoms will be positively correlated with mothers' anxious expectations of their child's distress in social situations.

There was a significant positive correlations between children's social anxiety on the SPAI-C and mothers' expectations of child social distress,  $r(42) = .45, p < .001$  (one-tailed). The same relationship was also found between the social phobia subscale of the SCAS-C (Spence, 1998) and mothers' expectations of child social distress,  $\rho(42) = .36, p < .01$  (one-tailed). Finally, the social phobia subscale on the SCAS-P (Spence, 1998) was also associated with mothers' expectations of child social distress,  $r(42) = .60, p < .01$  (one-tailed).

Hypothesis Three: It is hypothesised that child social anxiety will be more strongly positively correlated with maternal expectations of child social-threat interpretations than with physical-threat interpretations.

The correlation between social-threat and social anxiety was compared with the correlation between maternal expectations of child physical-threat and social anxiety. Table 11 shows the correlations between anxiety symptoms and maternal expectations of child physical-threat and social anxiety. There was a significant difference between the correlations;  $z(42) = 2.46, p < .05$ . There was no significant difference between the correlation of physical-threat and social anxiety symptoms on the SCAS-C and social-threat and social anxiety symptoms. There was also no significant difference between the correlation of physical-threat and social anxiety symptoms on the social phobia subscale of the SCAS-P (Spence, 1998) and social-threat and social anxiety symptoms.

Table 12

*Correlations between Anxiety and Ambiguous Situations Questionnaire Scores*

	SPAI	SPAI- C	SCAS- C Social Phobia	SCAS-P Social Phobia	SCAS- C Total Anxiety	SCAS-P Total Anxiety
ASQ (pc) social distress	.05	.45**	.29* <sup>R</sup>	.56**	.25	.57**
ASQ (pc) physical distress	-.15	.22	.19 <sup>R</sup>	.24	.08	.46**
ASQ (pc) social threat	-.05	.48**	.46* <sup>R</sup>	.58**	.43**	.55**
ASQ (pc) physical threat	-.11	.10	.15 <sup>R</sup>	.19	.09	.38*

*Notes.* \* = Correlation significant at 0.05 level, \*\* = Correlation significant at 0.01 level. ASQ (pc) = Ambiguous Situations Questionnaire Parent Report on Child (Expectations).<sup>R</sup> denotes when the Spearman's *rho* statistic was used for scales that were not normally distributed. The remainder of the correlations were calculated using the Pearson's *r* statistic.



Hypothesis Four (A): It is hypothesised that children's social-threat interpretations will be positively correlated with mothers' expectations of their child's threat-interpretations in social situations.

There was a positive correlation between mothers' expectations of their child's social-threat interpretations and child-reported social-threat,  $r(42) = .27$ ,  $p < .05$  (one-tailed).

Hypothesis Four (B): It is hypothesised that children's social-distress will be positively correlated with mothers' expectations of their child's distress in social situations.

There was a positive correlation between mothers' expectations of their child's distress and child social distress,  $r(42) = .40$ ,  $p < .01$  (one-tailed).

### **Maternal Anxiety and Maternal Anxious Cognitions, and Maternal Expectations**

Hypothesis Five (A): It is hypothesised that maternal symptoms of social anxiety will be positively correlated with mothers' expectations of their child's interpretations of social situations.

There were no significant correlations found between mothers' self-reported social anxiety and mothers' expectations of their child's threat-interpretation in social situations.

Hypothesis Five (B): It is hypothesised that maternal symptoms of social anxiety will be positively correlated with mothers' expectations of their child's distress in social situations.

There were no significant correlations found between mothers' self-reported social anxiety and mothers' expectations of their child's social distress.

Hypothesis Six: It is hypothesised that maternal social anxiety will be more strongly associated with mothers' expectations of child social-threat interpretations than with mothers' expectations of child physical-threat interpretations.

This hypothesis was not tested as no significant correlations were found between maternal social anxiety and mothers' expectations of child social-threat interpretations.

Hypothesis Seven (A): It is hypothesised that mothers' own threat-interpretations in self-relevant social situations will be positively correlated with mothers' expectations of their child's threat-interpretations of social situations.

There was a positive correlation between mothers' expectations of their child's distress and mothers' own distress in social situations,  $r(42) = .31, p < .05$  (one-tailed).

Hypothesis Seven (B): It is hypothesised that mothers' own distress in self-relevant social situations will be positively correlated with mothers' expectations of their child's distress in social situations.

There was a non-significant correlation between mothers' expectations of their child's threat-interpretations and mothers' threat-interpretations in social situations.

## **Chapter 4**

### **Discussion**

#### **Chapter Overview**

The aim of this chapter is to summarise the main research findings, and discuss their contribution to current theory, clinical practice, and future research in the field. To begin with a summary of the findings is presented. Next the methodology of the study is critically reviewed in terms of design, sampling strategies, measures and analyses used to answer the research questions. Following this the main findings are interpreted in relation to previous research. The implications of the present findings for theory and clinical practice are explored and future research suggestions are made. The chapter ends with a summary of the thesis and the main conclusions.

#### **Research Findings Summary**

This section will briefly summarise the main research findings. Positive correlations were found between mothers' distress and threat-interpretations in self-relevant social situations and child reported distress and threat-interpretations in social situations. There was also a significant association between child reported social anxiety and mothers' expectations of their children's social-threat interpretations and social distress. In addition, on the main child social phobia scale (the SPAI-C), this relationship was found to be specific to social-threat interpretations as compared with physical-threat interpretations. Similarly, positive correlations were observed between children's own interpretations and distress in social situations and mothers' expectations of their child's social-threat and social distress.

There was no support for the hypothesis investigating a correlation between mothers' social anxiety and mothers' expectations of child social-threat and social distress. However, a positive correlation was found between mothers' social-distress in self-relevant social situations and mothers' expectations of child social-distress, while the relationship between maternal social-threat and maternal expectations of child social-threat was non-significant.

### **Methodological Critique**

The results from this study need to be considered in light of the research methodology. In this section the design, sampling and measures used will be evaluated.

#### **Design**

The current study employed a between and within participants (child and mother dyads) cross-sectional correlation design. This design allowed the researcher to explore both within-groups investigations (the links between maternal social anxiety/threat-interpretation, and maternal expectations of child social-threat) and between groups investigations (associations between maternal and child interpretations of social situations). The correlational nature of the design however meant that it was not possible to ascertain the causal nature of the associations observed. Only a handful of studies investigating the intergenerational links between cognitive biases have experimentally manipulated variables in order to test the effect of one variable on another with a few exceptions (e.g., Creswell, O'Conner, & Brewin, 2008; Gallagher & Cartwright-Hatton, 2009). For instance, Creswell et al. (2008) found that parents who were given negative expectations about how their child would experience a puzzle task displayed increased levels of involvement during the task, as

compared with parents who were given positive expectations. This suggests that parental expectations about children's vulnerability influenced the level of parenting behaviour.

### **Sampling**

This study recruited a community sample of children and their mothers. The sampling procedure mimicked that used by Creswell et al. (2006) and Creswell and O'Connor (2006).

**Sample size.** The required sample size of 64 was not achieved in this study, thus reducing the study's statistical power to detect associations and differences. Of the 49 child-mother dyads interviewed, six pairs were excluded from the analysis as they met exclusionary criteria. The use of these stringent exclusion criteria meant that the study recruited typically developing children only, thus controlling for potential confounding variables. Notably, children with oppositional problems were excluded from the study based on Barrett et al.'s (1996) findings that oppositional children were just as likely to interpret ambiguous scenarios in a more threatening manner as anxious children (Barrett et al., 1996). The SDQ (Goodman, 1997) used in this study to help identify oppositional children is a well validated and a reliable measure for detecting hyperactivity and conduct disorder (e.g., Mathai, Anderson, & Bourne, 2004).

**Child age.** This study recruited children who fell within a narrow age range in order to minimise the potential confounding effect of cognitive development at different points in children's development. This particular age group was chosen because it is around this age (late childhood) that children begin to make social comparisons and have the capacity to see themselves as other people perceive them (Cole et al., 2001). Both are necessary capacities for

the potential to feel socially anxious and make negative interpretations about social situations. In addition, in late childhood parents are still highly influential in a young person's life, whereas in adolescence young people gradually become more influenced by their peers than their parents (Coleman, 1980). Therefore this age group was highly suitable for exploring hypotheses related to intergenerational transmission of cognitive biases and social anxiety.

**Community sample.** A non-clinical community sample was chosen for a number of reasons. Firstly, community samples are easier to recruit and this allowed the researcher to focus on one age group whereas clinical samples typically include children with broad age ranges due to recruitment difficulties. Secondly, social anxiety and cognitive biases are thought to exist on a continuum from non-clinical to clinical samples differing only in degree rather than kind (Harvey, 2004; Rapee, 1995), therefore we would expect similar relationships between cognitive biases and anxiety symptoms in non-clinical populations. Finally, investigating these constructs in community samples is important for informing preventative interventions in schools and communities, such as the Friends programme (Dadds, Spence, Holland, Barrett, & Laurens, 1997).

However the difficulty with using community samples is establishing whether the results found in these samples generalise to clinical populations. Community samples do not always present with a sufficient number of participants with high anxiety symptoms in order to find significant associations and differences. Although the SPAI and the SPAI-C scores were normally distributed, only a small percentage of participants scored at or above the clinical cut-off. This was particularly true for maternal social anxiety. Overall then the sample had relatively low social anxiety symptoms and may not have been

socially anxious enough to find significant associations with specific cognitive biases.

**School selection.** A systematic approach to school selection was not used in this study. Schools were approached based on local knowledge and information from previous research completed in the area. In addition, due to the nature of the recruitment there was a self-selection response bias in relation to both the participating schools and the participants themselves. Unfortunately, many schools did not wish to participate in this research due to existing commitments such as inspectors, exams and other research projects, and the head teachers who did get involved in the study typically had an interest in the area. Future research might consider alternative recruitment strategies such as advertisements in newsletters or posters at children's social clubs.

**Response rate.** The recruitment response rate in this study was poor (6%), particularly in comparison to similar studies (e.g., 27% in Creswell et al., 2006). One potential reason for the low response rate may have been the necessity for agreement from both child and mother to participate. In addition, some people may have been deterred from participating as they may have been concerned that the study might cause them or their child distress due to the subject matter. The testing procedure may have especially dissuaded people who were socially anxious from getting involved in the research. The idea of meeting with a stranger to talk about their worries was probably anxiety provoking and something they wished to avoid due to the very nature of social anxiety. This may have, in part, accounted for the relatively low levels of social anxiety in the recruited sample. Finally, the design of the information sheets and covering letter may also have discouraged participation as they were very detailed and people

may not have wanted to read them. However this detail was required in line with guidelines from the ethics committee.

## **Measures**

This subsection evaluates the measures used in the present study and considers other constructs that could have been measured.

**Self-report measures.** Similar to previous studies using community samples (e.g., Creswell et al., 2006; Magnusdottir & Smari, 1999), symptoms of anxiety were assessed using self-report measures. The main advantage of using self-report measure is that information can be gathered quickly and participants can give their own view on the severity of their symptoms. However a potential problem with using self-report measures, particularly in relation to social anxiety, is the impact of social desirability. Social desirability refers to the wish to be perceived by others in a favourable way and it may produce a bias in how symptoms are reported. For instance, Mogg, Bradley, Miller, Potts, Glenwright, and Kentish (1994) found adults with lower social desirability made more threatening interpretations of ambiguous words. This suggests that social desirability may be a confounding factor that was not controlled for in the present study.

One way of overcoming the issue of social desirability, is the use of semi-structured diagnostic interviews based on DSM-IV criteria such as the Anxiety Disorders Interview Schedule (ADIS) for children and parents (Silverman & Albano, 1996). While this has been shown to be a consistent assessment of childhood anxiety disorder, reliability varies across the different disorders (Silverman, Saavedra, & Pina, 2001), and its administration can be highly time consuming. Therefore, in non-clinical populations an extensive



clinical interview is hard to justify. Overall, self-report measures of anxiety can be justified in community samples as these measures are well standardised, have good face and construct validity and represent a good balance between speed, convenience, and accuracy.

**Anxiety measures.** The SPAI-C (Beidel et al., 1995) and the SPAI (Turner et al., 1989) were used to measure children's and mothers' symptoms of social phobia. Both measures assess a range of anxiety provoking social situations and map onto DSM-IV diagnostic criteria, assessing both physical and somatic aspects of social anxiety. The SPAI-C has been used in comparable studies relating it to social-threat interpretations (e.g., Smari et al., 2001). Other measures of social phobia, such as the Social Anxiety Scale for Children-Revised (SASC-R; La Greca & Stone, 1993), also give additional indices including fear of negative evaluations and avoidance of anxiety provoking situations which would be interesting to investigate in relation to cognitive biases in social situations.

**Measuring social-threat and social-distress.** The ambiguous situations questionnaire has been used previously in similar research and in community samples (e.g., Creswell et al., 2006). This allowed the researcher to compare the present findings with previous research. An additional benefit of the ambiguous situations questionnaire was that it already existed in three formats: a child self-report, a parent self-report, and a parent report on their expectations of their child. These versions were convenient for examining intergenerational associations in threat-interpretation. Furthermore the questionnaire was designed with equal numbers of social situations and physical situations, in line with Campbell and Rapee's (1994) conceptualisation that feared negative outcomes in

anxiety are organised in terms of two primary factors: social and physical. This design made it possible for this study to examine the specificity in the link between maternal biases in their expectations of the child in social situations and social anxiety symptoms. Furthermore the questionnaire was found to be reliable across the subscales with the exception of the avoidance scale which subsequently was not included in the analysis. Creswell et al. (2006) also reported acceptable reliability for the scales in a community sample.

However the validity of the ambiguous situations questionnaire requires consideration. Firstly, the child literature exploring threat-interpretation in relation to anxiety, including the present study, has predominantly relied on vignette methodology to elicit and measure interpretation biases. The extent to which the vignettes are eliciting interpretation styles in children has received little attention. There is some indirect evidence to suggest that the vignette questionnaire may be measuring the desired construct - threat-interpretation. For instance, in a clinical sample Creswell et al. (2005) found that interpretation of threat in the ambiguous situations reduced in children and parents following cognitive therapy for children and their parents. As these findings are in line with theoretical predictions they add some legitimacy to the construct validity of the scale. Specifically, cognitive theory would predict a change in threat-interpretation following cognitive therapy as the treatment directly targets this construct in the intervention. Similarly, Gallagher and Cartwright-Hatton's (2009) study found that when parental anxiety was experimentally increased, they interpreted child-related ambiguous situations as more threatening than parents who were not anxious. Again this increase in threat-interpretation would be predicted by cognitive theory and this contributes to the limited evidence

regarding the construct validity of the scale. Despite this, the ecological validity of the vignette approach to measuring threat-interpretation is yet to be confirmed in the child literature. It is not known whether responses to vignettes about ambiguous situations reflect how people interpret and respond to feared situations in 'real life'. For instance, Lucas, Collins, and Langdon (2008) found that staff attributions, emotions and helping behaviours in response to 'real' incidents of challenging behaviour were different from staff responses to vignettes depicting challenging behaviour. This research suggests that vignettes might not elicit the same responses as real life situations. Thus the current findings may not reflect how children and their parents respond to the ambiguous social situations in real life, and this needs to be examined in future research.

A further weakness of how interpretation biases were measured relates to shared method variance. Shared method variance refers to similarity or identity between procedures or formats used to measure a construct (e.g., both measures self-report or paper and pencil) (Kazdin, 1995). In the present study, interpretation biases were measured using the same measure – the ambiguous situations questionnaire. In particular the constructs maternal threat-interpretation in self-relevant situations and maternal expectations of child threat-interpretation, were measured by different versions of this questionnaire using the same format and were completed by the same person. The limitation of employing shared methods is that the resulting shared variance can inflate the magnitude of the correlations observed (Kazdin, 1995). Therefore the magnitude of the intergenerational correlations observed in interpretation biases, especially between maternal threat-interpretation and maternal expectations, may have been inflated by the shared method variance. Thus these correlations must be

interpreted with caution and future research could include additional methods to measure these constructs and triangulate the data.

**Depression.** Symptoms of depression were not measured in this study. However, research has demonstrated that anxiety and depressive symptoms are highly related in youth populations (e.g., Dobson, 1985), and depression is frequently found as a co-morbid disorder in individuals with social phobia (e.g., Strauss & Last, 1993). Mineka, Mineka, Watson, and Clark's (1998) review found that of all the anxiety disorders, social phobia and generalised anxiety disorder, are the most likely to co-occur with major depression disorder. Moreover, people with symptoms of depression may share some interpretive biases with people with anxiety symptoms (e.g., Dalglish, Taghavi, Neshat Doost, Moradi, Yule, & Canterbury, 1997). Dalglish et al. (1997) found that depressed children and anxious children were equally likely to expect negative events when given ambiguous situations, however for anxious children this effect was only relevant to situations they themselves were in and not for others. Eley et al. (2007) found that when symptoms of depression were regressed out, the link between anxiety symptoms and threat-interpretations was no longer present in 8 year olds. For social anxiety, Magnusdottir and Smari (1999) found that social anxiety in adolescents was specifically associated with social-threat interpretations even after symptoms of depression were partialised out. While the literature findings are mixed and inconclusive, given the potential overlap between threat-interpretations in depression and social anxiety, the inclusion of a measure of depression would have been useful to determine whether the associations found would have remained after depression had been accounted for.

**Paternal factors.** A major limitation of the present study and the literature more widely was the recruitment of mothers only in the research. Bögels and Phares's (2008) proposed that although there are significant overlaps between the effects of mothers and fathers on their children's anxiety, there is preliminary evidence to suggest that fathers make different contributions to child anxiety. For instance, Cooper et al. (2006) found that the association between parental anxiety and child anxiety was stronger between mother and child than between father and child. In addition, some specificity in the form of anxiety disorder in the child and the mother was observed for social phobia and separation anxiety disorder. Thus conclusions made from the present study do not necessary apply to the relationship between fathers and their children.

Fathers were not included in the present study as they are typically more difficult to recruit into research related to parenting (Bögels & Phares, 2008). Bögels and Phares suggested that possible explanations for their lack of involvement are; they may perceive themselves as less important than the mother, they may not live with their child so are not accessible, or they may be too anxious themselves to take part. Future research needs to consider these factors in order to recruit more fathers into this area of research.

### **Interpreting the Research Findings**

This section will consider the key research findings in light of the methodological critique and in relation to previous research investigating intergenerational similarities in interpretation biases. Intergenerational similarities in social-threat interpretations and anticipated social-distress were examined using the three versions of the ambiguous situations questionnaire.

### **Maternal Anxious Cognitions and Child Anxious Cognitions**

Maternal distress and threat-interpretations in self-relevant social situations were positively associated with child-reported social-threat interpretation and social-distress. Creswell et al. (2006) similarly found a positive correlation between mothers' anticipated distress in ambiguous situations (combined social and non-social) and children's anticipated distress in ambiguous situations. In contrast however Creswell et al. (2006) did not find a significant relationship between maternal threat-interpretation and child threat-interpretation. Consistent with the present findings Bogels et al. (2003) observed a correlation between child and parent threat-interpretation, and Creswell et al. (2005) also observed this association in a clinical population of children with a range of anxiety disorders (including 33.3% of the children with a diagnosis of social phobia).

### **Child Anxiety and Child Anxious Cognitions, and Maternal Expectations**

A significant positive correlation was found between child social anxiety and mother's expectations of their child's social-threat interpretations and social-distress. This is consistent with Barrett et al. (1996) who found that parents of clinically anxious children were more likely to predict that their children would interpret ambiguous situations as threatening compared to parents of non-anxious children. Kortlander et al. (1997) also found that mothers of anxious children expected their child to be more distressed, less able to cope with their feelings, and less able to perform a short videotaped talk compared to mothers of non-anxious children. The association between children's social anxiety and mothers' expectations is particularly robust as it was not affected by problems related to

shared method variance, and as the association was found to be specific to social-threat interpretations as compared with physical-threat interpretations. Although Barrett et al. (1996) found that parents of children with social phobia expected their children to provide more avoidant plans of action than the other anxious groups, this is the first study to observe the specificity for parents' expectations of their child's threat-interpretations.

Children's threat interpretations and distress in social situations were also significantly associated with mothers' expectations of their child's social-threat and distress, suggesting perhaps that mothers were sensitive to how their child might respond to social situations. Using the complete ambiguous situations questionnaire, Creswell et al. (2006) also observed associations between mothers' expectations and children's anxious cognitions.

### **Maternal Anxiety and Maternal Anxious Cognitions, and Maternal Expectations**

No association was found between mothers' social anxiety symptoms and mothers' expectations of child social-threat and social distress. This is inconsistent with Cobham et al.'s (1999) findings in a clinical sample and Gallagher and Cartwright-Hatton's (2009) findings in a community sample. One possible methodological explanation for this non-significant finding was that there may not have been a sufficient level of maternal anxiety in the current sample to observe a significant relationship. In the present sample few mothers reached the cut-off point on the SPAI for possible social phobia and this percentage was lower for mothers than for children. There may also be theoretical explanations for this non-significant finding. For instance, it is possible the relationship between maternal anxiety and maternal threat-

interpretation may not be as influential in the development of social anxiety. This is discussed in the following section on theoretical implications.

In the present study, there was a significant correlation between mothers' social-distress and mothers' expectations of child social-distress. In contrast, the association between mothers' social-threat and mothers' expectations of child social-threat was not significant. Creswell and O'Connor (2006) observed significant correlations between mothers' interpretations of threat and of distress in situations relevant to themselves and mothers' expectations of their child's threat-interpretation and distress in ambiguous situations, therefore the current results only partially support Creswell and O'Connor's study.

### **Implications of the Research Findings**

This section will consider the implications of the present research findings in relation to current theories and models, and how the research may inform current treatment programmes for childhood social anxiety.

#### **Theoretical Implications**

The present findings have implications for developmental models of social phobia (Rapee & Spence, 2005; Creswell et al., 2010). Developmental models of social phobia (Rapee and Spence, 2005; Creswell et al., 2010) highlight the role of parental anxiety and parental cognitions as risk factors in children's development of social anxiety. These theories posit that one way that children come to view the social world as dangerous and themselves as being unable to cope in it is through social learning processes, particularly through observations of and interactions with their parents. Theory suggests that parental modelling and direct transfer of verbal information about threat and coping, in addition to an over-involved parenting style may influence children's cognitions



about the social world and themselves in it (Creswell et al., 2010). This research investigated the maternal and child cognitive biases and anxiety symptoms that are thought to drive these anxiogenic parenting behaviours (Creswell et al., 2010).

Rapee and Spence (2004) and Creswell et al. (2010) proposed that parental anxiety and parental cognitive biases increase the probability that a parent will expect their child to present with similar cognitive biases that certain situations are dangerous and that they are unable to cope in these situations. Anxiogenic parenting behaviours are thought to arise from these expectations (Creswell et al., 2010). Contrary to this theory and previous research in anxiety more broadly (e.g., Gallagher & Cartwright-Hatton, 2009), no relationship was found between maternal social anxiety and maternal expectations of child social-threat and social distress. Similarly, the association between mothers' social-threat and mothers' expectations of child social-threat was also non-significant, inconsistent with Creswell and O'Connor (2006). However, there was a significant correlation between mothers' anticipated social-distress and mothers' expectations of child social-distress. These results demonstrate little support for Creswell et al.'s (2010) hypothesised pathway between parental anxiety/threat-interpretation and their expectations of their child. This suggests that the relationship between maternal anxiety and maternal threat-interpretation might not be as influential to how socially anxious mothers perceive their child in social situations. Alternatively these inconsistent findings may be a consequence of the recruitment of a sample of mothers with a reasonably low level percentage presenting with social anxiety levels above the cut-off. As there are no published studies specifically looking at this relationship in social anxiety conclusions

about this link in the aetiology of childhood social anxiety question remains unclear and requires further investigation.

Rapee and Spence (2004) and Creswell et al. (2010) proposed that children's symptoms of anxiety may also explain why some parents expect their children to have biases towards perceiving threat and low personal control in certain situations. In the current study there was an association between child social anxiety and maternal expectations. Moreover, this association was specific to social-threat as compared to physical-threat. This suggests that the proposed feedback loop between child anxiety and parental expectations (Creswell et al., 2010) is activated only in social situations as related to children's symptoms of social anxiety. Due to the correlational nature of the link between child social anxiety and maternal expectancies, it is not clear whether child social anxiety influences maternal expectancies or whether maternal expectancies influences child social anxiety, or whether the relationship is bi-directional. Creswell et al. (2010) proposed that parents' expectations are not only influenced by their own cognitive style but may be enhanced by their experience of parenting an anxious child. Previous research investigating childhood anxiety more broadly supports this bi-directional hypothesis. For instance, Teti and Gelfand (1991) found that parents' expectations of their child were influenced by child factors such as child temperament and age. Creswell et al. (2006) found that daughter's anxious cognitions predicted change in maternal expectations over time, and also that mothers' expectations predicted changes in children's cognition over a year, suggesting a reciprocal relationship. Thus, the relationship observed in this study might suggest that children who display early vulnerability or anxiety in social situations activate maternal expectations that the child will be distressed and feel

threatened in future social situations. Although not studied here, these expectations might be fed back to children through anxiogenic parenting behaviours such as parental over-involvement that reinforce the children's anxiety (Creswell et al., 2010). For instance, Creswell et al. (2008) found that parents who were given negative expectations about how their child would experience a task, displayed increased involvement during the task, as compared with parents who were given positive expectations.

Finally, the association found between maternal anticipated distress and threat-interpretations in self-relevant social situations and child-reported social-threat and anticipated social-distress is consistent with theory on the intergenerational transmission of anxious interpretation biases (Creswell et al., 2010). Specifically Creswell et al. (2010, 2011) hypothesised that parents' own interpretation biases may influence the child's cognitions about threat, distress and coping ability. Creswell et al. (2010) suggests that parenting behaviours, such as modelling fear responses and the transfer of threat-information from parent to child, are the mechanism through which parents' own interpretative biases may influence children's cognitions. For instance, Murray et al. (2008) found that children of mothers for were trained mothers to reinforce non-threatening interpretations of ambiguous situations were more likely to adopt and generalise a more adaptive interpretation style, than children of mothers who were trained to reinforce anxious interpretations. In social anxiety, Murray et al. (2007) mothers with social phobia (presumably with cognitive biases) were more likely to model anxious behaviour in a social interaction with a stranger than non-anxious mothers, and that infants of mothers with social phobia were also less

socially responsive to the stranger, suggesting that specific social learning processes may play a role in the development of social phobia.

In conclusion, the present findings support the hypotheses that child social anxiety and mothers' anxious expectations of their child in social situations are linked and that mothers' interpretative biases in self-relevant social situations are correlated with children's i biases in social situations. Although further work is required to tease out the direction and nature of these associations, these preliminary results suggest that these pathways may play important roles in the intergenerational transmission of social anxiety and socially anxious cognitive biases between mothers and their children. The mechanisms through which these constructs are linked, such as parenting behaviours, also need investigating in relation to social phobia.

The present results do not support previous research and theory suggesting that parental social anxiety and interpretative biases in social situations are associated with parents holding similar expectations for their child. Further research is required to reconsider these theoretical predictions in childhood social anxiety as it is also possible that there may be subtle differences in how parental and child interpretative biases are involved in the maintenance and development of different anxiety disorders, including social phobia.

### **Clinical Implications**

Although the present study did not recruit a clinical sample of socially anxious children they still have implications for clinical practice. This section will outline the clinical implications of the results by firstly considering them in relation to the involvement of parents in CBT for childhood social anxiety.

### **Parental-involvement in CBT treatment for child social anxiety.**

Findings in the literature are mixed with regard to the clinical benefits of including parents in the treatment of childhood anxiety disorders (Creswell & Cartwright-Hatton, 2007). Although this study recruited a community sample, these results and those from previous studies may have implications for this debate. As posited by Creswell et al. (2010; p. 290), “a clearer understanding of the cognitive and behavioural processes that promote the development and maintenance of children’s anxious cognitions offers the potential to improve family treatments for childhood anxiety and to identify who would be most likely to benefit from this form of treatment”.

Cobham et al. (1998) and Creswell, Willetts, Murray, Singhal, and Cooper (2008) reported that parental anxiety had a negative impact on child treatment outcome for child-focused CBT for anxiety. In addition, Cobham et al. found that children who received the a combined child CBT and parental anxiety management (PAM) intervention enhanced the efficacy of CBT for children with an anxious parent(s) but not for children with non-anxious parents as compared with children receiving child CBT alone. The PAM intervention aimed to make parents aware of the impact of their role in the development and maintenance of anxiety and also to teach parents to manage their own anxiety and model anxiety management strategies to their children. Cobham et al.’s findings suggest that it may be important to assess parental anxiety prior to beginning treatment for child anxiety to allow clinicians to consider whether parents need to be included in the treatment.

However the findings from the present study do not support the hypothesis that parental anxiety is a direct risk factor for the maintenance of

child social anxiety as there was no association between maternal social anxiety and child social anxiety symptoms. Notably, Creswell, Willetts, Murray, Singhal, and Cooper (2008) reported that providing anxious mothers with CBT for their own anxiety did not improve child treatment outcome. Creswell et al. (2008) suggested that where maternal anxiety disorders are present, child treatment outcomes may be improved by providing a programme designed to target parenting behaviours rather than parental anxiety directly. Consistently, Cobham, Dadds, Spence, and McDermott (2010) found that at three year follow-up, the combined child CBT and PAM was more effective than child-focused CBT alone, regardless of parental anxiety status. Based on their results at follow-up, Cobham et al. (2010) concluded that the effective aspect of the PAM intervention may have been a reduction in anxiogenic parenting behaviours as opposed to a reduction in parental anxiety.

In both, the present study and Creswell et al. (2005), an association was found between maternal and child anxious cognitions but no association was found between maternal and child anxiety symptoms. Therefore, it is possible that the PAM intervention may have impacted at the level of anxious cognitions with either a reduction in parental threat-interpretations due to the cognitive restructuring aspect of the PAM training or because of a reduction in the transfer of threat and coping information from parents to their children. Consistent with this explanation, Creswell et al. found that following CBT treatment for anxiety (including parent skills training) both children and their mothers reported a reduction in threat-interpretation further suggesting that the treatment may have been working at the level of threat-interpretations. Taken together, these findings suggest that clinicians may need to assess for parent threat-interpretation in

addition to parent anxiety during assessments as this might represent a risk factor in not only the maintenance of anxiety but also in treatment outcome. In addition, the current research methodology, such as the ambiguous situations questionnaires, could be easily used to aid treatment assessments.

Notably, the focus of this study was particularly on social anxiety. Spence, Donovan, and Brechman-Toussaint (2000) compared the relative efficacy of child-focused CBT with CBT plus parent involvement. The parent component involved teaching parents how to stop reinforcing their child's avoidant social behaviour, and training parents how to model socially proactive rather than anxious behaviour. While there was a trend towards superior results when parents were involved in the treatment, this effect was not statistically different to child-focused CBT alone at post-treatment and at 12-month follow up. This study did not investigate the impact of relevant parent factors, such as parental social anxiety, parental cognitive-biases, and parenting behaviours. These factors may have had an impact on the efficacy of the parent treatment component.

Clearly much more work is needed to tease out what components of parent involvement might be beneficial in the treatment for childhood anxiety and social anxiety. In treatment programmes for childhood social phobia, an emphasis on the role of the feedback loop between child social anxiety and parental expectations (and possible mediating parenting behaviours) and the transmission of similar interpretative biases from mother to their child could be incorporated into the family treatment and investigated for efficacy, based on the present findings.

**Preventative programmes in schools.** As the sample was drawn from a non-selected school sample, these research findings might be particularly relevant to preventative programmes currently being trialled in schools around the country. Ford, Hamilton, Meltzer, and Goodman's (2008) UK survey found that few children with anxiety disorders are identified and referred for treatment (33%). However, as the majority of children attend school, school represents an ideal setting to reach children who have developed or are at risk of developing an anxiety disorder.

The "Friends" programme is a universal cognitive behavioural intervention for the prevention of anxiety and depression symptoms in children. Short-term and long-term outcomes for this programme show promising results in Australia (e.g., Barrett & Turner, 2001; Barrett, Farrell, Ollendick, & Dadds, 2006) In England, Stallard, Simpson, Anderson, Hibbert, and Osborn (2007) also found good outcomes with reductions in anxiety symptoms and an increase in self-esteem at three month follow up in primary school children. The Friends programme typically includes some parent involvement (including psycho-education and parenting strategy sessions), but this is often very minimal (e.g., Lowry-Webster, Barrett, & Dadds, 2001). Based on the current findings and those of previous research (e.g., Creswell et al., 2006), psycho-education and preventative strategies targeting the parenting behaviours (such as information transfer, modelling, and over-involvement) in the development of anxiety disorders could be explicitly incorporated. In addition targeted prevention programmes could be offered to children and parents presenting with elevated anxiety symptoms and threat-interpretations. Laskey (2011) reported the efficacy of a CBT programme or 'cognitively enhanced parenting groups' for treating



anxiety disorders in young children that only included parents in the treatment sessions, suggesting that working with the parents alone might be enough to create change.

### **Future Research**

This final section will discuss potential avenues for future research in this area.

**Longitudinal and experimental designs.** A limitation of the present study was the use a cross-sectional correlational design that did not allow the researcher to investigate the causal nature of the links between the constructs the development of the relationships over time. To date the research investigating intergenerational transmission of anxious interpretation biases has been dominated by cross-sectional correlational designs, with a few exceptions using experimental designs (e.g. Gallagher & Cartwright-Hatton, 2009; Creswell et al., 2008), and one longitudinal design (Creswell et al., 2006). Further experimental designs are required to clarify the causal nature of the relationship between parental and child cognitions and behaviours. Longer term longitudinal designs could also tease out the development of interpretative biases in relation to social situations, and the influence of parental interpretative biases and parenting behaviours on this developmental process. Murray et al. (2007, 2008) provide preliminary evidence to suggest that these social learning processes begin in infancy, however much more is needed here. For depression, Nolen-Hoeksema, Girgus, and Seligman (1992) found that negative cognitions in depression become more stable and more influential in the development of depression as the child gets older, thus the same might apply to anxiety and social anxiety.

**Parenting behaviours.** This research investigated the maternal and child interpretative biases and anxiety symptoms that are thought to drive the anxiogenic parenting behaviours (Creswell et al., 2010). Future research could build on the present study by investigating the mechanisms linking parent and child interpretative biases, such as modelling and information transfer. Although some research has been completed investigating the role of parenting behaviours in anxiety more broadly (e.g., Gallagher & Cartwright-Hatton, 2009; Creswell et al., 2008), very few studies have looked at parenting specifically in social anxiety with the exception of Murray et al. (2007, 2008). Murray et al. (2007) demonstrated that mothers with social phobia were more anxious and less engaged when speaking to a stranger and less encouraging of their infants' interaction with the strangers than anxious and non anxious mothers. Further research needs to consider whether the development of social phobia is associated with specific parenting behaviours.

**Paternal influences.** This study only recruited mothers in the sample. Recently there has been some consideration in the literature about the differential maternal and paternal influences on children's development of anxiety symptoms and cognitions. Therefore, the results from the present study may not directly apply to fathers. Bögels and Phares's (2008) review of the limited research available concluded that although there are significant overlaps between the effects of mothers and fathers on their children's anxiety, there is preliminary evidence to suggest that fathers make separate contributions to child anxiety. Recently, Bogel et al. (2010) investigated the relative roles played by fathers' and mothers' on their children's anxiety in ambiguous social situations. In this experimental task, children (ages 8-12 years) were asked to imagine how they

would feel (in terms of anxiety and confidence) in an ambiguous social situation where their mother or father was acting in either a confident or anxious way. Significant findings revealed that in the normal and low socially anxious children, maternal behaviour (i.e., confident or anxious) was more influential than paternal behaviour. Specifically, in the unselected children, anxious maternal behaviour was more influential than anxious paternal behaviour but this difference was small. The same trend was observed for the low anxious group but the effect was stronger and a large difference was observed between anxious maternal behaviour and anxious paternal behaviour. In contrast, it was fathers' behaviour that was more influential than mothers' behaviour in the high socially anxious children. In particular, fathers' confident behaviour appeared to affect them more than mothers' confident behaviour. The authors propose that the findings may suggest that mothers play a more dominant role in teaching social caution to their children if they experience little or even not enough social anxiety, whereas fathers may teach social confidence to socially anxious children. This area of research is a fascinating one but much more research is required to tease out the differences between maternal and paternal influences on the development of childhood anxiety. Therefore it is important that research overcomes some of the issues related to recruiting fathers into research. Future research could examine the impact of the other anxiogenic parenting behaviours, such as over-involvement, on children's interpretative biases and symptoms of anxiety and social anxiety.

**Peer relationships.** Peer relationships were specifically highlighted in Rapee and Spence's (2004) model of the development of social phobia. The increasing importance of social interactions has been hypothesised as a

significant contributory factor in the onset of social phobia (Rapee & Spence, 2004). Peers might represent another relationship where social learning processes influence the development of social anxiety, particularly given that adolescence is a time when peers become increasingly important to young people and parents less so (Coleman, 1980). However little is known about how peers influence the development and maintenance of social anxiety and is potentially an important area for future research. Future research could employ experimental methods to investigate the impact of peer behaviour on children's social-distress and social-threat interpretations in ambiguous situations.

### **Conclusion**

A number of the present research findings are consistent with previous research. Support was found for the association between child social-threat and social distress and maternal social-threat and social-distress, and for a relationship between child social anxiety and mothers' expectations of child social-threat and social distress. These findings are in line with previous research observed in children with high trait anxiety or an anxiety disorder. However due to the methodological issues related to the ecological validity of the ambiguous situations questionnaire and shared method variance, these findings should be interpreted with caution. Surprisingly no relationship was found between maternal social anxiety and maternal expectations of child social-threat and social-distress. This finding was in contrast with previous research (e.g., Gallagher & Cartwright-Hatton, 2009).

The present findings provide preliminary evidence to suggest that the intergenerational transmission of interpretative biases found in trait anxiety and generalised anxiety may also apply to social anxiety. The findings are consistent

with the developmental model of social anxiety (Rapee & Spence, 2004) that implicates parents as playing a crucial role in the development and maintenance of social anxiety in children. Subtle differences may present in the development of social anxiety, with particular reference to the pathway connecting parent anxiety/cognitions and parents' expectations of their child. Further research is required to explore the causal nature of the associations, the mechanisms linking parent and child interpretative biases, and the development of these associations over childhood.

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