

**Maternal Social Anxiety, Verbal Information Transfer, and Child Play  
Representations in the Context of Starting School**

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Thesis submitted in part fulfilment of the degree of Doctor of Clinical Psychology,  
University of East Anglia

September 2013

Word Count: 31,653

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## **Abstract**

### **Background**

Anxiety is a common childhood psychological difficulty, however little is known about the development of anxiety symptoms in early childhood. By understanding such processes, early identification and targeted prevention work may be possible. Anxiety runs in families, and research suggests verbal information transfer may be one way in which vulnerabilities to developing anxiety may be transmitted from parents to children.

### **Method**

A community sample of mothers and their preschool children (N = 65) completed observational tasks relating to the upcoming event of the child starting school. Mothers gave a verbal description to their children about social aspects of school, then children completed a brief play assessment with a researcher involving ambiguous, school-based social scenarios. Mothers completed self-report questionnaires on social anxiety symptoms, general anxiety and depressive symptoms, fear of negative self-evaluation, and fear of negative child evaluation. Mothers also completed a questionnaire on child anxiety symptoms.

### **Results**

There were a number of non-significant associations. However, a significant positive association was found between maternal social anxiety symptoms and a lack of positive general comments in mothers' school descriptions. There was also a significant positive association between maternal fear of negative child evaluation and lack of consistent positivity in their descriptions of school. A one-item question asking mothers if they were personally worried about their child starting school was also associated with maternal descriptions. While no relationship was found between maternal descriptions and

child representational positivity, significant associations were found between overall maternal positivity, as well as overall maternal negativity, and child representational negativity.

## **Conclusions**

Further research is needed to replicate these findings before firm conclusions can be drawn, but they provide tentative support for the theory that verbal information transmission may be influenced by maternal anxiety/specific concerns regarding their child, and that this information transmission affects child representations.

## **Acknowledgements**

I would like to thank my supervisors Sian Coker and Kiki Mastroyannopoulou for their consistent advice and support throughout this study at a time of great upheaval on the course. I would like to say a particular thank you to Helen Dodd, who has gone beyond her advisor role to share her expertise and stimulate my thinking in this area. I am extremely grateful to have had input from the late Malcolm Adams on the design of this study, and remembering his enthusiasm for statistics helped me persevere through my analyses.

I would like to thank all the pre-schools, nurseries and playgroups that helped with recruitment, and provided rich information on the starting school experience. Thank you to all the mothers and children that participated so enthusiastically in the study, as without them this research would not have been possible. A particular thank you goes to Jinnie Ooi Ying Sze for conducting inter-rater reliability for the child representations, and to Jude Johnston for her incredible hard work coding the maternal descriptions.

Finally, I would like to thank my family and close friends who have supported me throughout this work. I would particularly like to thank Simone, Lillianna and Sebastian who helped to pilot the tasks, and provided a fascinating insight into young children's minds.

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## **Chapter 1 Introduction**

### **1.1 Study Rationale and Chapter Overview**

The current study investigates the influence of maternal anxiety on verbal information transmission and child play representations. This chapter will provide the rationale and background for the present study, examining the current literature relating to child anxiety, assessment in young children, and potential mechanisms of anxiety development. In particular the role of parents will be considered, with an overview of the current literature. Theoretical models of the development and maintenance of anxiety will be presented, with a focus on the verbal information transmission pathway. A systematic literature review of parental information transfer in the context of anxiety will be described, evaluating current published research and considering the limitations of this. The chapter concludes by describing the present study, how this follows on from previous research, and the research questions that will be investigated.

### **1.2 Anxiety Presentation and Symptoms**

Anxiety is one of the basic human emotions. It is evolutionarily adaptive in alerting us to potential threats in the environment, and facilitating our response to threat (Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg & van Ijzendoorn, 2007). Even fear of negative evaluation by others and similar social concerns may provide evolutionary advantage as a deterrent to alienating other people (Beck, Emery & Greenberg, 1985).

There are several features that are common to all types of anxiety (Carr & McNulty, 2006). These can be represented in the four domains often identified in Cognitive-Behavioural Therapy (CBT); cognitions, subjective experiences, physical sensations, and behaviour. Cognitions are specific to the individual and relate to the type of anxiety experienced, but tend to share common themes of threat, danger, and low coping ability/control (Beck, Emery, & Greenberg, 1985). The typical emotional experience

involves anxiety, fear, or dread. There are a set of physical sensations associated with the ‘fight or flight’ response (Cannon, 1929) in anxiety, including increased heart rate, blood flow, perspiration and other physiological changes to enable the individual to physically respond to the perceived threat. Behaviour that is typical of anxiety involves avoidance, and/or reassurance seeking, which maintain anxiety by preventing disconfirmation of threat beliefs, assumptions and cognitions (Wells, 1997). In many situations, anxiety can be beneficial by enhancing performance (e.g., increasing attention prior to an exam, providing the physiological arousal needed to take swift action to avoid an oncoming car). Anxiety becomes problematic when it is inappropriate given the situational demands (Beck et al., 1985), and impairs, rather than aids, functioning.

Social anxiety disorder (also known as social phobia) and social anxiety symptoms relate to a socially-triggered fear of acting in a way (or showing anxiety symptoms) that would be humiliating or embarrassing (APA, 2000). Individuals suffering with social anxiety fear being negatively evaluated by other people, and theoretical models suggest this fear persists even in the absence of evidence, due to biased interpretations of how the individual *believes* they appear to others (Clark & Wells, 1996).

### **1.3 Prevalence of Anxiety**

Anxiety disorders are among the most common psychological difficulties in both adults and children (Kessler et al., 2005; Verhulst, 2001). Prevalence rates vary, but higher estimates give lifetime and 12-month prevalence rates at 28.8% and 18.1% respectively in adults (Kessler et al., 2005; Kessler, Chiu, Demler & Walters, 2005). In children, twelve-month prevalence rates of between 5-15% have been reported (Costello, Egger & Angold, 2005; Merikangas, Nakamura & Kessler, 2009). In pre-adolescent children, prevalence estimations vary even more widely, with one review of 11 studies (combining single-point,

three and six-month prevalence estimates) finding rates of any DSM-III-R or DSM-IV anxiety disorder varying between 2.6 and 41.2% (Cartwright-Hatton, McNicol & Doubleday, 2006).

However, despite the large variations in estimates, a significant number of young children are likely to be affected (Cartwright-Hatton, McNicol & Doubleday, 2006). It is likely that all prevalence rates underestimate the number of individuals suffering from anxiety, as these individuals are less likely to participate in population surveys (Kessler et al., 2005). Further research is needed with younger age ranges to clarify exact prevalence rates and particular at-risk groups.

There are also a substantial number of children who experience significant anxiety symptoms, yet may not reach criteria for a particular anxiety disorder. Clinical cut-offs have been used in screening studies, to try and establish rates of anxiety symptoms that are likely to be causing some impact on child functioning and wellbeing. In a study of over 700 families, Chavira et al. (2004) found around 20% of children aged 8-17 years scored above a clinical cut off on parent and child brief anxiety screening questionnaires (the SCARED-5 item; Birmaher et al., 1997). While not representative of actual anxiety disorder diagnoses, these figures do highlight the high prevalence of anxiety symptoms (and associated interference) among the general child population.

Until recently, most research focused on children in middle to late childhood and beyond when considering anxiety symptoms, with preschool children being largely neglected (Edwards et al., 2010). However, a large community study of 2.5- 6.5 year old children (mean age 4.5 years) found, using a newly developed preschool anxiety scale and exploratory factor analysis, anxiety symptoms clustered into subtypes broadly similar to anxiety disorders as defined in DSM-IV (Spence, Rapee, McDonald & Ingram, 2001). Social fears and worries were among the most common types of anxieties, becoming increasingly prevalent between three and five years of age (Spence et al., 2001). Other

studies have shown similar findings (Eley et al., 2003; Sterba, Egger & Angold, 2007), suggesting that symptoms relating to discrete anxiety disorders begin to emerge in the preschool years. Research also indicates that anxiety symptoms in preschoolers are moderately to highly stable across a 12-month re-testing period (Edwards, Rapee & Kennedy, 2010), and longitudinal pathways for internalising difficulties exist from early to middle childhood (Mesman, Bongers, & Koot, 2001). When considered together, these findings suggest investigation of anxiety symptoms in a preschool population may be valid, reliable, and clinically important.

#### **1.4 Cognitive Biases in Anxiety**

In cognitive theory, Beck (1976) proposed the interpretation of events gives rise to emotions, and there has been extensive research into the role that information processing biases play in the development, and maintenance of psychopathology (Koster, MacLeod & Fox, 2009). Cognitive theories posit that the interpretation of threat is specific to anxious, rather than depressed, individuals (Beck & Clark, 1988), and it is proposed that individuals who have attentional, interpretation, and/or memory biases towards threat/danger to the self are more likely to experience anxiety than those who do not show such biases. These biases are theorised to maintain anxiety, as less threatening information or interpretations are not attended to or considered, so this information processing approach is reinforced (Wells, 1997). Cognitive biases relating to anxiety can occur at various levels of information processing, from encoding (attention), through interpretation of information, to goal and response selection (Daleiden & Vasey, 1997).

A meta-analysis of over 170 studies investigating attentional bias concluded that there was a significant threat-related bias among highly or clinically anxious participants (Bar-Haim et al., 2007), irrespective of mood disorders. Some research indicates a degree

of disorder-specificity (e.g. social vs animal fear) in attentional biases (Williams, Matthew & McCleod, 1996). Research also supports the hypothesised interpretation bias, where anxious individuals have been found to be more likely than non-anxious individuals to interpret ambiguous information in a threatening way (e.g. Butler & Matthews, 1993). There is even some evidence to suggest specificity in interpretation biases, linked to the type of anxiety symptoms experienced. For example, socially anxious participants have been found to be more likely to interpret ambiguous social scenarios in a negative way compared to both controls and other highly anxious, but not socially anxious, participants (Stopa & Clark, 2000). Support for memory biases in anxious adults is less convincing, with a recent meta-analysis finding no relationship between anxiety and implicit memory or recognition, but some support for selective recall of threatening material among anxious subjects (Mitte, 2008).

Less research has focused on cognitive biases in child anxiety, and the downward extension of adult models that has been the typical methodology may not be appropriate due to developmental influences on cognition in general (e.g., the development of cognitive inhibition throughout childhood; Hadwin et al., 2006). Some researchers have suggested an attentional bias towards threat is present in all young children, then attenuates in non-anxious children as they develop inhibitory control through development (Kindt & van den Hout, 2001). Interpretation biases in child anxiety have more robust support from the literature (Muris & Field, 2008), with anxious children showing a greater tendency for threat interpretation of ambiguous material, and greater use of avoidant strategies compared to non-anxious children (Barrett, Rapee, Dadds & Ryan, 1996; Chorpita, Albano & Barlow, 1996).

There is increasing research into the efficacy and effectiveness of Cognitive Bias Modification (CBM) techniques, designed to target the threat-related attentional and interpretational biases outlined above. Recent studies suggest such methods may be

effective in manipulating cognitive biases, and to some extent reducing anxious symptoms in adults (Hakamata et al., 2010; Hallion & Ruscio, 2011). The child and adolescent CBM literature is less advanced, however some significant results have been found. Using a novel 'space odyssey' paradigm, Muris and colleagues provided evidence that training could successfully manipulate interpretation bias in children (Muris et al., 2008; 2009). Recently, adolescent studies have also had similar results (Lau, Belli & Chopra, 2012; Lothman et al., 2011). While further work is needed to examine these mechanisms and consider the therapeutic utility, these findings lend further weight to the possible causal role of cognitive biases in the development, as well as maintenance, of anxious symptoms (MacCleod & Mathews, 2012).

### **1.5 Course of Anxiety and Prognosis**

While normal childhood fears follow a developmental course relating to cognitive stages and capacities (Moore & Carr, 2000), a substantial minority of children experience clinically significant levels of anxiety (Muris, Merckelbach, Mayer & Prins, 2000). Thus, it is clinically important to separate significant (and disabling) anxiety symptoms from normal developmental fears in childhood (Donnelly & McQuade, 2005). Anxiety symptoms can be distressing to experience at any time in life, but anxiety during childhood can have a long-term impact on mental health. While a variable course or spontaneous remission are possible, anxiety in childhood can be disabling, chronic, persist into adolescence/adulthood and increase risk of further psychological difficulties including anxiety and depression later on in life (Bittner et al., 2007; Rapee et al., 2009). Such findings highlight the need for early identification, and ideally, prevention.



## **1.6 Assessment of Child Anxiety**

Assessing young children's cognitions and emotions, including anxiety, can be challenging (Alfano, Beidel & Turner, 2002; Carter et al., 2004). There are methodological difficulties in assessing children who have limited verbal and abstract cognitive abilities, and most structured assessment measures have only been standardised and validated for children substantially older than the preschool population (Spence et al., 2001). Underdeveloped vocabulary and interview experience may mean young children are limited in their purely verbal communicative ability. There are also issues of social desirability, and denial of problems (Beidel & Turner, 1998), both of which may be particularly prominent in anxious or young children (Pina, Silverman, Saavedra & Weems, 2001). Furthermore, reliability and validity of responses may be compromised by young children's "impoverished narrative skills, and inappropriate expectations about their own role and that of the interviewer" (Lamb & Brown, 2006, p. 218). Despite these difficulties, the importance of gaining the child's own perspective on their own experience remains, and there have been some methodological advances in the assessment of psychopathology in young children, such as the Koala Fear Questionnaire (Muris et al., 2003).

While some standardised measures now exist for parent report of preschool children's psychological difficulties (e.g., the Preschool Age Psychiatric Assessment (PAPA); Egger & Angold, 2004), there is a limit to the access other informants have to a child's internal cognitions (Warren, Oppenheim & Emde, 1996). Understanding this internal world may be key to determining early vulnerabilities for targeting interventions. It is therefore important that such methodological difficulties are explored to consider how they can be overcome, to allow young children the ability to report their own feelings and behaviour (Egger, 2009).

### **1.3.1 The influence of cognitive development.**

As noted above, there is a need to consider developmental factors when designing assessments for preschool children. Piaget's stage theory of cognitive development posited that children in their preschool years are in the pre-operational stage, characterised by egocentric thought and lack of ability to consider alternative viewpoints (Piaget, 1936, 1945, 1957). However, more recent research has shown that with appropriate props, scaffolding, and adaptations to experimental tasks, children show much more sophisticated cognitive abilities at an earlier age than Piaget proposed. For example, Theory of Mind (ToM) tasks assess a child's ability to attribute mental states to themselves and others, and understand how feelings, beliefs and intentions can drive people's actions. Research suggests that basic ToM understanding develops rapidly between three and four and a half years of age (Wellman, Cross, & Watson, 2001), and by four years old most typically developing children have acquired this ability (Cutting & Dunn, 1999). ToM skills allow children to consider cognitions independent of experience, enabling both interpretations and expectations (Thompson, 2006).

Similarly, research suggests that even two year old children are able to use basic emotion words, and can use these in relation to themselves, others, the past, present and future (Wellman, Harris, Banerjee, & Sinclair, 1995). Coherent pretend play with recognisable themes becomes apparent by the age of three (Wallach, 1992), and as children approach four years old their ability to integrate different cognitive elements (e.g. beliefs, intentions, emotions) to predict behaviour becomes increasingly complex (Nicolopoulou & Richner, 2007).

Less research has considered developmental influences on the ability to consider future events. However, some research suggests that cognitive skills relating to this (e.g. planning, forward thinking, pre-experiencing) develop in complexity from the age of three onwards (Atance & Meltzoff, 2005; Atance & O'Neil, 2001). In addition, increasing

children's engagement in narrative descriptions by allowing non-verbal elements (e.g. drawing, re-enacting) in their input has been shown to increase information provided by young children (Wesson & Salmon, 2001). By considering all these factors it is therefore possible to create a developmentally appropriate, and valid, assessment method for preschool children's cognitions and internal representations.

### **1.6.1 Assessment of child cognitions through play.**

As outlined in previous sections, cognitions are hypothesised to play a key role in the development, and maintenance of anxiety. However, as with the assessment of anxiety, the assessment of cognitions in a preschool population is also challenging. One technique that has been used to overcome these issues is to use Doll Play (DP), or play/story stem narratives, which can elicit comparatively sophisticated representations compared to verbal report alone (Woolgar, 1999). Such methods can be particularly useful to explore cognitions and anxiety in young children (Marshall & Katz, 1992), given the aforementioned developmental constraints. The typical set up is for an experimenter to introduce a beginning of a story or scenario using standardised introductions and toy props, then ask the child to complete the story or give their interpretation for what is happening, both verbally and by acting out the ending with the props (e.g., Bretherton & Oppenheim, 2003). Such play techniques can help overcome developmental constraints, and be more familiar for the child, thus optimising engagement. Research suggests that by four years old, most typically developing children have acquired basic Theory of Mind (ToM) understanding (Cutting & Dunn, 1999), a necessary tool for consideration of different characters' mental states (and their influence on actions) in a play based assessment.

There is a long and rich psychology history of using play techniques with young children (Marshall & Katz, 1992), to uncover their "construction of reality" (Holmberg,

Robinson, Corbitt-Price & Wiener, 2007). Modern doll play approaches have been used to investigate a wide variety of child problems, including anxiety. There are a number of published child representation assessment tools and coding schemes (Bettmann & Lundahl, 2007), many of which focus on attachment representations (e.g. the MacArthur Story Stem Battery (MSSB; Bretherton and Oppenheim 2003). More specific techniques, story stems, and coding schemes have also been designed to examine particular clinical or at-risk populations (e.g., recurrent abdominal pain; Ramchandani et al., 2011, cleft lip/palate; Murray et al., 2010).

Three studies in particular have used doll play methodology to investigate anxiety in young children, and have found child representations to be predictive of later anxious symptoms (Dodd, Hudson, Morris & Wise, 2011; Pass, Arteché, Cooper, Creswell & Murray, 2012; Warren, Emde & Sroufe, 2000). Warren et al. (2000) used 16 story stems and the coding system from the MacArthur Story Stem Battery (MSSB: Bretherton & Oppenheim, 2003) with a community sample of five year old children, and assessed anxiety (by maternal/paternal/teacher report) at age five and 12 months later. In this study the authors created a negativity aggregate from all doll play codes, described as 'negative expectations'. Warren et al. (2000) found that overall negative expectations, as represented in child doll play at five years of age, predicted maternal/paternal/teacher reported child anxiety 12 months later. This finding remained significant even after controlling for anxiety symptoms at age five, suggesting negative play representations may be a risk factor for later anxiety development. No relationship between negative expectations and language skills was found, suggesting language ability is not a factor influencing play representations.

The findings by Warren et al. (2000) are particularly striking given sample was both small (N = 35) and non-clinical. However, the aggregation of mother, father, and teacher reports of anxiety to create an overall anxiety score is questionable given the low

intercorrelations between these measures. Equally, the reliance of largely attachment based story stems (12 of the 16) may mean the negative expectations aggregate captures attachment related representations, rather than more specific anxious cognitions.

Another longitudinal study used child doll play to examine anxious/negative expectations in children of mothers with social phobia (Pass, Arteché, Cooper, Creswell, & Murray, 2012). These children ( $n = 62$ ) were compared to children of non-anxious mothers ( $n = 60$ ), using a disorder-relevant context of starting primary school. Mothers were recruited in pregnancy and completed a structured clinical interview to determine psychiatric diagnoses. Groups were based on the presence of a DSM-IV social phobia diagnosis at time of recruitment (social phobia group), or no current diagnosis or history of psychological difficulties (control group). The sample was followed up for both maternal anxiety disorder diagnoses and multiple indexes of child development throughout their early years (for further details see Murray et al., 2000; Murray et al., 2008). When the children were around 4.5 years old, they completed a school-based play assessment around two months before starting school (exact ages and time lag between assessment and starting school varied, but did not affect results). The authors found that children of mothers with social phobia were more likely to provide anxiety-related negative responses in their doll play, compared to children of control mothers. Furthermore, these anxiety-related negative responses predicted teacher-reported anxious/depressed symptoms and social worries in children at the end of their first term at school.

In another longitudinal study, a sample of children rated as behaviourally inhibited ( $n = 65$ ) or behaviourally uninhibited ( $n = 66$ ) were initially assessed between three and four and a half years of age (mean age = 4 years) and followed up 12 months, two years, and five years later (Dodd et al., 2011). Three ambiguous scenarios were presented using doll play, and child interpretations were coded as representing threat or non-threat. The authors found that children who met criteria for a current anxiety disorder made

significantly more threat interpretations than children who did not have a current anxiety disorder. Threat interpretations also predicted anxiety symptoms at 12 month, but not two or five year follow up. The authors concluded that threat interpretations may play a role in maintenance of child anxiety, but not necessarily development of anxiety symptoms. Taken together, these studies suggest that the doll-play task may be developmentally appropriate, and a valid method for assessing anxiety-related cognitions in young children.

### **1.7 Familial Aggregation of Anxiety**

There is consistent evidence that anxiety disorders run in families (Rapee & Spence, 2004). In ‘bottom-up’ studies, parents of anxious children have been shown to be more likely to have an anxiety disorder than parents of non-anxious children (Cooper, Fearn, Willetts, Seabrook & Parkinson, 2006). Similarly, in ‘top-down’ studies, children of parents with an anxiety disorder are up to seven times more likely to have an anxiety disorder than children of control parents (Turner, Beidel & Costello, 1987). There is some evidence to suggest increased risk of anxiety in children of mothers with social phobia or generalised anxiety disorder in particular, compared to offspring of both control parents and those with depression/other anxiety disorders (Schreier, Wittchen, Hofler & Lieb, 2008).

Genetic influences on this familial aggregation have been examined, with studies converging on an estimate of around a third of the variance explained by genetics (Hettema, Neale & Kendler, 2001). There is evidence to suggest a shared genetic risk across anxiety disorders (Tambs et al., 2009), and that some of this variance may be common with depression (Eley, 2001). There has also been increasing interest in the genetic influence on cognitive phenotypes of disorder, including attentional and interpretational bias in anxiety. While further research is needed, some studies suggest a

smaller genetic influence on cognitive biases than on anxious symptoms themselves (e.g., Zavos et al., 2010), with greater support for the genetic influence on cognitive biases in depression than anxiety (Eley et al., 2008).

As with other polygenic disorders, it is predicted that numerous genes of only small to moderate influence will be identified in relation to anxiety (Gregory & Eley, 2007). Furthermore, environmental factors may influence gene expression, there are likely to be numerous potential gene-environment interactions (Rutter, Moffit & Caspi, 2006) and heritability may increase over the course of development (Eley & Stevenson, 1999a). Therefore environmental factors are likely to play a major role in the development of anxiety (particularly at a young age), and so remain an important focus for further research (Rapee, 2012).

## **1.8 Theoretical Models of Anxiety Development**

A number of theories have been proposed to elucidate the mechanisms involved in the development of anxiety symptoms. The following section describes three models of anxiety development, chosen with particular reference to parental influences. Parents are proposed to play an important role in the development of vulnerabilities (and/or protective factors) to child anxiety (Rapee, Schniering & Hudson, 2009).

### **1.8.1 Rachman's three pathways to fear.**

Rachman (1977; 1991) proposed that fear acquisition may occur via three pathways: direct conditioning, vicarious exposures (modelling/observational learning), and information transmission. Reviews of the literature support all three as routes to the development of anxiety (Askew & Field, 2008; King, Gullone & Ollendick, 1998). Compared to conditioning and modelling of anxiety, less research has focused on the information transmission pathway (Fisak & Grills-Taquechel, 2007). However, there has been a recent

surge of interest in the information transmission pathway, with the majority of studies focused on animal fears. The typical paradigm comes from Field (e.g., Field & Lawson, 2003), where children are provided with information about novel stimuli and the effect of this information is then evaluated. Using this approach, studies have shown that negative (threat) information increases child fear beliefs, behavioural avoidance, and negative implicit attitudes towards the novel stimuli (Field, Argyris & Knowles, 2001; Field & Lawson, 2003; Field, Lawson & Banerjee, 2008). A review of 17 studies of threat information transfer in child fear among the normal population found nearly 90% of studies elicited an increase in child-reported fear after being given threat information (Muris & Field, 2010).

Most of the above research has involved information given by unfamiliar people, such as experimenters. While these studies are valuable in elucidating the information transfer pathway in anxiety (Hadwin, Garner & Perez-Olivas, 2006), they do not examine the role of parents who are likely to be key information providers.

### **1.8.2 Parenting pathways to child anxiety.**

Given the literature outlined above regarding familial aggregation of anxiety, and the importance of environmental factors in this association, recent theoretical models of child anxiety have proposed a number of specific parental influences, including information transfer. Creswell, Murray, Stacey and Cooper (2011) proposed a model of parenting pathways to child anxiety (adapted from Murray, Creswell & Cooper, 2009; and Creswell, Murray & Cooper 2010). This model is shown in Figure 1, and represents the theoretical links between parenting behaviours and practices, and child anxiety. While the authors acknowledge that parenting is only one of many important factors to consider in



terms of the development and/or maintenance of child anxiety (Creswell et al., 2011), this model outlines specific mechanisms by which parenting may be implicated.

The model proposes that parental anxiety is not a necessary factor for parenting behaviour that may influence the development of child anxiety, but that it raises the risk for the behaviours. Thus, while information transfer around threat and lack of control may occur in the absence of parental anxiety, there is increased likelihood of such verbal transmission in the context of parental anxiety due to the associated information processing biases relating to their own experiences. Along with other mechanisms operating via parenting (e.g., over-involvement, reduced independent socialising opportunities, modelling of anxiety), it is proposed that parental information transfer increases the risk for the development of child anxiety, through the effect this has on the child's own cognitions and interpretation biases.

This model is novel in combining the key genetic, environmental, and bi-directional influences the literature suggests to be relevant to child anxiety. This represents a major step forward in the field, and is more closely associated with recent developmental psychopathology theory than Rachman's (1977) basic pathways to fear. For example, equifinality (the suggestion that there may be multiple pathways to the same disorder: Vasey & Dadds, 2001) is clearly highlighted within the model, albeit within the parenting domain. However, this means that testing the complete model is beyond the scope of any single study; separate investigations are likely to be necessary to examine individual pathways (e.g. parental anxiety effects on information transfer, information transfer effects on child anxiety). The inclusion of a number of factors within the same pathway (e.g. both increased child threat cognitions and reduced control cognitions in the same box) makes it difficult to identify whether both are deemed to occur together as a result of prior factors, or if they could be affected separately and have additive/combined effects.

The model also does not specify parental gender in any area of transmission, and while current research evidence does not provide enough support to propose specific mechanisms for each pathway, there are some suggestions of differing parenting styles for mothers and fathers (Bögels & Phares, 2008). Therefore it is likely that the current model will require further revisions as more detailed investigations of separate pathways within the broad overview are conducted. However, the current model serves as a useful, if provisional, overarching frame in which to consider information transfer in relation to the development of child anxiety.

—————> Parental anxiety accounts for the factor  
 .....> Parental anxiety raises the risk of the factor

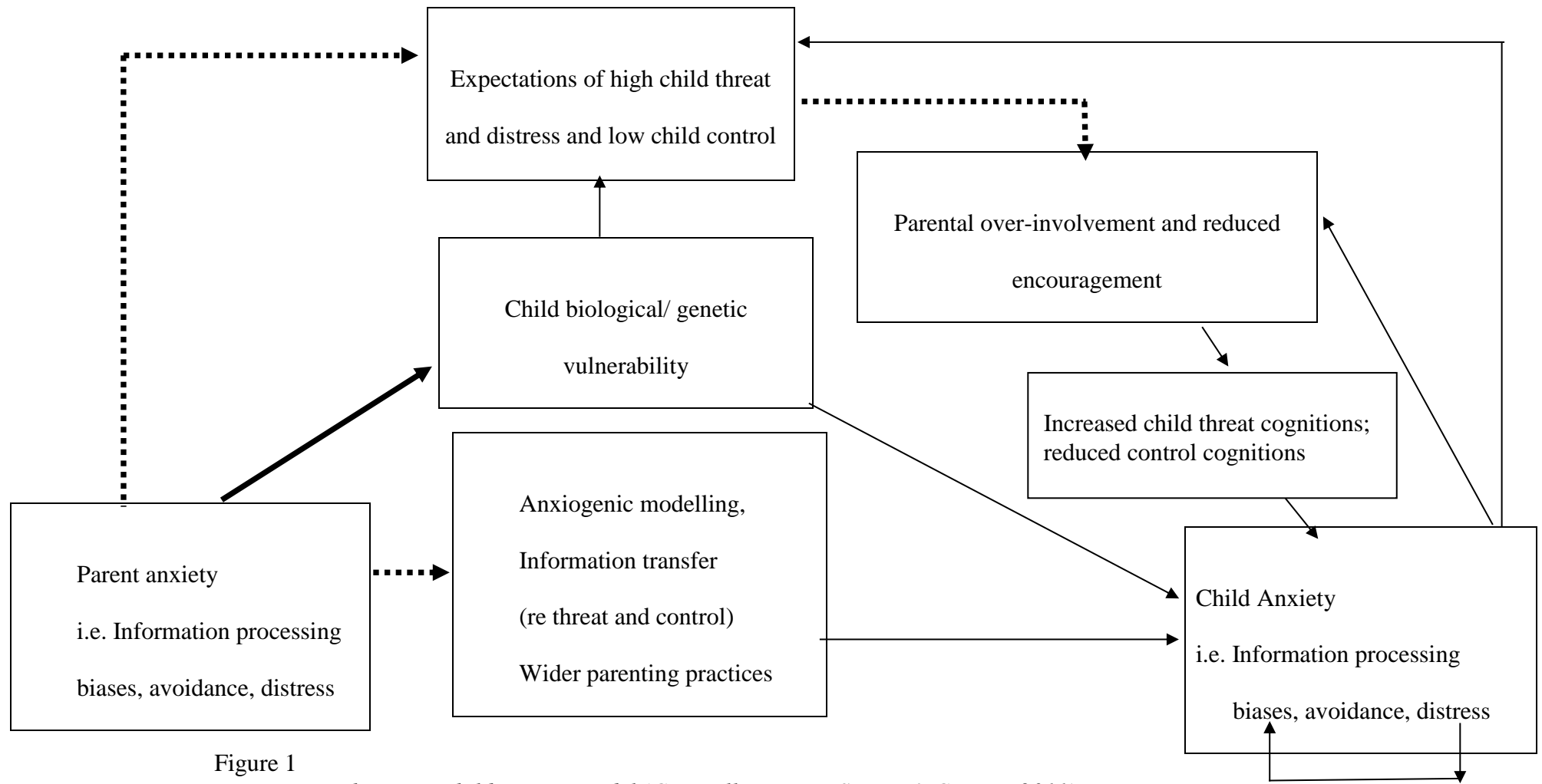


Figure 1  
 Parenting pathways to child anxiety model (Creswell, Murray, Stacey & Cooper, 2011)

### **1.8.3 Fear of negative child evaluation.**

When considering the transmission of social concerns and worries from parents to children, there may be specific mechanisms operating on the verbal information transfer pathway. Recently, the role of fear of negative *child* evaluation (FNCE) has been considered in relation to parental social anxiety and child social anxiety. First proposed by Schreier and Heinrichs (2010), parental concern of being negatively evaluated by others (a key concept in social anxiety) is hypothesised to extend to concern of their *child* being negatively evaluated by others. Such fears may be triggered when their child faces challenging social situations. This anxiety may elicit parental behaviours that actually increase the risk of child social anxiety, through the pathways outlined by Rachman (1977; 1991) and Creswell et al. (2011). In a large sample of 9-16 year old children, Schreier and Heinrichs (2010) found higher FNCE in parents (as rated by both parents and children through questionnaires) was associated with significantly higher levels of child social anxiety. In addition, child-reported maternal FNCE (e.g., ‘My mother is afraid that others think poorly of me’) was a mediator of the association between maternal and child social anxiety.

The FNCE construct was further examined in a much younger sample by de Vente and colleagues (de Vente, Majdandžić, Colonnese, & Bögels, 2011). They asked both mothers and fathers to complete social anxiety measures before the birth of their child, an adapted FNCE questionnaire when their child was four months old, and infant social fear and parenting questionnaires when their child was one year old. Parental social anxiety was found to significantly predict FNCE at four months. Paternal (but not maternal) FNCE was also found to predict infant social fear, and both parents’ FNCE predicted negative parenting behaviours. Such findings suggest parents’ own fear of negative evaluation (FNE) may extend to include their infant (and hypothetically their child throughout their life), for a number

of reasons. De Vente et al. (2011) proposed that i) parents may expect other people to be critical in general, and this includes criticism of their child; ii) parents may fear similar negative evaluation of their child as to themselves, due to the genetic similarity; and/or iii) parents may fear negative evaluation of their child as a criticism of their parenting from others. However, parental FNE relating to themselves was not assessed by de Vente et al. (2011), meaning such a link has not yet been directly tested.

### **1.9 Research on Parental Information Transmission**

The above theoretical models outline the potential pathways for transmission of anxiety (in the form of vulnerabilities, symptoms and frank anxiety disorders) from parent to child. However, such theoretical links are only of clinical use if supported by research evidence.

Child self-report studies have found associations between child anxiety symptoms and perceived parental rearing styles (e.g., Muris & Merckelbach, 1998). However, these studies are often retrospective, and may be subject to biases when using questionnaires to assess parenting as reported by children or parents themselves (Bögels & Brechman-Toussaint, 2006). A meta-analysis of 47 studies investigating the association between parenting and child anxiety found that parenting behaviours accounted for only 4% of variance in child anxiety (McLeod, Wood, & Weisz, 2007). However, the authors also found the strength of association to vary greatly depending on methodological factors. Specific parenting behaviours (e.g., autonomy-granting) showed stronger effects than more broad dimensions (e.g., warmth), and observational studies showed a greater level of association than questionnaire or interview methods. These differences suggest that research examining specific parenting dimensions using observational methodology may be best placed to uncover the true extent of the relationship between parenting and child anxiety.

To this end, the following literature search examined whether support for parental information transfer has been found in research studies examining observed parent and child behaviour, in the context of parent and/or child anxiety.

### **1.9.1 Search strategy.**

PsycINFO, Medline and Embase were individually searched on 4<sup>th</sup> March 2013. All peer reviewed journal articles in English language, using human subjects and published from 1977 (date of Rachman's three pathways publication) onwards were included. The key search terms and Boolean connectors were entered as follows:

1. *anxi\** OR *fear\** OR *phobi\** OR *worr\**
2. *parent\** OR *mother\** OR *maternal* OR *father* OR *paternal* OR *famil\**
3. *child\** OR *adolescen\**
4. "threat information" OR "negative information" OR "information transmission" OR "information transfer" OR "verbal information"
5. *discuss\** OR *talk\** OR *verbal\** OR *narrat\** OR *convers\** OR *tell\** OR *transmit\**
6. *Rachman\**
7. 4 OR 6
8. 1 AND 2 AND 3 AND 5 AND 7

A manual search was also performed by examining review articles (Fisak & Grills-Taquechel, 2007; Hadwin et al., 2006; Muris & Field, 2010) and the references of the relevant articles obtained from the database search. Papers that were cited as in press or in preparation were also considered, but none of these fitted the search description. One

unpublished doctoral thesis (from the research group the author of the current study has been involved in) was also included. Articles were included if they were empirical studies focusing on anxiety, with parents in the information transfer role (retrospective studies were excluded). A total of 16 studies were included in the current review. The review is organised into sections on general parenting behaviour, emotion discussions, family discussions of ambiguous scenarios, and specific information transfer studies.

### **1.9.2 General parenting behaviour studies.**

A number of studies have included evaluations of information transfer within parenting behaviour observations in the context of anxiety. Most have used broad coding dimensions (some of which combine verbal and non-verbal behaviours within one code), as these studies were not designed to assess information transfer specifically. However, many of the variables are related to, or include, verbal information transmission, so this group of studies can still provide information on verbal information transfer occurring alongside more general parenting behaviours.

Whaley and colleagues (Whaley, Pinto & Sigman, 1999) observed 18 anxious mothers and 18 non-anxious mothers and their 7-14 year old children in three conversational tasks ('ideal person task', conflict conversation and anxiety conversation). Along with other more general parenting behaviours (e.g., less positivity and granting of autonomy), anxious mothers were found to catastrophise significantly more than non-anxious mothers (e.g., blowing problems out of proportion, using a lot of 'what if' questions). This finding remained marginally significant after controlling for maternal depression, and catastrophising was particularly prominent in anxious mothers of anxious children. While suffering from some methodological weaknesses, this study was one of the earliest published observational studies of parenting and child anxiety. It is likely that the

Whaley et al. (1999) study prompted further observational research in this area, addressing some of the limitations of their study. Key methodological strengths included the use of structured measures to assess anxiety, and the individual coding of the three conversational tasks which allowed potential task comparisons. Although similarities across tasks meant they were in fact combined for analyses, this would not have been identified otherwise. However, the weaknesses of this study should also be acknowledged. The sample was relatively small (with no inclusion of fathers), and there were very small numbers in subgroups (e.g., non-anxious mothers, anxious children) which prevented some comparisons being made.

In a follow-up study, Moore and colleagues (Moore, Whaley & Sigman, 2004) expanded the sample used in the Whaley et al. (1999) study, to compare 29 anxious mothers with anxious children, eight anxious mothers with non-anxious children, 15 non-anxious mothers with anxious children, and 16 non-anxious mothers with non-anxious children. Children were aged 7-15 years old, and the same design as Whaley et al. (1999) was used, except the ideal person task was not coded (used as a warm up task in this study). The authors found a significant effect of maternal anxiety on catastrophising comments, and in the absence of maternal anxiety, child anxiety increased the likelihood of maternal catastrophising. One of the clear strengths in this study was the use of structured clinical interviews, which facilitated the ability to determine maternal and child psychopathology, and consider co-morbidity. While a very broad dimension, a catastrophising narrative style show similarities with information transfer (e.g., potentially highlighting the worst case scenario or fearful conclusions to an event). More detailed investigation of catastrophic comments would be beneficial, to identify exactly what information this constitutes. A limitation of both the Whaley et al. (1999) and the Moore et al. (2004) studies was that the majority of the anxious mothers in their samples reported current or past anxiety treatment. This may have influenced discourse style, yet was not



explored, and the type of treatment was not reported. It is plausible that psychological treatments focusing on challenging cognitive appraisals (e.g., CBT) may lead to a reduction in catastrophisation, while it is less clear whether a medication treatment would have the same effect. However, taken together, the findings from Whaley et al. (1999) and Moore et al. (2004) suggest negative information transfer (by way of catastrophic statements) may occur from anxious mothers to their children, and also from non-anxious mothers to their anxious children. Nonetheless, the possibility of bi-directional associations (e.g., child characteristics encouraging the use of catastrophising by mothers) cannot be ruled out with this cross-sectional design.

Using a very different sample in terms of demographics, Ginsburg and colleagues compared parenting behaviours of 25 clinically anxious and 25 non-anxious mothers interacting with their 5-8 year old children. Two papers reported on the same community sample largely consisting of low-income, African-American families. In the first study, mothers were observed interacting with their child during a challenging Etch a Sketch task (Ginsburg, Grover & Ialongo, 2005). As with other general parenting studies, information transfer was not directly assessed, but maternal anxious behaviour (which included maternal verbal comments of anxiety) was coded. No differences in anxious behaviour were found between anxious and non-anxious mothers, and there were no concurrent or longitudinal (6 years later) associations found between maternal anxious behaviour and child anxiety symptoms. In the second study, Ginsburg, Grover, Cord, and Ialongo (2006) compared maternal behaviours including anxious behaviour during the Etch a Sketch task, with an unstructured free play task. Again, no significant maternal anxiety group difference in anxious behaviour was found during either task. However, there was a significant effect of task type; mothers displayed less anxious behaviour during the free play compared to the Etch a Sketch task (with no significant interaction between anxiety

group and task type). Such results suggest the type of task used to observe parenting in the context of anxiety may be crucial.

The studies by Ginsburg and colleagues have a number of strengths, including the use of structured clinical interviews to obtain maternal anxiety diagnoses, and long-term follow up of child outcome which is lacking in most observational research. A key feature is the demographic characteristics of both samples, allowing parenting behaviours to be assessed in an under-researched population. The findings appear not to support the theory that anxious mothers transmit negative, threat-related information during their interactions with their children. However, conclusions about information transfer that can be made from the Ginsburg et al. (2005, 2006) studies are very limited, as the anxious behaviour code covered both modelling and information transfer (two of Rachman's (1977) proposed pathways). Therefore it is unknown whether specific verbal transmission codes may have revealed significant differences based on maternal anxiety. In addition, inter-rater reliability for this code was questionable (intra-class correlation = .61) and showed very low frequency, both of which may have masked group differences. As with previous studies, the lack of information regarding maternal treatment for anxiety prevents consideration of its influence on maternal discourse. The sample characteristics should also be considered when interpreting the results. The largely low income, African-American sample of young children and their mothers contrasts with those generally used in anxiety research (medium-high income, largely Caucasian families). While this is a methodological strength, it may be that different processes operate depending on child age, family cultural and economic environment. The above findings emphasise the need to investigate such factors, as well as types of observational task.

More recently, Becker and Ginsburg (2011) observed a community sample of 38 clinically anxious and 37 non-anxious mothers and their children (aged 6-14 years), preparing the child to deliver a five minute speech. No significant differences were found

between maternal anxiety groups on levels of maternal anxious behaviour (combining verbal and non-verbal anxious expressions) during the task. Overall, higher maternal anxious behaviour was significantly associated with poorer child-reported coping, but not child-reported distress or performance. In line with the critique of previous parenting behaviour research, the use of a clinically anxious group was a key strength of this study. However, a similar methodological weakness was also apparent, in the combining of verbal with non-verbal coding dimensions (preventing the specific influence of verbally transmitted anxious expressions being examined). In addition, over half of the anxious mothers currently receiving anxiety treatment at the time of the assessment, and again the possible impact of this on maternal behaviour (and a potential reason for lack of group differences) was not explored. While the deliberate exclusion of children with an anxiety disorder allowed greater specificity of findings, this meant that such results cannot inform the literature of parent information transmission in the context of both maternal and child anxiety.

In another parenting behaviour study, Turner and colleagues compared parents with an anxiety disorder ( $n = 43$ ) currently in treatment, with non-anxious parents ( $n = 38$ ) and their 7-12 year old children, during a 'risky' playroom interaction (Turner, Beidel, Roberson-Nay, & Tervo, 2003). The risky playroom equipment included a cargo net hung from the ceiling, a log wall to climb over, and balancing pole, all of which were contained within a padded environment. Observational codes included a cautionary statement variable related to verbal information transfer (saying 'be careful', directing child to a less risky activity). The authors found no significant difference between the frequency of cautionary statements made by anxious and non-anxious parents, and similarly, no difference in cautionary statements based on child anxiety status. In terms of strengths, this study was notable in including the assessment of child as well as parent anxiety (including lack of spouse anxiety) with standardised interview measures, and consideration

of both variables in analyses. However, in common with other parenting behaviour studies, the focus on verbal information transfer was limited in the coding scheme, and more subtle verbal expressions may not have been coded. The authors themselves acknowledge that the short duration of the task (five minutes) and the questionable level of 'risk' involved (in a soft padded playroom) may limit generalisability to naturalistic parenting behaviour, particularly in the context of longer exposure to more substantial risk. While the inclusion of (some) fathers is commendable, the combination of mothers and fathers in analyses prevented gender comparisons. Given recent theories positing differing roles for mothers and fathers in care/protection vs challenge/encouragement of risk taking (Bögels & Phares, 2008), it is possible that the combination of mothers and fathers in analyses may have weakened any associations found.

### **1.9.3 Emotion discussions.**

Two studies have explored parental discourse style in emotion discussions, in the context of child anxiety. In a community study of 8-12 year old children and their mothers, Suveg and colleagues (Suveg, Zeman, Flannery-Schroeder, & Cassano, 2005) compared unstructured emotion discussions (talking about times when the child felt worried, sad, angry) between mothers and children with anxiety disorders ( $n = 26$ ), and non-anxious comparison dyads ( $n = 26$ ). Mothers of anxious children were found to use significantly fewer positive emotion-related words than mothers of non-anxious children. While mothers did not differ on number of negative emotion words used, mothers of anxious children were significantly more discouraging of the emotion-related discussion. This study had a number of strengths and limitations. One strength was the use of a standardized interview measure to determine child anxiety diagnoses, however a limitation was the reliance on a questionnaire measure to examine maternal psychopathology.

Another weakness was that the impact of maternal symptoms on maternal discourse style was not assessed. This prevented consideration of the effect of maternal anxiety (a key area of interest for the current study) on their conversation style. Furthermore, the use of negative emotion discussions only (rather than positive or neutral conversations) may have masked potential differences in maternal expression of negative emotion-related words, due to task demands.

To address some of these weaknesses, this research was followed up by a family discussion study including both mothers and fathers talking about a happy, angry and anxious time with their 8-13 year old children (Suveg et al., 2008). Treatment seeking clinically anxious children ( $n = 28$ ) and their parents were compared to a group of non-anxious children ( $n = 28$ ) and their parents. Both parents engaged in discussion tasks with their child at the same time, but were coded separately. Fathers of anxious children were found to engage in significantly less explanatory discussion of emotion, compared to fathers of non-anxious children. A specific gender effect was found with mothers; mothers of anxious sons engaged in significantly less explanatory discussion of emotion during the anxiety conversation, compared to mothers of non-anxious sons (no difference was found for daughters). Contrary to the previous study findings, neither mothers nor fathers of anxious children showed differences in discouragement of emotion topics compared to parents of non-anxious children.

A main strength of this study was the inclusion of fathers which is lacking in other anxiety research (or where father have been included, their data are often combined with mothers in analyses). Including fathers allowed specific analyses in relation to paternal discourse style, as well as maternal discourse style. However, the participation of both parents in the same discussion task is likely to have impacted on each other's conversational input. It is plausible that hearing one parent's input during the discussion task may have stopped the other parent from making similar statements, as this would

seem repetitive. Therefore it is possible that individual discussion tasks may have uncovered greater specificity of effects. One important limitation of this study is that the anxious group was participating prior to receiving treatment for their child's anxiety, which the authors acknowledge may have influenced the way families approached the tasks. For example, parents of anxious children may have been more encouraging in their discussions than they naturally would be, as they believed this task was required for their child to gain treatment. In common with the general parenting behaviour literature, both studies by Suveg and colleagues (2005, 2008) relied on broad coding dimensions, and lacked specific coding of parental threat/negative information transfer. This was not the primary focus of the emotion discussion tasks, but necessarily limits the conclusions that can be drawn regarding verbal information transmission.

#### **1.9.4 Family discussions of ambiguous scenarios.**

Two research groups have investigated family discussions of ambiguous scenarios, with coding schemes that are more directly related to verbal information transfer. Using a small sample of four children with anxiety diagnoses and eight non-anxious children (aged 9-13 years), Chorpita, Albano and Barlow (1996) investigated child interpretations and responses to ambiguous scenarios, and discussion of these with parents. Due to the small sample size, anxious and non-anxious groups were not compared and the sample was analysed as a whole. Significant positive correlations were found between anxious verbalisations by parents (anxious statements/agreement with anxious child statements), and child anxious plan statements. While the small sample and lack of parental anxiety measurement severely limit the conclusions that can be drawn from this study alone, these preliminary findings are supported by further research (see below). The significant results

found in such a small sample are likely to have been maximised by the clinically-enriched sample used.

In two papers describing the same study, Barrett and colleagues examined family discussions of ambiguous scenarios, and anxious children's interpretations and responses to these scenarios before and after the discussion (Barrett, Rapee, Dadds, & Ryan, 1996; Dadds, Barrett, Rapee, & Ryan, 1996). In both the Barrett et al. (1996) and Dadds et al. (1996) papers, the anxious children group ( $n = 152$  and  $66$  respectively) was compared to children referred for Oppositional Defiant Disorder (ODD,  $n = 27$  and  $16$ ), and non-clinic children ( $n = 26$  and  $n = 18$ ). The authors found an increase in anxious children's avoidant solutions following family discussion, compared to an increase in aggressive solutions by oppositional children, and decrease in both avoidant and aggressive solutions by non-clinic children (Barrett et al., 1996). More detailed analysis of the content and sequence of communication within the family discussions revealed that parents of anxious children did not verbally communicate more threat information or avoidant solutions in their speech compared to parents of non-clinic or aggressive children (Dadds et al., 1996). However, parents of anxious children were less likely to point out positive consequences of plans than parents of non-clinic children (no difference was found for negative consequences). Additionally, compared to parents of non-clinic children, parents of anxious children were more likely to respond to child avoidant plans by communicating avoidance themselves, and were less likely to agree with pro-social plans. Significant positive correlations were found between parental agreement with child avoidance, or reciprocating avoidant solutions, and final child avoidant solution. The effect of family discussions on child solutions was labelled by the authors as the Family Enhancement of Avoidant and Aggressive Responses (FEAR) effect.

The Barrett et al. (1996) and Dadds et al. (1996) studies are notable in the size of their clinically anxious groups, and by excluding non-anxiety diagnoses the authors

allowed greater specificity in their analyses and findings. Other strengths include the use of a detailed coding scheme, and the inclusion of a clinical control group that highlighted similarities as well as specific differences. However, there were also a number of limitations. Parental psychopathology was not assessed at all, and although fathers were included, the proportion of mothers/fathers/both parents participating in discussions is not reported on. Also, parental responses to child suggestions were combined for the analyses, preventing comparisons by parent gender. Another limitation of these studies is the difficulty in concluding parental intention during the discussions. It is possible that parents felt they should help their child clarify the child's own responses (i.e., help their child to be more accurate in providing their own interpretation), rather than providing their own (parental) view or interpretation. While family discussions hold greater ecological validity than many other designs already discussed, it is still possible that conversations about ambiguous scenarios may differ from discussions about real-life events concerning the child.

### **1.9.5 Parental information transfer research.**

Four published studies have specifically investigated parental information transfer in relation to anxiety. Muris and colleagues (Muris, van Zwol, Huijding, & Mayer, 2010) extended Field's work by providing 88 parents with 10 sentences containing positive, ambiguous or negative information about a novel animal (a cuscus), and measured transmission of this information and corresponding child fear beliefs. Parents were asked to describe four hypothetical experiences (their child wants a cuscus for their birthday, their child meets a cuscus in the park, the parent has to clean a cuscus cage, and a cuscus meets another animal) to their 8-13 year old children. Parents' narratives were coded for negative cuscus statements, and children's cuscus fear beliefs were measured before and



after parental narration. The authors found that parents provided with negative information (e.g., ‘The cuscus is dangerous’) made significantly more negative cuscus statements in their narratives than those provided with ambiguous (e.g., ‘The cuscus is noticeable’) or positive (e.g., ‘You can have fun with the cuscus’) information. Negative narrative statements were also found to lead to increased cuscus fear beliefs in children. Importantly, in the ambiguous information condition, high trait anxious parents made more negative statements about the cuscus in their narratives than low trait anxious parents, which also corresponded to child fear beliefs. Overall, parental negative statements were found to mediate the effect of parental anxiety on child fear beliefs; therefore these findings provide strong support for the parental information transfer pathway.

A key strength of this study was the examination of relationships between parental anxiety, information transfer, and child fear, and comprehensive assessment of each of these factors. The study was designed to assess information transfer, and therefore the coding was specific to this (a feature lacking in most other anxiety research). Another strength was the inclusion of both mothers and fathers and investigation of separate pathways, although comparisons were not possible due to the small number of fathers ( $n = 16$ ). However, the Muris et al. (2010) study also has a number of limitations. As the study involved a non-clinical sample (relying on self-report anxiety measures), there is limited generalisability to clinical populations. A key limitation of the maternal trait anxiety findings, that the authors themselves acknowledge, is that maternal depression was not assessed in the study despite this being associated with the anxiety measure used.

Therefore it is not possible to assess the relative influence of maternal anxiety compared to depressive symptoms on verbal information transfer. Another limitation is that these findings do not address how parents transmit information they have acquired (which may have been influenced by biased attention, interpretation and memory) more naturally to their children, and regarding more complex situations than encountering a novel animal.

Additionally, child-relevant (e.g., ‘Your child is playing in the park and then a cuscus approaches’) and non-child-relevant (e.g., ‘The cuscus encounters another animal’) situations were combined in analyses, preventing potential differences in narrative style between these being assessed. It might be expected that parents would view such situations differently, and so the degree of negative statements in these scenarios might differ.

Remmerswaal and colleagues (Remmerswaal, Muris, Mayer, & Smeets, 2010) used the same design and methodology as Muris et al. (2010) in a slightly smaller sample ( $N = 52$ ) of mothers and their 9-12 year old children, to investigate information transfer and reasoning biases. The same materials and procedure were followed, except no ambiguous condition was included. Additionally, a cuscus-related reasoning bias assessment was included both for mothers (after being given information) and children (following maternal narratives). The test employed in this study assessed confirmation bias (employing a verification strategy to selectively search for information that validates the view you already hold, rather employing a falsification strategy), a reasoning bias found in anxious individuals. The previous findings of Muris et al. (2010) in terms of information transfer were replicated, and reasoning biases were also found in both mothers and children. Both mothers and children in the negative information condition chose a falsifying reasoning strategy less often (e.g., seeking to falsify the dangerousness of the cuscus) compared to those in the positive information condition.

As for the previous study by Muris and colleagues (2010), limitations of generalizability apply due to the use of a non-clinical sample. However this study is notable in replicating the Muris et al. (2010) findings, and extending work on information transfer to consider cognitive processes that may be influenced by this mechanism. Indeed, the fact that such effects were found in a non-clinical sample suggests this could be a conservative estimate of such mechanisms. A limitation of the Remmerswaal et al. (2010) design was the use of an artificial task and extreme comparison conditions (e.g.

‘The cuscus will attack you’ vs ‘You can have fun with the cuscus’), which limits generalisability of the findings to everyday situations where parents rarely have such clearly positive or negative information. However, this in itself provides clear directions for future research, and is a strong starting point from which to explore more subtle information transfer and cognitive processes.

To increase ecological validity of the task, Remmerswaal, Muris and Huijding (2013) used a similar design as Muris et al. (2010) to investigate maternal information transfer, this time using real animals during the task itself. Mothers ( $N = 47$ ) were shown a pair of live Mongolian gerbils (and told they were in fact exotic rodents called ‘Tjinos’). No mothers or children had any prior knowledge of the animals. Mothers were then given either positive or negative information about the ‘Tjinos’. Following this, they were asked to prepare their 8-12 year old children to approach the live animals, and their spontaneous information transfer to their children was recorded, along with latency for their child to approach. Mothers in the negative condition were found to make more negative comments (and fewer positive comments) about the animals than those in the positive condition. While this did not affect fear ratings, children in the negative information condition were more reticent to approach the animals than those in the positive information condition.

A clear strength of this study was the use of real live animals that were visible to mothers, to create a realistic context for information transfer and approach tasks. The coding of positive as well as negative comments was another key strength, as much anxiety research has focused on the negative aspects of parent behaviour/speech. Additionally the lack of specific instructions to mothers to pass on the information they had been given to their children allowed greater opportunity for naturalistic conversations. This enabled more realistic assessment of how mothers tend to transmit information to their children prior to an upcoming real-life event, when they are provided with less structure in how to do this. However, despite a number of strengths, there were also some limitations of the

Remmerswaal (2013) study. In this study the negative information was rather mild in valence compared to previous studies using the same design (e.g., ‘these animals are wild animals and inclined to defend their territory’). While this was probably more similar to information parents receive in everyday life, this is a likely reason for the lack of change in child fear beliefs. A major limitation of this study was the lack of an ambiguous/neutral information condition, which prevented the impact of maternal anxiety on information transfer being assessed. Given the novel methodology using live animals during the information provision stage, it would have been intriguing to assess whether the effect of trait anxiety on maternal statements found in the Muris et al. (2010) study was replicated.

A naturalistic community study by Remmerswaal and Muris (2011) investigated information transfer and child fears related to the swine flu pandemic ( $N = 223$ , child age range 7-12 years). While this study was not observational in nature, the naturalistic design and focus on parental information transfer warranted inclusion of the study in this review. In this study, parents and children completed questionnaires regarding their fears of swine flu, as well as general fearfulness of medical issues. Children also rated whether they had received threat-related information about swine flu from their parents (e.g., ‘My parents warn me about the swine flu’), or other sources (school, friends, media). Parents also completed a four-point scale regarding their own swine flu threat-related information transfer to their child (e.g., ‘I warn my child about the Swine flu’). Parental information transfer (significant even after controlling for other information sources) partially mediated the significant effect of parental swine flu fear on child swine flu fear, with similar findings for both mothers ( $n = 202$ ) and fathers ( $n = 145$ ). Although using a general population sample and questionnaire data only, the strengths of this study (a large sample, comparisons between maternal and paternal influences, naturalistic design) mean these findings can be taken to strongly support the theory that parents transmit negative information to their children in the context of anxiety. However, a limitation of this study

was that only very minimal information was gathered regarding information transfer (four questionnaire items for both children and parents). In common with all correlational designs, the study findings cannot address questions of causality.

One unpublished doctoral study has included observations of mother and child naturalistic discussions regarding a real-life event (Pella, 2011). As part of a prospective longitudinal study (on which other papers have been published; see Murray et al., 2007; 2008; Pass et al., 2012), information transfer by mothers with DSM-IV social phobia ( $n = 73$ ) was compared to that of control mothers ( $n = 63$ ), using starting school as a disorder-relevant context. Around three months prior to starting school (mean child age 4.53 years), mothers and children co-constructed a narrative about the child's first day at school using a picture book prompt. A comprehensive coding scheme was developed to capture specific aspects of verbal information transmission, with narratives were coded by utterance. Mothers with social phobia showed a significantly greater overall anxiogenic style in their narratives compared to non-anxious mothers; this included being significantly more likely to make a high proportion of threat attributions and child vulnerability comments, and failure to resolve their child's expressed anxiety. Mothers with social phobia also showed less positive encouragement in their narratives compared to control mothers. Children also completed a play representation of school based ambiguous scenarios, and maternal lack of positive encouragement in the narrative task was significantly associated with highly anxious/negative child representations (Pass, 2010). A clear strength of this study was the naturalistic design and disorder relevant (i.e., social), real-life context on which the task was based. This provides greater ecological validity and generalizability of findings than the experimental information transfer studies previously mentioned. Additionally, maternal anxiety was assessed using structured assessment measures, and very specific information transfer codes were analysed compared to many of the broad parenting codes used in other studies. The main limitation of the Pella (2011) study was the extremely time

consuming and labour intensive nature of the coding scheme, requiring each narrative to be transcribed and separated into utterances before coding on a number of specific variables. While this allowed very detailed investigation into specific types of comments socially anxious mothers may make, the future research and clinical applications of such a comprehensive, time intensive coding scheme may be limited. In fact, the need to analyse maternal speech in such a fine grained manner to identify differences based on maternal anxiety is questionable. It is not known whether a more streamlined, clinician-friendly coding method would still be able to capture clinically relevant effects of maternal anxiety.

#### **1.9.6 Limitations of the current literature.**

Overall, in the context of parent and/or child anxiety, research suggests that parents verbally transmit negative, threat-related information to their children. Across the literature reviewed, general parenting behaviour studies provide weakest support for parental information transfer (partly due to these studies not including this as a central feature of their designs), and specific information transfer research providing strongest support.

There are number of methodological weaknesses in the current literature. Small samples are common, which limit design (e.g., preventing subgroup comparisons) and power to detect significant effects. There are often various anxiety disorders combined in one 'anxious' group, without comparisons of different anxiety presentations; yet there may be important differences in information transfer depending on type of fears/worries and certain task contexts. Few studies included fathers, and in those that did, small numbers prevented comparisons between information transmission depending on parental gender (an important theoretical question; Bögels & Phares, 2008). In fact, the inclusion of fathers without sufficient numbers to make comparisons between parental gender may in

fact have weakened power to detect effects (if mothers and fathers have differing information transfer styles). Additionally, almost all studies focused on an age range (6-15 years) spanning middle childhood. It may be that there is a developmental aspect to parental information transfer, and combining different ages masks such effects. Parental information transfer may be particularly salient in early childhood, yet only Ginsburg et al. (2004; 2006) and Pella (2011) included younger children.

A range of tasks have been used in previous research, and although not all studies were designed to investigate information transfer of anxiety, some studies may have been limited in their ability to identify parental information transfer due to type of task, explaining variation in results. However, this should not negate the use of such tasks if the focus is on other measures of parenting, and the reviewed studies provide an excellent grounding for consideration of the relevant context in which to conduct further research.

In many studies, the measurement of anxiety in both parent and child was not undertaken, preventing consideration of both influences on information transmission. Overall, there is a lack of consensus regarding anxiety assessment and measurement, hindering comparisons. Coding schemes have also varied, often combining verbal and non-verbal dimensions, preventing differentiation between Rachman's distinct theoretical pathways of modelling and verbal information transfer. Finally, not all studies have considered positive verbalisations (or the corresponding lack of these), which may be equally important in the development of anxiety and the hypothetical protective nature of positive information transfer. Other areas of parenting research have highlighted the potential role of low positivity in the development of maladaptive child cognitive processes such as rumination (e.g. Gate et al., in press), and so this would be an important area to consider in future research.

### **1.9.7 Theoretical and Clinical Implications.**

Despite these limitations, the reviewed studies have important implications. The hypothesised pathway between parental anxiety, information transfer, and child anxiety (Creswell, et al., 2011) has been largely supported. This indicates that parents may play an important role in the information transfer pathway to fear (Rachman, 1977), and information transfer may add to the environmental explanation of anxiety familial aggregation, beyond that of more general parenting behaviour. When considering the development and maintenance of child anxiety, such findings point to possible discourse-based interventions with parents of clinically anxious children, and clinically anxious parents. By helping parents talk to their children using less negative, threat-related information, anxiety in their offspring may be reduced or even prevented. Parental information transfer therefore appears to be a promising area for further research on which to base effective clinical interventions.

Several avenues for future research are clear, based on this review. First, further research focusing on *parental* information transfer, rather than other informants, is needed. Ideally, this should include consideration of both mothers and fathers to investigate gender-specific parental discourse patterns. However, this is unfortunately a major challenge for most early childhood studies, and those that attempt to recruit both parents often suffer from much smaller paternal sample sizes even with substantial recruitment resources (e.g. Edwards et al., 2010). If studies lack the resources to compare data from mothers and fathers, it is pragmatic to focus on only one parental gender to prevent the combining of theoretically different influences. There is evidence to suggest greater concordance between maternal and child mental health difficulties than paternal and child, particularly for internalising disorders in early childhood (Connell & Goodman, 2002). Therefore depending on the age of the children being assessed, future studies may wish to



focus particularly on mothers when examining parental information transfer to young children.

Additionally, younger (e.g., preschool) children have been neglected in the current information transfer literature, despite the likelihood that parental information transmission is particularly salient for this age group. Prior to starting school, children have limited direct experience of the world themselves, and most of this is in the company of their parents. Therefore future research should include younger child samples to address this issue, as well as consider developmental differences in the type of information transmitted. It would also be helpful to restrict the age range in studies to reduce variability in each sample, or alternatively recruit sufficient numbers per study to allow comparison of different age ranges.

Second, further exploration of task influences is warranted, to develop observational frameworks that are both naturalistic and relevant to examining information transfer. Parents may transmit more threat-related information to their children when considering situations relevant to their own and/or their child's anxiety; and upcoming real-life challenges may be a useful frame for such discussions. Alongside these, more specific coding schemes are needed to separate individual elements of verbal information transfer, and allow analyses comparing and combining different features of this. Specific codes relating to positive information transfer should also be included, to explore the possibility that the absence (or low levels) of positivity could be as important as the presence (or high levels) of negativity/threat. The detail needed in such coding schemes should be balanced against the ease that they can be used in clinical practice, which requires a fast and assessor-friendly coding system.

### **1.10 The Present Study**

The present study draws on the published literature outlined above, and attempts to both replicate findings of parental information transfer and extend these to address some of the limitations of previous studies. A particular focus of this study is on naturalistic information transfer, to investigate whether the strong experimental findings described above (e.g. Muris et al., 2010) can be replicated with less artificial settings and tasks. To this end, a naturally occurring social challenge will be used as a context to frame the study; children starting school.

Starting primary school is a significant developmental step in early childhood (Dockett & Perry, 1999a). This is a potentially anxiety provoking, yet normative event for both children and parents, and involves numerous new challenges, of which many are social in nature (e.g., interacting with unfamiliar peers, older children and teachers). By using the context of this upcoming, real-life social challenge, the influence of maternal social anxiety on how mothers talk to their children about social challenges, and how children represent such challenges, can be explored.

Due to the young age of children in the present study (dictated by the age of starting primary school in the UK), mothers rather than fathers will be included to assess parental information transfer. There are potential parental gender differences in interactions with their children (Bögels & Phares, 2008), and comparisons between mothers and fathers would require a representative and sufficiently powered sample of fathers. Unfortunately this is beyond the time and financial scope of the present study, therefore only mothers will be selected. For preschool children, mothers are still most likely to be the primary caregiver, therefore are particularly significant information-givers for this age group.

Observational methodology allows direct measurement of information transfer. The design of the information transfer task allows the content of maternal speech to be

coded, while enhancing ecological validity by focusing the task around a real-life challenge. Starting school is a familiar topic for children and doll play is an activity they enjoy and understand, optimising engagement. Previous doll play methods using the starting school context have required time and labour-intensive coding (Pass, 2010; Pass, Arteche, Murray & Cooper, 2012), so a more clinically relevant and streamlined coding approach will be developed for use in the current study.

In sum, the present study aims to investigate the influence of maternal social anxiety on i) a structured maternal information transfer task about starting school, and ii) on child representational doll play about starting school. The influence of maternal information transfer on child representations of school will also be assessed.

### **1.11 Research Questions and Hypotheses**

Primary research questions:

- 1) Do socially anxious mothers provide more negative/threat information, and less positive information, to their children about school?

It was hypothesised that mothers with higher social anxiety symptoms would be more likely to include negative/threat statements in their descriptions about school, and less positive/encouraging statements than mothers with lower social anxiety symptom scores.

- 2) Do children who have socially anxious mothers represent school as a negative/threatening place?

It was hypothesised that children of mothers with higher social anxiety symptom scores would be more likely to represent school with negativity/threat interpretations, than children of mothers with lower social anxiety symptoms.

- 3) Do children of mothers who provide more negative/threat information (and less positive information) about school, represent school as a negative/threatening place?

It was hypothesised that there would be a positive correlation between maternal description task negativity, and child representational negativity.

- 4) If 1, 2 and 3 are supported: Does maternal information transfer mediate the effect of maternal social anxiety on child representations?

It was hypothesised that maternal description task variables would mediate the association between maternal social anxiety symptoms and child representations, so that once maternal description variables were controlled for, the association between maternal social anxiety scores and child representations would no longer be significant.

Secondary research questions:

- 5) What is the relationship between maternal social anxiety, fear of negative evaluation, and fear of negative child evaluation?

It was hypothesised that there would be positive associations between maternal social anxiety, fear of negative evaluation and fear of negative child evaluation, which have been purported to measure similar underlying constructs in social anxiety.

- 6) What is the relationship between fear of negative child evaluation, maternal information transfer, and child representations?

It was hypothesised that there would be a positive association between maternal fear of negative child evaluation, and negativity in both maternal description task variables and child representations.

The demographic and questionnaire data also allowed assessment of demographic details (e.g., age of mother/child at assessment, child gender) as well as general anxiety, stress and depressive symptoms in mothers, to control for these variables if required.

## **Chapter 2 Method**

### **2.1 Design**

The study employed a correlational design, recruiting mothers across the spectrum for levels of social anxiety from the general population. While clinically significant social fears were not expected in a large number of participants, social anxiety disorder is relatively common (around 12%; Kessler, 2005) with greater prevalence in females than males in community samples (Furmark, 2002), so a range of scores was expected. The mothers and children were assessed at one time point, where both maternal questionnaires and the observational assessment took place (mothers could however return questionnaires at a later date if they chose to). All families were assessed during the academic year prior to the child beginning primary school.

### **2.2 Participants**

Participants for the current study comprised mothers and their preschool age children from the general population. Families were included if the mother was the primary care-giver, and the child was due to start primary school in the next academic year. Mothers and/or children with severe physical illnesses or medical conditions (if reported by mothers, who also stated that this may prevent a typical transition to school) were excluded, as were families where either mother or child did not speak fluent English (as this would affect the validity of responses on both the observational tasks and questionnaires). English fluency was assessed during the correspondence that was involved prior to the study visit (all families made some initial contact by telephone, email, or in person, enabling a basic screen for English fluency by the researcher prior to recruiting into the study). For any family that such exclusion criteria were uncertain at recruitment, the protocol was for additional contact to be made to ascertain the validity of conducting the assessment (e.g. if correspondence from a mother raised queries about their

English fluency, further emails/telephone calls/discussions in person would be elicited to check this). In fact, there were no concerns regarding exclusion criteria for any family who agreed to participate.

Families were recruited from local pre-schools, nurseries, playgroups and church play schemes, as well as SureStart initiatives in the Suffolk, Norfolk, Essex and Cambridgeshire area. Mothers who had taken part were also invited to pass on the study details to other mothers they knew who may be interested, to maximize recruitment. This recruitment process necessarily meant that almost every family contacted about the study had their child in formal day care. However, due to the government provision of free childcare sessions for children over 3 years, in practice most children in their pre-school year in the UK receive some formal care and therefore it was deemed an acceptable recruitment strategy.

### **2.3 Sample Size and Power Analysis**

The closest previous research to base the a priori power analysis on is that of Muris et al. (2010), with acknowledgement that without an experimental manipulation, it was unlikely as strong effects would be obtained (e.g., large effect sizes in each analysis, shown by correlations ranging from .51- .64, resulting in a linear regression model with .80 power and .89 effect size, able to detect effects at  $N = 15$ ). However, the above findings are promising, and suggest a slightly more conservative estimation would still enable sufficient power to be obtained with a feasible sample size.

For the first three research questions, at 80% power for a one-tailed test, a correlation of .30 (a medium effect size) required a total sample of 67 participants. For the fourth research question, a multiple linear regression model with 2 predictors at 80% power for a one-tailed test with a medium effect size (.15) would require a total sample of 68 participants. Given these calculations, it was deemed that a total sample size of 70

would allow sufficient power to detect effects for each of the research questions, with conservative estimations of study effect size.

A total of 43 child care centres (e.g. nurseries, preschools) and two childminders agreed to pass on details of the study to families (the amount of help varied, from displaying a poster about the research to handing out flyers/information packs, or allowing the researcher to recruit from the premises in person). Details of the recruitment process are outlined in Appendix J. A total of 215 information packs were distributed to parents via these centres, in addition to over 300 flyers (some preschools printed the flyers themselves or sent it out electronically via email distribution lists, so an accurate total could not be calculated). From these methods and from mothers who had taken part recommending the study to their friends and family (accurate numbers unavailable), a total of 109 mothers expressed a formal interest in the study (through email, text message, phone call, or returned consent forms). Consent forms were received from 74 mothers, 66 of whom completed the assessment. Out of the eight mothers who returned consent forms but did not take part, two mothers were un-contactable, three had children who were not starting school until 2014 (and so were not eligible for the current study during the period of assessments), two mothers were unable to make any of the offered days/times for the assessment, and one child was sick on the day of the assessment and the visit could not be re-arranged.

## **2.4 Measures**

The following measures were used in the current study.

### **2.4.1 Maternal symptoms and questionnaires.**

A number of questionnaires were given to mothers, to gain information on background demographic characteristics, anxiety, depression and stress symptoms, child anxiety and more specific constructs relevant to social anxiety (fear of negative evaluation



of themselves, and their child). The questionnaire pack took on average 10 minutes for mothers in this study to complete.

#### ***2.4.1.1 Demographics.***

A demographics questionnaire was designed for the current study (see Appendix C), to gain demographic information about the families (for potential inclusion as covariates), and full contact details. This was returned at the same time as consent forms, to allow contacting of interested families. The following demographic information was requested: Maternal and child date of birth, maternal and child ethnicity, child birth order, maternal co-habitation information (and whether this was with someone whom the child regards as their father), age at which the mother left full-time education and highest qualification, status towards child (e.g., mother, step-mother). All participating mothers were the biological mothers of the participating child.

#### ***2.4.1.2 Social Interaction Anxiety Scale (SIAS; Mattick & Clark, 1998).***

The SIAS (see Appendix E.i) is a 20-item questionnaire assessing worry relating to social interaction (e.g., ‘When mixing socially I am uncomfortable’), a key component in social anxiety. Each question is rated on a 5 point Likert scale, from 0 (Not at all characteristic or true of me) to 4 (Extremely characteristic or true of me). Total scores range from 0-80, with higher scores indicating greater social anxiety. The SIAS is free to use and shows high internal consistency ( $\alpha$  range .88- .94 across a variety of samples), test-retest reliability ( $r = .92$  across both a 4-week and 12-week interval), and discriminates between clinical anxiety groups and between social anxiety and general population samples (Mattick & Clarke, 1998). The SIAS takes around 3 minutes to complete.

**2.4.1.3 Brief Fear of Negative Evaluation scale- Straightforward items (BFNE-S: Rodebaugh et al., 2004; Weeks et al., 2005).**

The BFNE-S (see Appendix E.iii) is a shortened, adapted version of the Fear of Negative Evaluation Scale (FNE; Leary, 1983; Watson & Friend, 1969), and is an eight-item scale assessing fear of negative evaluation by others. This taps into the central construct of social anxiety, namely the fear of others thinking badly of the person (e.g. ‘I am afraid that others will not approve of me’). The BFNE-S is free to use, and has been shown to have good convergent and discriminative validity, and high internal consistency in both clinically anxious and control samples ( $\alpha = .92, .90$ ; Weeks et al., 2005). The 12-item version of the BFNE has shown good test-retest reliability over a four-week period (Leary, 1983). The BFNE-S is suggested to be a more psychometrically sound measure than other versions of the FNE where reverse score items are included (Rodebaugh et al., 2004), and was included to allow comparisons between the SIAS, BFNE-S, and FNCE (see below). The BFNE-S takes around one minute to complete.

**2.4.1.4 Fear of Negative Child Evaluation (FNCE: Majdandžić, de Vente & Bögels, 2008b).**

The FNCE (see Appendix E.iv) is a 10-item questionnaire measuring parental fear of their child being negatively evaluated by others (e.g., ‘I am afraid that others will not approve of my child’). Each item is scored on a 5 point scale, from 0 (Not at all characteristic of me) to 4 (Extremely characteristic of me). Total scores range from 0-32, with higher scores indicating greater fears of negative evaluation of their child. In common with the BFNE-S, the FNCE was developed from the Fear of Negative Evaluation Scale (FNE; Leary, 1983). The FNCE is a relatively new measure with little published psychometric data, but preliminary reports suggest good psychometric properties (e.g., internal consistency  $\alpha = .90$  for both mother and father samples; de Vente et al., 2011).

The inclusion of the FNCE allowed associations to be assessed between maternal social anxiety (SIAS), particular fears of negative self-evaluation (BFNE-S), fears of how others may respond to their child (FNCE), and what mothers say to their children about an upcoming social challenge (the maternal description task). The FNCE takes around one minute to complete.

#### ***2.4.1.5 Maternal anxiety about their child starting school.***

At the end of the FNCE, an additional question was added: ‘Do you personally feel worried about your child starting school? Yes/No’? While the FNCE relates to maternal cognitions about their child, this question was added as it was specific to the context of this study. This question also provided a check of whether some mothers may be anxious about their child starting school, but manage not to convey this in their statements to their child.

#### ***2.4.1.6 Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995).***

The 21-item version of the DASS was used to measure general anxiety, stress and depressive symptoms (see Appendix E.ii). The scale is free to use and shows high internal consistency on each of the three subscales ( $\alpha$  range .82-.91), adequate concurrent validity between the subscales and related measures of anxiety/depression ( $r$  range .68- .85), good test re-test reliability (Brown et al., 1997) and ability to differentiate between controls and clinical subjects (Antony, Bieling, Cox, Enns, & Swinson, 1998; Henry & Crawford, 2005). The subscales of the DASS allowed consideration of general anxiety symptoms and depressive symptoms, as potential covariates. The DASS-21 takes around two minutes to complete.

## **2.4.2 Child anxiety symptoms.**

### ***2.4.2.1 The Preschool Anxiety Scale- Revised (PAS-R: Edwards et al., 2008).***

The PAS-R (see Appendix E.v) is a revised version of the original PAS (Spence et al., 2001), showing superior psychometric properties. It is a 28-item questionnaire designed for parents of children aged 2.5- 6 years old, to assess child anxiety. The PAS-R yields an overall anxiety score, as well as subscales for social anxiety, generalised anxiety, specific fears and separation anxiety (the PAS obsessive-compulsive subscale was removed following evidence of poor psychometric properties). The PAS-R shows strong internal consistency (total scale  $\alpha = .92$ , subscales  $\alpha = .72- .83$ ), concurrent validity (shown by correlation with the Emotional Symptoms subscale of the SDQ  $r = .70$ ), and discriminates between children with and without an anxiety disorder diagnosis (Edwards, Rapee, Kennedy, & Spence, 2010). The PAS-R takes around three minutes to complete.

## **2.4.3 Maternal description task**

The maternal description task was designed specifically for this study, and finalised following pilot testing and feedback from one mother and child dyad, and four mothers. Mothers were asked 'Please tell your child something you think it is important for them to know about: i) Making friends at school; ii) Teachers at school; iii) Playtime at school; and iv) Older children at school'. Mothers were asked to spend up to around one minute on each topic, and that the child could respond if they wanted to. The time limit was decided on to provide mothers with sufficient time to create a rich description for each topic, while ensuring the task itself was still brief in total length (averaging around 5-6 minutes, including instructions and time for questions).

This task was designed to elicit maternal descriptions about managing the social challenges at school, in a natural conversation task. The researcher provided the above prompts on a written sheet, then allowed the mother and child to discuss each topic for as

long as they wished (although a stop watch was used to indicate when a minute had passed to encourage the mother to bring the conversation to a close). If a child appeared unwilling to engage in this task or wished to finish before the mother had completed all topics, they were encouraged once by the experimenter with a prompt of ‘Mummy has just a few more things to tell you’. Mothers also tended to spontaneously encourage their child to pay attention if they seemed distracted. If the child continued to state a wish to end the task, the task was ended by the researcher.

The maternal descriptions task was audio recorded, and a coding scheme was developed to code negative and positive information from the audio recording. This was based on previous coding schemes related to parental information transfer (e.g., Muris et al., 2010; Pella, 2011) and theoretical/empirical models of transmission of anxiety (Field et al., 2001; Murray, Creswell, & Cooper, 2009; Wood, McLeod, Sigman, Hwang, & Chu, 2003). Coding development was aided by initial piloting of codes, and exploration of themes present in the mothers’ descriptions. Key codes included mention of any type of threat (e.g., ‘Are you scared of the older children?’); negative evaluation of child (e.g., ‘What if the teacher tells you off cos you’re naughty?’) positive evaluation of child (e.g., ‘Your new friends might invite you over for tea’); and resolution of threat (e.g. ‘If you get lost, then the bigger children can help you’). The full coding scheme is outlined in Appendix H.ii. Inter-rater reliability was established for the finalised coding scheme (see section 3.3.3.2).

#### **2.4.4 Doll play (DP) task**

The doll play task comprised three ambiguous scenarios presented using dolls and props (set up in the doll school environment), using a story-stem approach (e.g. MacArthur Story Stem Battery: MSSB; Bretherton & Oppenheim, 2003). All three scenarios focused on social situations that may occur in reality at school (hearing other children laughing in

the playground; being told the teacher is looking for you; seeing older children look over at you), and were informed by previous work (Barrett et al., 1996; Pass, 2010; Pass, Arteché, Cooper, Creswell & Murray, 2012). The exact scenarios were finalised following piloting with three families, and discussion with other parents regarding the most age-appropriate situations to include (see Appendix I.i for researcher script). A final ‘fun time’ scenario was included to ensure the play ended on a positive note.

A doll play coding scheme was created for the current study, adapting previous measures used in coding child responses to ambiguous scenarios (Barrett et al., 1996; Dodd et al., 2011). Dichotomous present/absent codes were used, such as threat (e.g. ‘They don’t like me’) vs non-threat interpretation (e.g. ‘They are having fun’); approach to older children/teacher/laughing children vs no approach; negative evaluation (e.g. ‘They don’t want me to play’) vs none; verbal anxiety (e.g. ‘I feel shy’) vs none (e.g. ‘I feel happy’). The full coding scheme is outlined in Appendix I.ii. Inter-rater reliability was established for the finalised coding scheme (see section 3.3.4.2). In line with previous anxiety doll play work (Dodd et al., 2011; Warren et al., 2000), each doll play scenario was coded separately, therefore enabling a total to be calculated for each code (e.g. a 0-3 total threat interpretation score). The doll play task took around 15-20 minutes to complete.

## **2.5 Ethical Considerations**

All study data were stored securely in line with the Data Protection Act. All data were kept confidential, with each family allocated a unique anonymous identification number which was used on all data obtained. Family personal contact details were kept separately to the study data, in lockable storage. The video recordings of the doll play were stored on DVDs, which were kept in a locked storage case, separate from any identifying participant information. All electronic data were password protected on all devices.

Parents were given full written information about the study (see Information sheet, Appendix A), and the opportunity to ask questions prior to taking part. Each child was given a brief verbal description of the task (immediately prior to the assessment, and in advance if the researcher had contact with them), along with clear instructions that they were free to stop the task at any time without giving a reason. Written consent was obtained from all mothers prior to undertaking any aspect of the study (see Consent form, Appendix B), along with verbal consent from each child. Contact details of the Research Supervisor at UEA were provided on the information sheets, for families to gain further information or if they had any problems.

It was not anticipated that participants would become distressed during the study, as the task was engaging and similar to other play activities mothers and children undertake together. However, as mothers were asked about their mental health via questionnaires, it was possible that this may cause some distress. This was highlighted in the information sheet and mothers consented to taking part knowing they would be asked about this. They were also provided with the NHS Direct number, details of other useful resources, and advised to seek help from their GP if they had any concerns over their own, or their child's mental health (via the Useful Resources handout, see Appendix F). The protocol for any family raising concerns over risk or child protection, was that this would be followed up by communicating this with parents, and seeking further advice from appropriate sources (e.g. NSFT safeguarding team). However, this did not occur with any families in the study. The Useful resources handout was also provided to all participating pre-schools for their own use.

## **2.6 Procedure**

Two hundred and seventy five local pre-school leaders/managers were approached by letter, email, phone calls and in person, inviting them to take part in research examining

the transition to primary school. Further childcare providers were also contacted by families who had already taken part in the study if they wished to pass the information on, but details of numbers approached in this way were not available. Information on anxiety prevention in young children was offered in exchange for help with recruitment and use of facilities. From the 43 centres that agreed to take part (around a 6% agreed response rate), mothers who had a child due to start school in the next year, and who was currently attending the pre-school, were contacted. This was done in a number of ways, such as by sending out information packs (via the pre-school), the pre-school emailing parents, putting up posters, and the researcher meeting parents face to face at the pre-schools. Mothers and children who showed an interest in the study were provided with information sheets and consent forms. If they wished to take part, mothers were asked to return their completed consent forms to the researcher, along with the contact details sheet to allow follow-up phone calls to mothers around one week later. Mothers could complete and return consent forms at the time of initial meeting (i.e., face to face with the researcher), but could also return them via a drop box at the pre-school, or by post (postage paid return envelopes were provided). Mothers could also indicate their consent by emailing the study researcher (signed consent forms were obtained prior to testing). All mothers were informed that it was entirely voluntary to take part, and they were under no obligation to take part in the study.

Once written consent was obtained, a study visit was arranged at a convenient location and time for the family, to ensure the child felt comfortable. While visits at other locations (e.g., pre-school premises) were offered, all participating families in this study were seen in their own homes at the mothers' request. At the start of the assessment, the researcher introduced themselves, and gave a brief overview of the tasks: "Thank you for agreeing to take part in this study! I'm (researcher name), and this study is all about starting school. First of all, I'm going to ask (mum) to tell you (child's name) some



important things about starting school. Then (child's name) I'm going to let you make up the endings to some stories I'm going to tell you, about things that might happen when you start school". Following this, verbal consent from both mother and child was sought, with the ability to withdraw at any time emphasised.

As a warm up task, the researcher then gave the child a cartoon picture of a school (see Appendix D), and asked the child to help them colour this in, and either the child, mother or researcher added the child's details (child's name, age, school they would be attending). The researcher gave the child a sticker to put on the school picture, and explained that the child would get another sticker for each task they did. If the child appeared very shy or nervous towards the researcher, extra time was taken to put them at ease through the use of additional stickers, and colouring in of the picture.

The researcher then introduced the maternal descriptions task (see Appendix H.ii for details). After mothers completed this task, they were asked to complete the questionnaires while the child and researcher completed the doll play task independently. While there was a potential influence on questionnaire responses by the mother being present for the doll play task, this was deemed to have minimal impact on results, compared to the additional time it would require of participants to complete these at a later date. This approach also maximized questionnaire return and response rate, and allowed complete data collection for each family at the visit itself. The mother was told she could stay within the same room to watch the doll play itself, as long as this did not distract the child.

The researcher then introduced the doll play task to the child, inviting them to choose a doll to represent themselves (from a selection of dolls of different appearances), and familiarized them with the set up (coloured sheet of paper with drawings to represent each scenario context, other dolls, table and chair props as appropriate). The child was then asked to finish stories that the researcher started, about things that might happen when

they go to school. The child was encouraged to identify the doll as them, to increase engagement and validity of the school context. The researcher then followed a script to introduce each scenario in a standardised way (see Appendix I.i). In each scenario, the researcher asked for responses from the child to create endings to each scenario. As well as interpretations of the ambiguous scenario, the researcher asked the child ‘How do you feel?’ after their interpretation. While some research suggests children of this age may struggle to identify emotions, even with cues such as puppets (Quakley, Reynolds & Coker, 2004), this question was included to assess whether this was the case in a story stem design, and also to help disambiguate child responses. The doll play always ended with a positive scenario, left open for the child to complete (although the research provided support to ensure the child was able to end this positively, such as suggesting activities or friends to include). The doll play was video recorded.

The time taken to complete the doll play task was around 15-20 minutes, but this varied depending on how elaborate the child made each story ending (with greater variation in the length of the final, open ended ‘fun time’ story). After the doll play task, completed questionnaires were checked for missing responses then the family were thanked for taking part and given an opportunity to ask questions. A useful resources handout was given to all mothers, along with a brief description about how to seek help if required. Mothers who had not completed all questionnaires were asked to either fill them in, or return at a later date. Mothers were informed they could contact the researcher to ask questions later on, and that they would be sent a summary feedback sheet on the study via email. The child was given their school picture to keep and a larger sticker of their choice to thank them for their help, and mark the end of the visit.

## **Chapter 3 Results**

### **3.1 Overview**

This chapter outlines the results of the current study. The chapter begins by providing a data analytic strategy, followed by demographic and descriptive information about the sample and explorations of the three sets of data (questionnaire data, maternal task data, and child doll play data) to consider data reduction, and assess assumptions for parametric testing. The first three research questions are then addressed in turn, followed by consideration of the fourth research question as a result of the findings from the previous research questions. Subsidiary research questions are also be addressed at the end of the chapter, along with additional analyses that were conducted.

### **3.2 Data Analytic Strategy**

The data analytic strategy involved entry and analysis of data using the Statistical Package for Social Science for Windows, version 19 (SPSS, 2009). Prior to statistical analyses, data was explored and descriptive statistics used to assess for missing data, extremely low frequency codes, and high inter-correlations between codes. Following this, redundant variables or those with extremely low distributions were removed. Assumptions for parametric testing were assessed, using visual exploration of the data, z scores for skewness and kurtosis, and the Shapiro-Wilks normality test.

If the data were normally distributed, Pearson's correlations were conducted (and point-biserial correlations between one continuous and one categorical variable) for each of the first three research questions. If the data were not normally distributed, the robust statistical method of correlation via randomisation was used (point-biserial correlations were also conducted this way). This statistic does not require the assumptions needed for parametric data analysis (Howell, 2001), and outliers in the data are not problematic. Randomisation assesses how rare an obtained correlation is, relative to the sampling

distribution of correlations based on the data, and provides a correlation coefficient and corresponding significance level. Where partial correlations were unable to be performed using randomisation (due to limitations in the current statistical programs), these were run using the bootstrapping procedure and bias corrected and accelerated (BCa) bootstrap 95% confidence intervals reported (a significant result is indicated by the confidence intervals not including zero; Field, 2013). Collapsing categorical variables into dichotomous variables was also considered to maximise statistical options, and associations between two dichotomous variables were analysed using phi ( $\phi$ ) correlations. Close exploration of the data for any non-linear relationships (e.g. U shaped curve) was undertaken prior to decisions being made for each variable. Demographic variables were assessed for their association with main variables, and those showing a significant effect were included as covariates in the main analyses.

Following the steps outlined by Baron and Kenny (1986), if all three correlations for the first three research questions were significant, a partial correlation would be run to assess the mediation of the relationship between maternal anxiety and child representations, by maternal statements (the fourth research question). Partial mediation could be concluded if the  $p$  value was still significant but the correlation coefficient was reduced; full mediation would be concluded if the  $p$  value was no longer significant. The subsidiary research questions would be assessed using the same data analytic strategy outlined above. As all research questions had directional hypotheses, one-tailed significance tests and  $p$  values were used unless indicated otherwise.

### **3.3 Exploration of the Data**

#### **3.3.1 Demographic characteristics.**

Basic demographic information was requested from all mothers in the study. These questions were optional to answer, and therefore there were some missing data in the sample; Table 1 shows the demographic characteristics available for all mothers who provided information.

Table 1

*Maternal Demographic Characteristics*

Demographic Information	N	% of total sample	Mean (SD)	Total N
Maternal ethnicity:				
White British	58	87.9%		
White Other	8	12.1%		66
Non-white	0	0%		
Highest maternal qualification:				
GCSE/O level	5	7.6%		
HNC, NVQ, A-level(s)	13	19.6%		66
Undergraduate degree	18	27.3%		
Postgraduate degree or qualification	30	45.5%		
Cohabitation:				
Married/co-habiting with partner (child regards as father)	60	90.9%		66
Cohabitation: Not child's father	1	1.5%		
Not cohabiting	5	7.6%		
Maternal age when left full time education (years)			21.21 (3.52)	66
Maternal age at assessment (years)			37.75 (4.65)	66

As shown in Table 1, the majority of mothers (87.9%) identified themselves as White British ethnicity, and almost all mothers (90.9%) were cohabiting with the father of the participating child. Only five of the 66 mothers had not undertaken any post-compulsory education, and the high level of education in the sample was also indicated by the mean age of mothers when they left full time education (mean= 21.21, range 15-31

years old). The mean age of mothers at the time of the assessment was 37.75 years, ranging from 23 to 48 years old.

Demographic information was also requested from mothers regarding the participating child. The details of these are presented in Table 2.

Table 2

*Child Demographic Characteristics*

Demographic Information	N	% of total sample	Mean (SD)	Total N
Child ethnicity:				
White British	61	92.4%		
White Other	3	4.5%		66
Non-white	2	3.0%		
Birth Order:				
Only child	18	27.3%		
First born with younger siblings	24	36.4%		66
Both younger and older siblings	6	9.1%		
Older siblings only	18	27.3%		
Child gender: Female	42	63.6%		66
Child age at assessment (months)			50.71 (4.06)	66
Time lag between visit and starting school (days)			95.89 (49.95)	66

Table 2 shows that only two children were identified by their mother as non-white in ethnicity. A slightly larger number of girls than boys took part in the study, and there was a variety of birth orders although slightly more children who took part were first born or only children (i.e., the first child in their family to start school). The mean age of

children at the time of the assessment was 50.71 months, ranging from 42 – 58 months old. As many of the assessments were carried out before mothers had received confirmation of which school their child would be attending (and therefore school term dates), an average start date of 4<sup>th</sup> September (based on advertised Norfolk, Suffolk, Cambridgeshire and Essex school start dates) was used to calculate a time lag for each child between the assessment and starting school. As expected due to the time period over which data were collected (February- August 2013), there was a large range in the time between the visit and the average start date of 4<sup>th</sup> September 2013 (13 – 191 days).

As mothers had been recruited primarily through pre-schools, nurseries, and other formal daycare settings, all children in the study were receiving some level of formal care. The level of data provided by mothers regarding this varied, and many reported differing types of daycare, and varying amounts per week, throughout the child's life. This prevented a single measure being calculated to indicate the number of hours per week each child spent in formal daycare settings; however almost all children at the time of the assessment were receiving at least the 15 free hours funded by the government. The most recent national study of childcare use (based on 2011 data) found that 87% of 3-4 year old children were receiving some formal childcare (Department for Education, 2013), and that this was increasing year by year. Therefore, the fact all children in this sample were receiving some formal childcare was not deemed to be completely unrepresentative of the general population.

### **3.3.2 Questionnaire data.**

Mothers completed the SIAS, DASS-21, BFNE-S, FNCE and PAS-R. There were a small number of missing questionnaires (one mother did not complete the DASS-21, and two mothers did not complete the BFNE-S). This was due to lack of completion when returned via post, where it appeared the mothers had not turned over one page to complete



the questionnaire on the back. There was also a small amount of missing data within the completed questionnaires. For individual missing items, the missing value was replaced by the mean of the scale (or subscale, as appropriate) as long as there were no more than 20% of the scale items missing. When mothers had circled two responses on the same item (one mother did this numerous times throughout her questionnaires), the average of the two responses was substituted (e.g., if a mother had circled both 0 and 1 on an item, a value of 0.5 was added). When whole questionnaires were missing, these were requested again from mothers by email/post, but were left missing (and therefore excluded from analyses) if not returned.

Table 3 shows the means, medians, standard deviations and ranges of scores on each questionnaire, as well as the possible range of scores and total sample size.

Table 3

*Descriptive Data for Maternal Questionnaires*

Questionnaire	Mean	Median	SD	Possible range in scores	Observed range	N
SIAS	17.70	15	11.05	0 – 80	1 – 52	66
DASS-21 Depression	4.18	2	6.12	0 – 42	0 – 28	65
DASS-21 Anxiety	2.65	0	5.23	0 – 42	0 – 28	65
DASS-21 Stress	11.29	8	8.33	0 – 42	0 – 34	65
BFNE-S	10.71	10.5	7.74	0 – 32	0 – 31	64
FNCE	13.01	11	7.30	0 – 40	2 – 32	66
PAS-R total	27.70	27	14.73	0 – 112	0 – 63	66

As indicated in Table 3, the sample data showed a limited range of scores on all measures, with none reaching the maximum total on any questionnaire. This was expected

given this was a general community sample, and the symptom scores observed were largely in line with others reported from community samples (e.g., Henry & Crawford, 2005; Mattick & Clarke, 1998; Weeks et al., 2005). To further examine levels of significant symptomology in the current sample, Table 4 shows the number and proportions of mothers scoring above cut offs suggestive of clinical levels of severity (e.g., Brown et al., 1997; Carleton et al., 2011). As there are no known published cut offs for the FNCE and PAS-R, these questionnaires could not be analysed in this manner. However, the means for the top quartile of scores on both the FNCE (mean = 14.41, SD = 7.61) and PAS-R (mean = 46.94, SD = 7.75) were still well below the highest possible symptom scores. When asked the additional question, ‘Are you personally worried about your child starting school?’, 15 mothers (22.7%) stated that they were personally worried, while 51 (77.3%) stated they were not.

Table 4

*Proportion of Mothers Scoring Above Published Questionnaire Cut-offs*

Questionnaire	N above cut off	% above cut off	Total N
SIAS: 34+	6	9.1%	66
DASS-21 Depression: 10+	5	7.6%	65
DASS-21 Anxiety: 8+	3	4.5%	65
DASS-21 Stress: 15+	15	22.7%	65
BFNE-S: 26+	4	6.3%	64

As seen in Table 4, only a small proportion of the sample scored above suggested cut-offs indicating clinical severity on any of the questionnaires. This is reflective of a self-selected, general population sample and suggests that perhaps mothers who were more anxious chose not to take part in this study. However, the fact that 22.7% of the sample

reported that they were personally worried about their child starting school, suggests that at least a fifth of the mothers taking part had some anxiety regarding their child's upcoming transition to school.

### ***3.3.2.1 Questionnaire internal consistency.***

The internal consistency of individual questionnaires are displayed in Table 5. All questionnaires had a Cronbach's alpha of .86 or above, indicating good internal consistency.

Table 5

*Questionnaire Internal Consistency*

Questionnaire	Cronbach's Alpha ( $\alpha$ )
SIAS	.907
DASS-21 Depression subscale	.866
DASS-21 Anxiety subscale	.872
DASS-21 Stress subscale	.874
BFNE-S	.948
FNCE	.897
PAS-R total	.893

### ***3.3.2.2 Questionnaire assumptions testing.***

The questionnaire data were examined visually, and through statistical analyses, to consider the distribution of data, and consider assumptions for parametric testing.

Although outliers were considered, in the current sample they were not excluded due to the likelihood of a small number of cases with clinically severe symptoms who were important

to include. Additionally, robust statistical methods (correlation via randomisation, bootstrapping) are not adversely affected by outliers, so they did not adversely affect analyses. Normality of the distribution was assessed using histograms, skewness, kurtosis, and P-P plots. Z scores of skewness and kurtosis were calculated, and these were deemed to be significant if the value was greater than 1.96 (Field, 2013). The Shapiro-Wilks test for normality was also used. From examination of these statistics and visual descriptives, all questionnaires were deemed to be non-normally distributed with the exception of the PAS-R (see Appendix K.i for details of the normality tests). Therefore the questionnaire data was deemed to violate the assumptions for parametric testing, and alternatives used.

Where possible, correlations via the randomisation procedure using Howell's computer program (Howell, 2001) were used. This was deemed a useful and valid way of assessing relationships in these data, given the lack of normal distribution in the majority of questionnaires, and the presence of a small number of extreme scores.

### ***3.3.2.3 Demographic influences on questionnaires.***

The potential influences of certain demographic variables were assessed in relation to the main questionnaires of interest in the study (SIAS, BFNE-S, FNCE, PAS-R). Maternal age at time of assessment, and age at which they left full time education, were entered into correlations with the SIAS, BFNE-S and FNCE. Child age at assessment, gender, and birth order (first born/only child vs other) were examined in associations with the PAS-R. The time lag between assessment and average school start date was assessed in relation to all questionnaires.

For the continuous measures, correlations were run using the randomisation procedure (using 1,000 repetitions), and for correlations with one continuous and one dichotomous variable, point-biserial correlations were undertaken (also using the randomisation procedure). The correlation coefficients, and associated significance levels,

are outlined in Table 6. Maternal co-habitation, maternal and child ethnicity, and maternal type of highest qualification were not deemed to be likely to influence questionnaire scores, and so were not assessed for their associations with these measures. As there were no a-priori predictions as to the direction of effects, two-tailed test p-values were used.

Table 6

*Correlations Between Demographic Variables and Questionnaires*

	SIAS	BFNE-S	FNCE	PAS-R
Time lag between visit and school start	-.116	-.087	.009	-.017
Maternal age at assessment (years)	-.076	-.267*	-.289*	-.093
Maternal age leaving full time education (years)	-.070	-.101	-.124	.039
Child age at assessment (months)	-	-	-.087	-.035
Child gender	-	-	.216^	.025
Child birth order: First born/only child or not	-	-	-.070	-.200

*NB: All 2-tailed tests, ^=  $p < .1$ , \*=  $p < .05$ , \*\*=  $p < .01$*

As indicated in Table 6, there was a significant negative correlation between maternal age at assessment, and the BFNE-S, where scores decreased with maternal age ( $p = .037$ ). A similar result was found with the FNCE, where older mothers endorsed significantly less fear of negative child evaluation than younger mothers ( $p = .022$ ). There

was also a marginally significant negative correlation between child gender and FNCE score ( $p = .075$ ), where mothers of girls endorsed slightly greater fear of negative child evaluation than mothers of boys.

The impact of the above significant associations were considered for future analyses, and where possible maternal age was entered as a covariate for analyses involving the BFNE-S and FNCE. As the effect of gender on FNCE was only marginal ( $p > .05$ ), this was not included as a covariate.

#### ***3.3.2.4 Questionnaire inter-correlations.***

To examine the associations between questionnaire measures to consider possible covariates in further analyses, a series of correlations were conducted between each questionnaire using the randomisation procedure. The correlation coefficients and significance levels are displayed in Table 7. As these correlations were exploratory, two-tailed  $p$  values were used.

Table 7

*Questionnaire Inter-correlations*

Questionnaire	SIAS	DASS-21 Dep	DASS-21 Anx	DASSS-21 Stress	BFNE-S	FNCE	PAS-R total
SIAS	-						
DASS-21 Depression	.504**	-					
DASS-21 Anxiety	.297*	.701**	-				
DASS-21 Stress	.546**	.742**	.658**	-			
BFNE-S	.496**	.405**	.457**	.507**	-		
FNCE	.246*	.244^	.239^	.369**	.386**	-	
PAS-R total	.077	.152	.118	.205	.137	.189	-

*NB All 2-tailed p-values, ^= p<.1, \*= p<.05, \*\*=p<.01*

As indicated in Table 7, DASS-21 Depression scores were significantly positively associated with the SIAS and BFNE-S (higher scores of maternal social anxiety/ fear of negative evaluation were associated with higher scores of depression), and marginally significantly associated with the FNCE. Therefore depression scores were controlled for in analyses involving the SIAS and BFNE-S. Similarly, DASS-21 Anxiety scores were significantly positively correlated with the SIAS and BFNE-S, and so were controlled for in analyses involving these variables. Notably, there were no significant associations found between any of the maternal symptom questionnaires and maternally-reported child anxiety on the PAS-R.

### **3.3.3 Maternal description task.**

#### ***3.3.3.1 Maternal description data exploration and reduction.***

There were nine variables coded on the maternal descriptions tasks. To limit the number of analyses conducted (to control Type II error), the data were explored to consider any codes of extremely low frequency, or strongly correlated codes that would suggest redundancy of some variables. The decisions made based on this data exploration are outlined below.

Out of the 66 mothers, 100% made some positive social comment. Therefore this variable was not discriminatory, so was removed from further analyses. The Overall Negativity and Overall Positivity 0-3 scales were explored to consider collapsing of categories (as the 4 points were deemed ordinal rather than interval, so the scale could not be used as continuous interval data for parametric analyses). For Overall Positivity, no mother showed a complete lack of positivity throughout their description of school (perhaps unsurprisingly, given they had volunteered to talk to their child about school). Six mothers (9.1% of the sample) showed only minimal positivity overall, compared to 27 mothers (40.9%) showing clear (more than one instance) positivity, and 33 (50%) mothers showing consistent positivity throughout their description of school. Theoretically, minimal positivity was the end of the scale that was of interest, so a dichotomous split was created as None/Minimal Positivity vs Clear/Consistent Positivity.

For Overall Negativity, a different pattern was seen, with only one mother (1.5%) showing consistent negativity throughout her description of school. Eleven mothers (16.7%) showed clear (more than one instance) negativity, 22 (33.3%) showed minimal negativity and 32 (48.5%) showed no negativity at all in their school description. Again, as the area of interest was the high end of negativity, the scale was dichotomised into a split of None/Minimal Negativity vs Clear/Consistent Negativity.



The Threat comments and Resolution of threat variables were combined by creating a Presence of Unresolved Threat code, indicating the presence of at least one unresolved threat comment in the maternal description of school. A dichotomous version of this variable (None vs Any) was created due to the limited number of mothers who mentioned any unresolved threat in their description (11 mothers showed one instance of this, and only two mothers showed more than one instance).

These seven variables (Presence of unresolved threat, Positive general comment(s), Any anxiety-related word(s), Negative evaluation, Positive evaluation, Overall negativity and Overall positivity) were assessed for inter-correlations, to consider potential redundancy of certain codes. The associations between the maternal variables are displayed in Table A5 in Appendix K.iv. There were positive correlations between a number of maternal description variables, however none of these were above .60 therefore it was concluded there was no redundancy of codes. The decision to retain a larger number of variables was also due to the exploratory nature of the current study, and limited previous research using specific information transfer codes. While the Overall Positivity and Overall Negativity variables also showed significant correlations with some other maternal description variables, because these were global codes capturing an overall sense of the school description, it was decided to retain both these and the more specific codes they correlated with (e.g., Positive general comments, Unresolved threat). This allowed for consideration of the usefulness of specific vs global codes.

This data exploration and reduction process left seven maternal description variables for use in further analyses, all of which were dichotomous. Table 8 indicates the final maternal description variables, and the proportion of mothers scoring in each category.

Table 8

*Descriptive Data for Final Maternal Description Variables*

Maternal Description Variable (N = 66)	N (%)	
	Absent	Present
Any Unresolved Threat(s)	53 (80.3%)	13 (19.7%)
Positive General Comment(s)	7 (10.6%)	59 (89.4%)
Any Anxious word(s)	56 (84.8%)	10 (15.2%)
Suggestion of Negative Evaluation by others	60 (90.9%)	6 (9.1%)
Suggestion of Positive Evaluation by others	53 (80.3%)	13 (19.7%)
	N (%) Low (None/Minimal)	N (%) High (Clear/Consistent)
Overall Negativity	54 (81.8%)	12 (18.2%)
Overall Positivity	6 (9.1%)	60 (90.9%)

**3.3.3.2 Maternal description task inter-rater reliability.**

Another doctoral student (blind to questionnaire and doll play data) coded all maternal description assessments, in exchange for inter-rater reliability work on their study. The author provided inter-rater reliability for this task. This was following doll play coding so the author was not completely blind, but these scores were only used for reliability purposes not the results themselves. Inter-rater reliability was established using 18 tapes (27% of the total sample), and the results are displayed in Table A2 in Appendix K.ii. All kappas/intraclass correlations (single measures) were above .70 with most showing perfect agreement, indicating acceptable inter-rater reliability. The statistic for Positive Social Comments could not be computed, as all scores were 0 (although there was perfect agreement).

### **3.3.3.3 Demographic influences on maternal description variables.**

To examine possible influences of demographic variables, the associations between the final seven maternal description variables and certain demographic characteristics of both mothers and children were examined. Demographic variables considered were: maternal age at assessment; age at which mother left education; child gender; child birth order; child age at assessment; and time lag between assessment and average school start date. There were no significant ( $p < .05$ , two-tailed) associations between any of the demographic characteristics and maternal description task variables, and so there was no need to control for these in further analyses.

### **3.3.4 Child doll play (DP) task.**

Out of the 66 families who took part, one child declined to engage in the doll play task (the child appeared shy throughout the visit and was reluctant to engage in any interaction with the researcher). Therefore, a total of 65 children provided doll play data, with a small number of missing variables for some children (due to experimenter error, video failure, child not engaging with task for a part of a scenario). These were coded as missing in the dataset, as there was no way to assign a value for these. The original variables used to code the doll play task, and how each of these were scored, are shown in table 9. All present/absent variables were coded so the negative category (e.g., presence of threat interpretation, absence of positive evaluation) was coded as 1, and the positive category was coded as 0.

Table 9

*Doll Play Variables and Scoring Details*

	Child Doll Play Variable	Scoring details
1	S1 Threat Interpretation	Present/ Absent
2	S1 Interpretation response	5 categories: Positive, Neutral, Don't Know, No response, Threat
3	S1 How do you feel?	5 categories: Positive, Neutral, Don't Know, No emotion response, Negative
4	S1 Approach older children	Present/ Absent
5	S1 Negative evaluation	Present/ Absent
6	S1 Positive evaluation	Present/ Absent
7	S1 Any social interaction	Present/ Absent
8	S1 Verbal anxiety	Present/ Absent
9	S2 Threat Interpretation	Present/ Absent
10	S2 Interpretation response	5 categories: Positive, Neutral, Don't Know, No response, Threat
11	S2 How do you feel?	5 categories: Positive, Neutral, Don't Know, No emotion response, Negative
12	S2 Approach teacher	Present/ Absent
13	S2 Negative evaluation	Present/ Absent
14	S2 Positive evaluation	Present/ Absent
15	S2 Any social interaction	Present/ Absent
16	S2 Verbal anxiety	Present/ Absent
17	S3 Threat interpretation	Present/ Absent
18	S3 Interpretation response	5 categories: Positive, Neutral, Don't Know, No response, Threat
19	S3 How do you feel?	5 categories: Positive, Neutral, Don't Know, No emotion response, Negative
20	S3 Approach other children	Present/ Absent
21	S3 Negative evaluation	Present/ Absent
22	S3 Positive evaluation	Present/ Absent
23	S3 Any Social interaction	Present/ Absent
24	S3 Verbal anxiety	Present/ Absent
25	Overall negativity	0-3 scale (capturing whole Doll Play)
26	Overall positivity	0-3 scale (capturing whole Doll Play)

*S1= Scenario 1, S2= Scenario 2, S3= Scenario 3*

### ***3.3.4.1 Doll play data exploration and reduction.***

There were 26 original variables coded for each doll play assessment, requiring data reduction to limit the number of statistical analyses conducted. A variety of data reduction and analytical techniques have been used in the doll play literature, from creating a total aggregate score from all codes (e.g., Poehlmann et al., 2008; Warren et al., 2000), to creating a collapsed total for a specific code (e.g., threat interpretation in 0, 1, or 2+ scenarios in the Dodd et al., 2011 study), or dichotomising specific codes and looking at these individually in relation to other variables (e.g., Murray, Woolgar, Briers & Hipwell, 1999). The treatment of doll play data in previous work has largely been dictated by the number of scenarios used (e.g., creating a total from 10 scenarios is more likely than if only two scenarios have been used), the frequencies and distribution of scores (e.g., low frequency codes are more likely to be dichotomised as present/absent than those showing a continuous and normal distribution), inter-rater reliability of individual codes (e.g., a binary variable may be more reliable than a 0-3 scale), and available statistical approaches (e.g., collapsing categories can enable more robust methods of analysis). Therefore an exploratory approach was used with the current study doll play data, to consider various ways of reducing and combining variables.

Initially, frequencies of individual codes were explored, to assess whether any codes had a high proportion of missing data or were lacking variance. When examining the frequencies for both the Interpretation Response and Emotion Response variables, a high proportion of 'Don't know' or non-responses were found. For example, 29.3% of children gave a 'Don't know' response or did not provide an interpretation for the ambiguity in scenario one, 29.3% did the same in scenario two, and 16.9% in the final scenario. Likewise, when asked how they felt in response to the ambiguous scenario, 48.4% gave a 'Don't know' response or no emotional response at all in scenario one, 50.0% did so in scenario two, and 40.7% did so in the third scenario. Therefore these

variables were not deemed to be discriminatory, and so were removed from further analyses. Table 10 outlines the data reduction process and the final variables created.

Table 10

*Original Doll Play Variables and Data Reduction Process*

Original Doll Play Variable	Data Reduction details	Final Doll Play Variable
S1 Threat Interpretation S2 Threat Interpretation S3 Threat Interpretation	Summed together	Total Threat Interpretation (0-3)
S1 Interpretation response S2 Interpretation response S3 Interpretation response	High proportion of Don't know responses or no interpretation provided	Variables dropped from further analyses
S1 How do you feel? S2 How do you feel? S3 How do you feel?	High proportion of Don't know responses, or no emotional response provided	Variables dropped from further analyses
S1 Approach older children S2 Approach teacher S3 Approach other children	Summed together	Total Approach (0-3)
S1 Negative evaluation S2 Negative evaluation S3 Negative evaluation	Summed together	Total Negative Evaluation (0-3)
S1 Positive evaluation S2 Positive evaluation S3 Positive evaluation	Summed together	Total Positive Evaluation (0-3)
S1 Any social interaction S2 Any social interaction S3 Any social interaction	Summed together	Total Social Interaction (0-3)
S1 Verbal anxiety S2 Verbal anxiety S3 Verbal anxiety	Summed together	Total Verbal Anxiety (0-3)
Overall Negativity	Dichotomised (0-1 vs 2-3)	Overall Negativity binary
Overall Positivity	Dichotomised (0-1 vs 2-3)	Overall Positivity binary
New variable created: Negativity aggregate	Total threat (0-3) + Total negative evaluation (0-3) + Anxious words (0-3), then dichotomised based on frequencies	Negativity aggregate binary: 0 vs 1+
New variable created: Positivity aggregate	Total Approach (0-3) + Total Positive evaluation (0-3) + Total Social interaction (0-3)	Positivity aggregate (0-9)

As indicated in Table 10, the 26 original Doll Play variables included certain codes that were repeated across the three scenarios (Threat interpretation; Approach; Negative evaluation; Positive evaluation; Social interaction; and Verbal anxiety). Therefore a total score was created for each of these variables, by summing the presence/absence in the three scenarios. This is in line with most doll play research with more than one scenario (e.g., Dodd et al., 2011). This created six variables with a 0-3 total (Threat Interpretation, Approach, Negative evaluation, Positive evaluation, Social interaction, and Verbal anxiety). For all of these variables, higher scores indicated greater negativity.

There were also two global codes representing Overall Negativity and Overall Positivity across the whole doll play assessment for each child (0-3 on each scale). These were explored to consider collapsing of categories (as similar to the scales used in the maternal task, the four-point scale was deemed ordinal rather than interval, so could not be used as continuous interval data for parametric analyses). For Overall Positivity, no child showed a complete lack of positivity throughout their doll play, so there were no scores of 0 (this was also found in the maternal descriptions task). Twenty-one children (32.3% of the sample) showed only minimal positivity in their play representations, compared to 29 (44.6%) showing clear (more than one instance) positivity and 15 (23.1%) showing consistent positivity throughout their play. As was outlined in the maternal descriptions data reduction, the end of the scale of interest was lack of positivity, so a dichotomous split was created as None/Minimal Positivity (32.3%) vs Clear/Consistent Positivity (67.7%).

For Overall Negativity, again a similar pattern was found to maternal overall negativity. Only four children (6.2% of the sample) showed consistent negativity throughout the representations of school, and 12 children (18.5%) showed clear (more than one instance) negativity. Twenty-four children (36.9%) showed minimal negativity, while 25 children (38.5%) enacted play representations completely free of negativity. In line with the maternal description overall negativity variable, and to focus on the high



negativity end of the scale, the child play negativity scale was dichotomised into None/minimal Negativity (75.4%) vs Clear/Consistent Negativity (24.6%).

To further reduce the number of analyses run, an aggregate combining a number of doll play variables was considered. As there was a general divide of variables relating to either positive (e.g., social approach) or negative (e.g., threat interpretation) responses, separate positive and negative aggregate scores were created. A total negativity aggregate score was calculated by summing Total threat (0-3) + Total negative evaluation (0-3) + Anxious words (0-3). Similarly, a total positivity aggregate score was also computed, by summing Total Approach (0-3) + Total Positive evaluation (0-3) + Total Social interaction (0-3).

Both aggregate scores had a possible range of 0-9. The positivity aggregate showed a non-normal distribution ranging from 1-9, so this was retained as a continuous scale. However, the negativity aggregate maximum score in this sample was 3, with 77.0% of the sample scoring 0 (no negativity). Therefore a binary version of this code was created based on the distribution, dichotomised as 0 vs 1+. This binary version of the negativity aggregate was used in further analyses.

The doll play variables were examined to assess frequency and inter-correlations between codes, to indicate possible data reduction. The associations between variables are shown in Table A6 in Appendix K.iv. These indicated a strong positive correlation between doll play overall positivity binary and the doll play positivity aggregate ( $r = .663$ ,  $p < .001$ ). When examining frequencies for both variables, the positivity aggregate had missing data (due to missing individual variables preventing the aggregate being computed) for 11 children, while no missing data existed for the overall positivity binary variable. Therefore, as both variables appeared to be tapping into similar constructs but the overall positivity binary variable allowed use of the full dataset, this variable was retained and the overall positivity aggregate was dropped from further analyses.

There was also a significant positive correlation between the Overall negativity aggregate binary variable, and the Overall negativity binary variable ( $\phi = .536, p < .001$ ). These variables were very similar in nature, however while the aggregate variable combined a number of negative responses, the overall negativity code was a global measure of the negativity present throughout the doll play. For this reason, both variables were retained to examine differences in the associations found, to inform future doll play coding. Table 11 indicates the three final doll play variables, with the number and proportion of children scoring in each category.

Table 11

*Descriptive Data for Final Doll Play Variables*

Doll Play Variable	N (%) Low (None/Minimal)	N (%) High (Clear/Consistent)	Total N
Overall Negativity	49 (75.4%)	16 (24.6%)	65
Overall Positivity	44 (67.7%)	21 (32.3%)	65
	N (%) None	N (%) Some	Total N
Negativity Aggregate	47 (77.0%)	14 (33.0%)	61

### ***3.3.4.2 Doll play inter-rater reliability.***

The author coded all doll play tapes, and inter-rater reliability was conducted with a PhD student experienced in coding doll play assessments. Both researchers were blind to questionnaire and maternal description data at time of coding. Inter-rater reliability was established with 18 tapes, representing 27% of the total doll play sample. The results for both the original and final combined doll play variables are displayed in Table A3 and A4

in Appendix K.ii. All kappas/intraclass correlations (single measures) were above .70 for all final variables, indicating acceptable inter-rater reliability.

### ***3.3.4.3 Demographic influences on doll play variables.***

Following data reduction, the associations between demographic variables and the doll play variables were explored. Child gender was considered as a potential variable to control for, given previous findings showing an association between doll play responses and child gender (Pass, 2010). In addition, birth order, child age at assessment and time between assessment and starting school, were also considered for effects on doll play data. Categorical associations were computed using Phi ( $\phi$ ) correlations while continuous variable associations were computed using the randomisation procedure (with point-biserial correlations when correlating one continuous and one categorical variable). These correlations are outlined in Table 12.

Table 12

#### *Correlations Between Demographic Variables and Doll Play Variables*

Doll Play Variables	Child gender	Birth order	Child age at assessment	Time lag between visit and school
Negativity aggregate binary	.067	-.022	.057	-.198
Overall Negativity: High	.049	-.081	.071	.031
Overall Positivity: Low	-.246*	-.120	.018	.048

*NB: All two-tailed p-values, ^=  $p < .1$ , \*=  $p < .05$ , \*\*= $p < .01$*

There was a significant association between overall positivity and child gender; males were significantly less likely to show high (clear/consistent) positivity (52.2% of

boys) than females (76.2% of girls,  $p = .048$ ). This is similar to previous findings where boys were significantly more likely to show pervasive negativity through their school doll play representations (Pass, 2010). Therefore gender was controlled for in analyses involving overall positivity. No other demographic variables were significantly associated with any other doll play variables.

### **3.4 Hypothesis Testing**

#### **3.4.1 Research question 1: Do mothers who are more socially anxious provide more negative/threat information, and less positive information, to their children about school?**

To address the first research question, correlations between the SIAS and maternal description task variables were calculated and are shown in Table 13. For clarity, correlation coefficients from the randomisation procedure are displayed in the table, but analyses were also re-run in bootstrapped partial correlations controlling for maternal depression and general anxiety symptoms.

Table 13

*Correlations Between Questionnaires and Maternal Description Variables*

Maternal Description Variable	SIAS
Presence of unresolved threat	.038
Absence of positive general comments	.405**
Presence of anxiety related word(s)	.004
Suggestion of positive evaluation	-.149
Suggestion of negative evaluation	.001
Overall maternal negativity: High	-.159
Overall maternal positivity: Low	.196 <sup>^</sup>

*NB: All 1-tailed p-values, <sup>^</sup>=  $p < .1$ , \* =  $p < .05$ , \*\* =  $p < .01$*

As indicated in Table 13, mothers who did not make any positive general statements about school had significantly higher SIAS scores ( $n = 7$ , mean = 30.57, SD = 15.60) than mothers who made at least one positive general statement ( $n = 59$ , mean = 16.17, SD = 9.45). This correlation remained significant in bootstrapped partial correlations after controlling for maternal depression (DASS-21 Depression) symptoms [95% BCa CI: .013, .637], and when controlling for both maternal depression and anxiety (DASS-21 Anxiety) symptoms [.050, .596]. While a trend was found for a positive association between SIAS scores and low overall maternal positivity using the randomisation procedure ( $p = .054$ ), this was not significant in a simple [-.119, .496] or partial bootstrapped correlation controlling for maternal depression symptoms [-.146, .421], or when controlling for both maternal depression and general anxiety symptoms [-.170, .409]. No other maternal description variables were correlated with the SIAS (neither with nor without controlling for depression and/or anxiety scores), therefore the

hypothesis that mothers scoring higher on social anxiety symptoms would transfer more threat/negative information in their descriptions was generally not supported.

### 3.4.2 Research question 2: Do children who have more socially anxious mothers represent school as a negative/threatening place?

In order to address the second research question, the associations between maternal SIAS scores and doll play variables were examined. The randomisation procedure correlation coefficients are displayed in Table 14. Analyses were also re-run using bootstrapped partial correlations controlling for child gender and maternal depression/general anxiety symptoms as appropriate, but did not change results.

Table 14

*Correlations Between Questionnaires and Doll Play Variables*

Doll Play Variable	SIAS
Overall Negativity: High	-.030
Overall Positivity: Low	-.177
Negativity aggregate binary: Any negativity	-.109

*NB All 1-tailed p-values, ^=  $p < .1$ , \*=  $p < .05$ , \*\*= $p < .01$*

As shown in Table 14, there were no significant associations between maternal SIAS scores and any doll play variables (either using the randomisation procedure, or in bootstrapped partial correlations: all 95% BCa CI's overlapped zero). Therefore the hypothesis that children of mothers with higher social anxiety symptoms would enact more negative/threat representations was not supported.

**3.4.3 Research question 3: Do children of mothers who provide more negative/threat information (and less positive information) about school, represent school as a negative/threatening place?**

The third main research question related to the associations between maternal description variables, and child doll play variables. The correlations between these are shown in Table 15. Where demographic characteristics were significantly associated with either doll play or maternal description variables, these were controlled for in additional analyses. For clarity the simple correlations (run using the randomisation procedure) are displayed in Table 15, and any changes to significance levels when controlling for demographic variables are outlined in the text.

Table 15

*Correlations Between Maternal Description Variables and Doll Play Variables*

Variables	DP Negativity aggregate: Any negativity	DP Overall Negativity: High	DP Overall Positivity: Low
MD Presence of unresolved threat	.097	-.018	-.016
MD Absence of positive general comments	.170 <sup>^</sup>	.147	-.028
MD Presence of anxiety related word(s)	-.031	-.046	-.021
MD Suggestion of positive evaluation	.074	.107	.016
MD Suggestion of negative evaluation	-.021	.065	.007
MD Overall maternal negativity: High	.251*	.280*	-.074
MD Overall maternal positivity: Low	.343**	.311**	.007

*NB: MD= Mother Description variable, DP= Doll Play variable.*

*All 1-tailed p-values, <sup>^</sup>=  $p < .1$ , \* =  $p < .05$ , \*\* =  $p < .01$*

As shown in Table 15, high maternal negativity in the description task was significantly and positively associated with the child doll play negativity aggregate ( $p = .025$ ) and with high child negativity ( $p = .012$ ). Similarly, low maternal positivity in the school description was significantly positively associated with the doll play negativity aggregate ( $p = .004$ ) and high child representational negativity ( $p = .006$ ). There was a trend found for a positive correlation between the absence of positive general comments in maternal descriptions, and the doll play negativity aggregate; however this was only a marginal effect ( $p = .092$ , one-tailed). There were no significant associations between any of the maternal description variables and child overall representational positivity, either with or without controlling for child gender (all 95% CI's overlapping zero). When



considering these results as a whole, the hypothesis that children of mothers who transmit more negative/threat information (and less positive information) would represent more negativity/threat in their doll play was partially supported.

**3.4.4 Research question 4: If 1, 2 and 3 are supported: Does maternal information transfer mediate the effect of maternal social anxiety on child representations?**

As the fourth research question was examining mediation of the association between maternal social anxiety and child representations by the maternal descriptions task, this required three significant ( $p < .05$ ) correlations; between the SIAS and maternal description task variable(s), between the SIAS and child doll play variable(s), and between the maternal description task variable(s) and child doll play variable(s). The same doll play/maternal description variable needed to significantly correlate in each of the above mentioned correlations, to enable a mediation analysis. Given that none of the maternal description or child doll play variables met these assumptions, mediation analyses could not be conducted.

**3.4.5 Subsidiary research questions.**

***3.4.5.1 What is the relationship between maternal social anxiety (SIAS), fear of negative evaluation (BFNE-S), and fear of negative child evaluation (FNCE)?***

To examine the relationships between the SIAS, BFNE-S, and FNCE, the correlations between these measures are shown in Table 16. Some of these associations have previously been displayed in Table 7 (see section 3.3.2), using two-tailed  $p$ -values. However, as there were directional hypotheses for this research question (it was predicted that all questionnaires would be positively correlated with each other), one-tailed  $p$ -values are shown in Table 16.

Table 16

*Correlations between SIAS, BFNE-S and FNCE*

Questionnaire	SIAS	BFNE-S	FNCE
SIAS	-		
BFNE-S	.496**	-	
FNCE	.246*	.386**	-

*NB: All 1-tailed p-values, ^=  $p < .1$ , \*=  $p < .05$ , \*\*= $p < .01$*

As predicted, there were there were significant positive simple correlations between the SIAS and BFNE-S ( $p < .001$ ), SIAS and FNCE ( $p = .020$ ), and between the BFNE-S and FNCE ( $p = .001$ ). The association between the SIAS and BFNE-S remained significant after controlling for both maternal age and depression scores [95% BCa CI: .134, .596]. After controlling for maternal age and depression scores, the association between the SIAS and FNCE was no longer significant [-.086, .340]. However, the simple bootstrapped correlation also had 95% BCa confidence intervals overlapping zero [-.064, .483], preventing firm conclusions being drawn. When considering the relationship between the BFNE-S and FNCE, the correlation remained significant after controlling for maternal age and depression scores [.072, .458]). Taking these findings together, they largely support the hypothesis that there would be positive correlations between the SIAS, BFNE-S and FNCE.

**3.4.5.2 What is the relationship between fear of negative child evaluation (FNCE), maternal information transfer, and child representations?**

To examine the first part of the above research question, correlations were conducted between the FNCE and maternal description variables. For clarity, correlation

coefficients obtained using the randomisation procedure are displayed in Table 17, but analyses were re-run using bootstrapped partial correlations controlling for maternal age.

Table 17

*Correlations between FNCE and Maternal Description Variables*

Maternal Description Variable	FNCE
Presence of unresolved threat	.173 <sup>^</sup>
Absence of positive general comments	.156
Presence of anxiety related word(s)	.262*
Suggestion of positive evaluation	-.084
Suggestion of negative evaluation	.203*
Overall maternal negativity: High	.265*
Overall maternal positivity: Low	.291**

*NB: All-tailed p-values, <sup>^</sup>=  $p < .1$ , \* =  $p < .05$ , \*\* =  $p < .01$*

The results outlined in Table 17 showed that mothers with higher FNCE scores were significantly more likely to include at least one anxiety-related word in their descriptions of school ( $p = .014$ ), and to include at least one suggestion of negative evaluation by others ( $p = .047$ ) compared to mothers with lower FNCE scores. Mothers with higher FNCE scores were also significantly more likely to show high negativity ( $p = .024$ ), and low positivity overall ( $p = .007$ ). There was a marginally significant association between FNCE scores and presence of unresolved threat ( $p = .082$ ), where mothers with higher FNCE scores were slightly more likely to provide at least one unresolved threat comment in their description.

However, as the FNCE was significantly negatively correlated with maternal age at assessment (older mothers endorsing fewer concerns over their child being negatively

evaluated), analyses were re-run controlling for maternal age using bootstrapped partial correlations. The association between FNCE scores and overall maternal positivity remained significant after controlling for maternal age at assessment [95% BCa CI: .016, .459]. Mothers who showed low positivity in their descriptions of school had significantly higher fears of negative child evaluation (mean = 19.67, SD = 8.89) compared to mothers who showed high overall positivity in their description (mean = 12.34, SD = 6.86).

After controlling for maternal age, there were no longer any significant associations between FNCE and the other maternal description variables (anxiety-related words: [-.044, .410], negative evaluation: [-.192, .367], overall maternal negativity [-.042, .451]). As the simple correlations were not significant using the bootstrapping procedure (all CI's overlapping zero), it is difficult to conclude whether differences in statistical methods, or influence of maternal age at assessment, could be behind the lack of significance. Therefore the hypothesis that FNCE would be positively associated with maternal information transfer was only partially supported.

To assess the relationship between the FNCE and child doll play variables, the associations between these are outlined in Table 18.

Table 18

*Correlations Between FNCE and Doll Play Variables*

Doll Play variable	FNCE
Negativity aggregate binary	.217*
Overall Negativity: High	.185
Overall Positivity: Low	-.002

*NB: All 1-tailed p-values, ^ =  $p < .1$ , \* =  $p < .05$ , \*\* =  $p < .01$*

As shown in Table 18, a significant positive association between the FNCE and child negativity aggregate binary variable was found using the randomisation procedure ( $p = .044$ ). However, after controlling for maternal age, this was no longer significant  $[-.086, .414]$ . The FNCE showed no significant associations with child overall negativity or positivity either with or without controlling for maternal age (all 95% BCa CI's overlapped zero).

#### **3.4.6 Additional analyses.**

Additional analyses were conducted to investigate the relationships between one-item question 'Are you personally worried about your child starting school?', the PAS-R and maternal description variables. Results are displayed in Table 19. While no demographics were significantly associated with either variable, the DASS-Anxiety scale was significantly associated with the personally worried question ( $r = .283, p = .025$ ). Therefore analyses were re-run controlling for this. The PAS-R and 'Are you personally worried about your child starting school?' were significantly positively correlated ( $r = .425, p < .001$ ).

Table 19

*Correlations Between Additional Questionnaires and Maternal Description Variables*

Maternal Description Variable	Personally worried: Yes	PAS-R total
Presence of unresolved threat	.368**	.310**
Absence of positive general comments	.048	-.040
Presence of anxiety related word(s)	.477**	.121
Suggestion of positive evaluation	-.186	.128
Suggestion of negative evaluation	.206*	.122
Overall maternal negativity: High	.307**	.184^
Overall maternal positivity: Low	.080	.061 <i>ns</i>

*NB: All 1-tailed p-values, ^=  $p < .1$ , \*=  $p < .05$ , \*\*= $p < .01$*

There were a number of significant phi correlations between mothers' Yes/No response to the question 'Are you personally worried about your child starting school?' and maternal description variables. Mothers who stated they were personally worried about their child starting school were significantly more likely to include at least one unresolved threat comment ( $p = .002$ ), an anxiety-related word ( $p < .001$ ), and a suggestion of their child being negatively evaluated by others ( $p = .048$ ), than mothers who stated they were not personally worried about their child starting school. Mothers who stated they were worried were also significantly more likely to show high negativity across their description of school as a whole, than mothers who stated they were not worried about their child starting school ( $p = .007$ ). After controlling for general anxiety symptoms, a significant association with the personally worried question remained for unresolved threat [.058, .567], any anxious words [.102, .690], and high negativity [.008, .578]. The association

between being personally worried and suggestion of negative evaluation was no longer significant [-.086, .587].

There were also some significant point-biserial correlations between the PAS-R questionnaire scores and maternal description variables. Mothers who made at least one unresolved threat comment in their school description rated their children as having significantly higher anxiety symptoms (mean = 36.85, SD = 17.40) than mothers who did not make any unresolved threat comments in their description of school (mean = 25.45, SD = 13.24,  $p = .006$ ). Mothers who showed clear/consistent negativity in their school descriptions were marginally more likely to rate their child as having higher anxiety symptoms; however this association was only a trend ( $p = .069$ , one-tailed).

## **Chapter 4 Discussion**

### **4.1 Overview**

This chapter begins with an interpretation of the research findings in relation to each research question, with comparisons to the previous literature. The methodological strengths and limitations of the current study are then evaluated. Both theoretical and clinical implications are then discussed, followed by consideration of areas for future research. The chapter ends with some overall conclusions of the current study.

### **4.2 Interpretation of Research Findings**

#### **4.2.1 Research question 1: Do mothers who are more socially anxious provide more negative/threat information (and less positive information) to their children about school?**

The first research question was generally not supported. Only one significant association was found between the SIAS and maternal description task variables (absence of positive general comments). Unfortunately, due to the task design and coding it was not possible to investigate differences in positive social comments (mothers were instructed to talk about their child ‘making friends at school’, which necessarily involved positive social descriptions about making friends). Therefore it is unknown whether there would have been differences in positive social comments if the task instructions had been more ambiguous. Additionally, the fact that such variables were coded as simply present/absent may have masked some subtle differences in mothers depending on their levels of social anxiety.

However, it may be the case that in a self-selected sample, levels of maternal social anxiety were so minimal that they did not greatly influence information transfer, as it seems that mothers with significant social anxiety concerns did not volunteer to participate



in this socially-based research task (or were not bringing their child to the formal daycare sites from which the sample was recruited). Although there was some limited variation in SIAS scores (range 1-52), this still meant no mother scored in the top 35% of possible scores. The low level of symptoms was also indicated by the median of 15. This leaves the possibility that correlations between social anxiety symptoms and other aspects of information transfer (other than absence of positive general comments) might exist, but only for those showing significant social concerns. Previous research has found marked differences in narrative style within school-related descriptions by mothers with a DSM-IV Social Phobia diagnosis, compared to control mothers (Pella, 2011). However, it is plausible that social anxiety levels would have to be substantially raised (such as reaching diagnostic threshold, as in the Pella (2011) sample) to affect discourse style. One experimental study found mothers' negative statements to their child about a novel animal (after being given ambiguous information about that animal) were linked to their trait anxiety levels (Muris et al., 2010) in a general community sample, which initially does not support this suggestion. However, as the current study used a naturalistic design, the strength of effect was not expected to be as strong as in the Muris et al. (2010) study. While this was considered in the power analysis, there still may not have been sufficient power to detect such effects. Overall, it is likely the lack of significant associations may have been affected by both the limited social anxiety symptoms in the sample, and the naturalistic design reducing strength of effects.

Nonetheless, one significant finding did emerge; a positive correlation between maternal SIAS scores and absence of positive general comments. It is notable that this association remained significant even after controlling for both maternal depression, and general anxiety symptoms. This extends the findings of Muris et al. (2010), who did not assess maternal depression so could not control for this when examining effects of maternal trait anxiety on information transfer.

It is possible that this variable, which relates to general positive comments about the school environment, could be capturing some aspect of lack of positive encouragement found in the Pella (2011) study to be significantly related to social phobia diagnosis. While positive encouragement was not specifically coded in this description task, some such maternal comments could fall under the positive general code (e.g. “You’re really going to enjoy starting school”, “You will get to learn lots of new exciting things!”). One possible explanation of this code being the only one to be significantly associated with the SIAS is that it was tapping into the extreme lack of positivity found in only a few mothers in the sample ( $n = 7$ ). The fact that the task design required mothers to mention positive social aspects of school (making friends) may have artificially inflated the overall positivity rating for these mothers, preventing significant associations being found with this global code. Equally, this inclusion in the task instructions may have also affected the suggestions of positive evaluation by others (although ‘making friends’ was not enough to be coded as positive evaluation, comments linked to this such as being invited to sleepovers were included). Therefore task demands may have prevented the finding of other significant associations between positive maternal description codes and SIAS scores.

#### **4.2.2 Research question 2: Do children who have more socially anxious mothers represent school as a negative/threatening place?**

Overall, the second research question was not supported. There were no significant correlations between the SIAS and any child doll play variables. It is likely that the limitations noted above regarding the lack of significant social anxiety symptoms in the current sample may have had also affected these results, which would also be expected to show smaller effect sizes due to the variables being less closely related. The proposed pathway outlined by Creswell and colleagues (as shown in Figure 1) is that maternal

anxiety increases the risk of negative child interpretations/representations, via the influence on maternal expectations, information transfer and wider parenting practices. It may be that there is only a weak direct relationship between maternal social anxiety and child internal representations. A previous study did find a significant effect of maternal social anxiety on child doll play negativity (Pass et al., 2012); however this was comparing a DSM-IV social phobia group with healthy controls, so effect sizes are likely to be stronger with such a sample. In addition, even if the proposed pathway (Creswell et al., 2011) exists; it may be that such processes have yet to be fully established by the time the child is entering school. A combination of these factors (a largely non-socially anxious mothers, and assessment of children at preschool age) could explain the lack of support for this research question.

**4.2.3 Research question 3: Do children of mothers who provide more negative/threat information (and less positive information) about school, represent school as a negative/threatening place?**

The third research question was partially supported. While no significant associations were found between maternal description variables and overall child representational positivity, there were significant associations with the negativity-related child doll play variables. It appears that the global codes of overall negativity and positivity in mothers' descriptions were more closely associated with child representational negativity than the maternal variables relating to specific aspects of mothers' descriptions (e.g., unresolved threat, suggestion of positive or negative evaluation by others). While this is contrary to findings of stronger associations for specific sub-dimensions of parenting behaviours on child anxiety than broader constructs (McLeod et al., 2007), verbal information transfer may already represent a very specific type of parenting behaviour.

A previous study comparing maternal threat comments in a narrative task with child doll play representations also failed to find an effect of maternal threat attribution on child doll play representations (Pass, 2010). This was a similar naturalistic design, also using starting primary school as a focus. As with the current study, absolute levels of threat attribution were very low in comparison to neutral or positive information transmitted to the child (however this was explicitly measured in the Pass (2010) study, whereas specific information on proportions of various comments was lacking in the current study). Taken together, these findings suggest that in naturalistic conversations, much of the content is positive, benign or simply off-topic, compared to negative statements made following specific information being provided in the context of an experimental task (e.g., Remmerswaal et al., 2013). This may also be influenced by the complexity and differing challenges that starting school entails, and therefore the variety in topics that mothers discuss both in the task, and during every day conversations with their children. An attempt to direct descriptions on four main social topics (making friends, teachers, playtime, and older children) was made, however in practice mothers often combined ideas, added in many other topics (e.g., school uniform, lunch time, the register etc.) which may have diluted the effects.

The diversity within the starting school discourse may also explain the lack of similar findings to those by Remmerswaal and Muris when examining negative threat information transfer in the context of swine flu (Remmerswaal & Muris, 2011). While the swine flu study also focused on a real-life event, this event is very discrete and specific compared to the range of conversation topics that could occur around starting school. The children in the swine flu study were also older (mean= 9.97 years, range 7-12 years) than the preschool sample in the current study, and self-report on questionnaire items was used rather than a representational methodology. These differences could explain the divergence in the results of the studies. Overall, it seems that the weaknesses regarding

ecological validity that are inherent within experimental designs such as those used by Field, Muris and colleagues, result in other design strengths (e.g., larger effect sizes, less noise in the data) that make more naturalistic investigations such as this study challenging.

One alternative explanation may be that specific threat or social anxiety related variables (e.g., suggestion of positive/negative evaluation) may not be as influential on child representations of an upcoming event, as the general valence of maternal descriptions. The task was designed to elicit discourse as natural as possible, and to capture some of the features present in typical school-related descriptions that mothers and children engage in outside of this task. It is possible that the global maternal codes are better able to represent the typical nature of general (every day) discussions about the diverse topic of school, and thus show greater association with child representations. However, with data from only one maternal description available, the current study cannot assess how representative these data are of day-to-day discussions about school.

An additional influence may have been social desirability (exacerbated by the presence of the researcher during the task itself) affecting the specific content of the mothers' descriptions. Some mothers made comments in the presence of the child, but outside of the task, relating to specific concerns they had about their child starting school (e.g., bullying, child toileting, length of the school day) yet did not mention these when being recorded. It is possible that the global sense of positivity/negativity may have been harder for mothers to consciously influence, than inhibiting specific comments they did not wish to be recorded. One intriguing possibility is that comments parents make in the presence of, but not directly to, the child, could also affect child representations, and that the global ratings of positivity/negativity may be best able to capture this. While the current study is not able to provide any evidence to test this hypothesis, it would be an interesting line of further enquiry.

**4.2.4 Research question 4: If 1, 2 and 3 are supported: Does maternal information transfer mediate the effect of maternal social anxiety on child representations?**

As the assumptions for mediation analysis (Baron & Kenny, 1986) were not met with any set of maternal social anxiety, description task, and child doll play variables, the fourth research question could not be addressed. The naturalistic style of the tasks may have lowered the strength of associations between variables, and therefore limited our ability to detect such effects. The lack of variation and rarity of clinical levels of anxious symptoms in the mothers who took part in this study may also have reduced the likelihood of finding such associations in the current sample. Alternatively, it may be possible that maternal information transfer, at least in the context of a description task about school, does not mediate the effect of social anxiety on child representations, however without testing this hypothesis the current study cannot make any conclusions.

**4.2.5 Subsidiary research questions.**

***4.2.5.1 What is the relationship between maternal social anxiety (SIAS), fear of negative evaluation (BFNE-S), and fear of negative child evaluation (FNCE)?***

In support of the hypothesised association between maternal social anxiety, fear of negative evaluation and fear of child negative evaluation, significant positive correlations were found between the SIAS, BFNE-S and FNCE. This is in line with previous findings of parental social anxiety being associated with fear of child negative evaluation (Schreier and Heinrichs, 2010; de Vente et al., 2011). However, the current findings go a stage further in explicitly examining the associations between the BFNE-S (which relates to fear of oneself being negatively evaluated), maternal social anxiety symptoms generally (as measured by the SIAS), and FNCE. While the FNCE is still a new questionnaire and further work is needed to validate this measure, the current study results suggest it could be a promising tool to explore

links between parental social anxiety, fears of themselves being negatively evaluated, and concerns over their child's social evaluation. There has only been one published study investigating the links between parental anxiety, FNCE and parenting, and in that sample FNCE was assessed in the very early months/years of a child's life (de Vente et al., 2011). The current study extends this work by examining these relationships in mothers of preschool children.

***4.2.5.2 What is the relationship between fear of negative child evaluation (FNCE), maternal information transfer, and child representations?***

The consideration of FNCE, within the theoretically relevant context of an upcoming child transition into a new social environment, appears to be a useful frame in which to assess FNCE and maternal information transfer. While a number of associations between maternal description variables and FNCE were non-significant after controlling for maternal age, it is possible that such results would be significant in a larger sample, or one with less variability in maternal age. One finding that remained significant in the current sample was the association between minimal maternal positivity in maternal descriptions of school, and higher FNCE scores, which complements previous findings of FNCE predicting parenting behaviours (de Vente et al., 2011). The correlation found in the current study cannot be used to infer causation, but there is a possibility that mothers' fears of their child being negatively evaluated may impact on their discourse style when talking to their child, to the extent that they fail to provide a clearly positive description of a future social transition. This links to the parenting pathways outlined in the model by Creswell et al. (2011), where fears of future negative child evaluation may fit under the broader dimension of maternal expectations.

The relationship between increasing maternal age and decreasing fear of negative child evaluation itself is intriguing, and indicates an area for future research. No significant associations were found between the FNCE and child representations, suggesting a lack of a direct relationship between these variables (or lack of power to detect a small effect).

#### **4.2.6 Additional analyses.**

The additional analyses, while not part of the original research questions, uncovered some fascinating results. The one-item measure specific to the starting school context ('Are you personally worried about your child starting school?' Yes/No) was significantly associated with ways in which mothers talked about that event (mention of unresolved threat, use of anxious word(s), overall negativity) even after controlling for general anxiety symptoms. This is striking, and while causation cannot be inferred from these correlations it provides strong support for the use of specific questions to identify mothers who may struggle to encourage their child about an upcoming event. This may be due to maternal concerns over their child's anxiety (shown by the significant positive association between being personally worried and PAS-R scores), and longitudinal work is required to establish the direction of such effects. Nonetheless, given the significant associations found between maternal descriptions and child representations, if replicated in future work, a one-item measure to highlight mothers that may be more likely to exhibit anxiogenic discourse styles could be of great clinical use.

The positive association between unresolved threat in maternal descriptions and PAS-R scores is equally notable, as neither of these variables were associated with maternal anxiety (so the possibility of over-reporting of child anxiety symptoms due to maternal anxiety is unlikely). While causation again cannot be inferred, this finding suggests a tentative target for intervention with mothers, to encourage them to resolve any mentions of threat in their descriptions.



### **4.3 Methodological Strengths and Limitations**

#### **4.3.1 Design.**

The design of the current study had a number of strengths and limitations. The transition to primary school context was used to provide a naturalistic upcoming social challenging context in which to assess mothers and children. This greatly enhances the ecological validity of the findings. However, this naturalistic context meant that there could be greater variability in mothers' and children's knowledge, understanding, and preconceptions about this event. While as many potential confounds were assessed and controlled for if necessary (e.g., time delay from assessment to starting school, whether the study child had older siblings who had already transitioned to school or not), there was a limit to how this could be accurately captured and assessed. Some information was not collected due to practical difficulties. For example, whether the child had visited the school prior to the assessment may have affected their doll play representations; however there was a great variability in the types of 'visits' mothers and children described, and often mothers were not aware of the amount of contact their child had been given with their new teacher or school environment if this was arranged by the preschool. The limited ability to control for such variables meant there could have been other influences affecting the results, and may explain why some expected associations did not reach significance. However, the conflict between internal validity (e.g., undertaking research in a controlled environment as possible) and external validity (e.g., being able to generalise findings to outside of the research environment) is an issue for all psychological research (Clark-Carter, 2010) and not this study alone.

In addition, the cross-sectional design meant that causation cannot be established from these correlational results. The parenting pathways to anxiety model (Creswell, Murray, Stacey, & Cooper, 2011) proposes that maternal anxiety leads to increased

negative information transfer, which in turn increases the risk of the development of child anxiety. However, there has been increasing research on the bi-directional influences within parenting (Pardini, 2008), and the significant associations found in the current study could also be explained by child influences on maternal anxiety and/or maternal information transfer. While longitudinal or experimental designs are better able to answer hypothesis as to the direction of effects, they also require either much greater time and resources to conduct (with longitudinal designs) than were available for the current study, or lack the ecological validity (with experimental studies) of the current study design.

A major limitation with the current study design was the time and resources required for recruitment. This was much greater than anticipated, and led to delays and potential bias in the final sample (see below). Recruitment of both preschools and individual mothers became much easier as the starting school date got closer (around two thirds of consent forms were received from March onwards, despite recruitment beginning in October), probably because starting school became more salient for all concerned. Many childcare establishments declined to help with recruitment when approached in the Winter term, which reduced recruitment options later on. It is likely that recruitment strategies solely targeted in the Spring/Summer terms would have had greater success, and may have led to a more representative sample. However, this was not possible due to time constraints on the current study, and the need to go through preschool/daycare approval before details were passed on to mothers (time to do this varied but often required discussion at termly meetings). Attempts at introducing the study to mothers in person were largely unsuccessful, due to the preschool age group attending daycare independently, and mothers being too busy to talk during drop off/pick up times.

### **4.3.2 Sample.**

The current study sample was a self-selected, general population sample, largely recruited from formal preschool day care providers. The demographic characteristics highlight the homogeneity of the sample, with the vast majority of mothers being highly educated, of White British ethnic background, and co-habiting with the participating child's father. While attempts were made to recruit a diverse sample (e.g., through pre-schools and nurseries in more economically and ethnically diverse areas, and through Sure-Start centres), recruitment was much more difficult than expected and in practice many of the participating pre-schools and nurseries (and therefore areas in which the families lived/worked) were based around academic establishments and towns (Cambridge, Norwich). It is likely that mothers who had also undertaken their own research were more sympathetic to recruitment campaigns by others, and this was commonly mentioned by participating mothers. This self-selection bias is common in observational research (Hammer, 2009), but appears particularly prominent in the current study due to the high numbers of mothers who received study information but did not respond to the invitation to participate. It is likely that the lack of diversity in the current sample is due to a combination of self-selection bias, and the general demographic characteristics of the geographical area from which participants were recruited (predominantly white, middle class). However as little data could be accurately gained on who actually received information about the study (due to pre-schools sending out information but not confirming numbers contacted, participants passing on details to friends), comparisons between mothers who volunteered to take part and those who did not were not possible.

The sample characteristics necessarily limit the generalisability of findings to the wider population of the UK; however this is a long-standing difficulty faced by psychological research in general (e.g., Smart, 1966). The demographics suggest the sample is low-risk sample for psychopathology (e.g., high maternal qualification giving an

indication of socio-economic status; two-parent, non-ethnic minority families). Therefore, it is possible that the current findings are a conservative estimate of the influence of maternal social anxiety and fears of negative self/child evaluation, as research indicates stronger effects of maternal psychopathology in the presence of adversity. A recent meta-analysis of the influence of maternal depression on child psychopathology found effect sizes to be greater in samples with lower proportions of married parents, and higher proportions of families from ethnic minorities and on low income (Goodman et al., 2011). It is plausible that similar influence on effect size may hold for maternal anxiety. However, observational research with an African-American, low income sample showed no effect of maternal anxiety on maternal anxious behaviour during interactions with their children (Ginsburg et al., 2005, 2006). Therefore the strength of maternal anxiety effects on information transfer depending on cultural and economic background requires further investigation, which the current study is not able to add to.

Additionally, the current study used a non-clinical sample, which combined with the low-risk nature of the community sample mentioned above, limits the conclusions that can be drawn regarding clinically significant and impairing anxiety. However, the study design focuses on mechanisms proposed to be involved in the *development* of childhood anxiety, and thus it is not necessary to use a clinical sample to examine such influences.

A strength of this study is the small age range of the child sample. The fact that all were in their pre-starting school year, and the standard deviation was only 4.06 months means developmental differences were unlikely to be major cofounds. Nonetheless, there were noticeable variations in the sample in terms of verbal, emotional, and academic ability (e.g., some children were able to write their name with ease while others did not even attempt this, some children showed difficulty identifying any emotional responses). It is possible that these differences may have affected children's own, and their mother's, expectations of starting school; however the proxy of child age was deemed the most

appropriate measure to try and capture such differences given the time and methodological constraints. More detailed assessment of cognitive development was beyond the scope of this study.

As the current study recruited any mothers who had a child starting school in the same academic year, there was necessarily a range in maternal age in the sample (23- 48 years old at time of assessment). This was significantly related to FNCE scores, with older mothers showing less fear of negative child evaluation. While this is an intriguing finding in itself, the need to control for maternal age in FNCE analyses may have reduced the power to detect significant effects with this variable. There may also be other factors that correlate with maternal age (e.g., pregnancy difficulties, income, life events) that could have acted as confounds in the current study.

#### **4.3.3 Measures.**

There were two main types of measures used in the current study; self-report and observational data. These are discussed separately below.

##### ***4.3.3.1 Maternal questionnaires.***

The selection and comparison of a number of questionnaires was a strength of this study. With the exception of the FNCE, all questionnaires were well-established measures with adequate, published psychometric properties. The combination of questionnaires assessing social anxiety and related constructs, with general anxiety/depression symptoms and maternally reported child anxiety, allowed a variety of comparisons between these to be made. While the number of questionnaires meant that it took most mothers 10 minutes to complete them, this did not seem to be a problem and no mother refused to do this. The questionnaires were completed while the child engaged in the doll play assessment, which ensured the child was occupied; however it is possible that the child's representations may have affected maternal symptom reporting (although the lack of association between most

questionnaires and doll play variables suggests otherwise). The variety of self-report measures collected meant there were a large number of correlations carried out between differing symptom scores, which enabled subtle associations to be uncovered which would not have been identified otherwise. However, the possibility of Type I error due to multiple comparisons should be considered.

The questionnaire scores highlight the relative lack of variation in symptomology in the current sample, with very few mothers endorsing clinically significant levels of anxiety, depression, or child anxiety. This was a limitation of the current study, as lack of variation in symptoms limited the strength of effects that could be expected (i.e., with very few mothers showing significant levels of social anxiety, the associations between social anxiety and information transfer/child representations were unlikely to be significant). The possible reasons for this (e.g., social desirability, non-clinical sample) have been discussed previously.

Self-report measures were chosen rather than using a researcher-administered structured clinical assessment to assess symptomology (e.g. the Structured Clinical Assessment of DSM-IV Diagnoses, DSM-IV; First et al., 2002). The use of self-report had the benefit of being quick, easily administered, and made efficient use of time during the visit while children completed the doll play task. However, self-report methods can be affected by social desirability and concerns over disclosure of potentially embarrassing information (Paulhus & Vazire, 2005), and this may be particularly the case regarding social anxiety symptoms and the completion of questionnaires in the presence of the researcher. Additionally, most mothers completed the questionnaires while in the same room as the child completing the doll play assessment. This could potentially have influenced their own symptom reporting, and/or that of their child.

While questionnaires were given an anonymous ID number, most mothers completed the self-report measures during the visit itself, therefore there was a limit to the

anonymity in their responses (as they handed their completed questionnaires back to the researcher directly). Mothers were always given an alternative to post back the questionnaires at a later date, to try and minimise the potential fear of evaluation. However, they were invited to complete the questionnaires during the visit, as most mothers reported finding it difficult to find the time later. To maintain anonymity of their responses (and reduce potential evaluative concerns in mothers with higher levels of social anxiety), mothers could have been offered a plain envelope to place their questionnaires in, sealing this before returning it to the researcher during the visit. However, this method would have prevented any missing items being identified and completed at the time. Overall it was deemed that the benefits of maximising response rate, minimising missing items/questionnaires, and being able to answer any questions mothers had about completing the questionnaires at the time of the visit, out-weighed the potential issues that this collection method raised. A more rigorously anonymous data collection method (e.g., online questionnaires) may be required with a clinically socially anxious sample.

#### ***4.3.3.2 Maternal descriptions task.***

The Maternal Descriptions task was specifically designed for the current study, based on previous research by Muris and colleagues on threat information transfer (e.g., Muris et al., 2010) but using the naturalistic setting of upcoming school transition. The task focused on the real-life event of starting school which meant there was increased ecological validity compared to studies using more artificial tasks (e.g., with novel animals the child is unlikely to ever encounter again). This was a major strength of this study. The task was originally designed to prompt mothers to make specific statements about four social aspects of starting school, with the expectation that these would be brief, maternal comments only. However, many mothers created a conversation with their child through the task, phrasing comments as questions and seeking responses from their child to move

the discussion onwards. This is typical of an elaborative maternal narrative style found to be positively associated with child conversation participation and elaborative style in their own narratives (Fivush, Haden, & Reese, 2006), and so may be a more natural way for mothers to speak to their children. Therefore it is possible that setting up an *explicit* discussion task for mother and child (i.e., asking them to speak together), may be a more realistic task for parents to engage in. This may also have been aided by the researcher absenting themselves during the discussion; however in the current study there was often no other area to move to, and the researcher remained in the room to prompt the child to listen and ensure the task was being recorded adequately. The coding of child-initiated statements during the descriptions task was beyond the scope of this study, however this would have been a useful area to consider.

The use of present/absent codes rather than counts and frequencies for variables prevented fine detail analysis of the content of mother descriptions (e.g., proportion of negative statements relative to non-negative statements). Dichotomous variables allowed easy comparison with previous research that has used experimental manipulation or positive/negative conditions (e.g., Muris et al., 2010; Remmerswaal et al., 2010; 2013) and aided inter-rater reliability which was easily achieved. While there is a possibility that more subtle differences between mothers may have been missed using this approach, proportional coding would have required a comprehensive narrative coding scheme, transcribing of descriptions, and separation of individual statements (c.f. Pella, 2011). This is extremely time intensive, and not possible with the resources available for the current study. The fact that maternal descriptions could be coded in real-time and directly from audio-recordings greatly streamlined coding in both time and training required, and thus enhances the clinical utility of the measure.



#### **4.3.3.3 Child doll play task.**

The doll play task used in the current study comprised three scenarios, based on research on ambiguous scenarios and doll play research. All children (except the one child that refused to attempt the doll play task) appeared to enjoy completing the play scenarios, and were often reluctant for the task to end. Mothers also reported enjoying watching how their child represented school. This indicates that the task was an age appropriate, engaging activity that both mothers and children appeared familiar with. Additionally, the comparison of a negativity aggregate created from a number of specific codes with a global negativity rating for the entire doll play allowed consideration of the most useful coding method. Few differences were found between these codes, but both appeared to be more strongly associated with maternal variables than the doll play positivity code. It may be that a quick yet reliable coding method would simply involve rating child representational negativity.

The structured approach (specific story stems, standardised questions from the researcher) provided a clear framework for coding the task, and facilitated training and inter-rater reliability. This has clear clinical advantages in developing a streamlined assessment and coding method that does not require intensive training or lengthy coding time. However, other doll play approaches have used a more open-ended approach, with less structure and direction from the experimenter (e.g., Woolgar & Murray, 2010). Such studies have included global codes relating to the quality of the play, such as narrative coherence (e.g., MSSB story stem coding scheme; Bretherton & Oppenheim, 2003), which was not possible with the current study doll play structure. While it is possible that stronger effects would have been found using a less structured doll play method, the current administration followed that of previous research assessing interpretation bias and child representations using doll play techniques (Dodd et al., 2011; Pass et al., 2012). It also allowed greater control over the length of the scenarios, shown by the much longer

(uncoded) final scenario, where the child was simply invited to represent ‘a really fun time’ at school. Using an unstructured approach throughout the assessment was likely to have increased the visit time significantly (indicated by the majority of children wishing to continue the stories after the researcher had ended them), and thus would be a potential barrier for recruitment, data collection, and family satisfaction with participation.

The doll play task was administered only once, immediately following the maternal description of school. Other studies have used a repeated-measures design, assessing child interpretations, anxiety, fear or beliefs about the event/object before and after the information transfer task (e.g., Remmerswaal, Muris & Huijding, 2013). However, the focus of the current study was not a specific, novel event/object, but rather an upcoming social challenge for which families had been preparing for already (all parents had to submit their school preferences to the local authority by January 2013). Therefore the observational tasks were designed to capture how mothers and children thought/talked about school in general, with the assumption that other similar discussions had already taken place.

#### **4.3.4 Focus on maternal influences.**

The current study only included mothers, rather than either or both parents. This was for methodological reasons to minimise variation in the data and possible reduction in power (e.g., to include both mothers and fathers, the sample size would have had to be significantly larger to allow for comparison between parental gender, and/or run separate analyses for mothers and fathers). However, this meant that the influence of paternal information transfer could not be assessed, which was a limitation of the current study. While there has only been minimal research including fathers in child anxiety research, some models propose a key role for fathers in the transmission and development of social anxiety in particular (Bögels & Phares, 2008; Bögels, Stevens & Majdandzic, 2011).

However, in the current study, all mothers were the primary caregiver for their child, therefore it is likely that they were the most prevalent information-giver at this developmental stage. In addition, a large meta-analysis of 134 studies examined the association between maternal and paternal mental health and child mental health, and found that maternal mental health problems were more strongly associated with child internalising problems than paternal mental health, especially for younger children (Connell & Goodman, 2002). The influence of fathers' psychological difficulties was stronger in older children, suggesting it would be of particular importance to include fathers in studies with adolescents. However, the inclusion of fathers as well as mothers in future studies is recommended.

#### **4.4 Implications of Research Findings**

##### **4.4.1 Theoretical implications.**

Much further work is needed to replicate and extend the current study before firm implications can be made regarding theoretical models of anxiety development. However, it would be of interest to see further consideration of fear of negative child evaluation, as well as the current focus on anxieties relating to the parent themselves. This concept requires further exploration, with validation of the FNCE and comparisons with other social anxiety measures needed. It may be that such fears may operate differently for parents depending on the developmental stage of the child; the current study and that of de Vente et al (2011) show a variety of FNCE scores which may be explained by the differing ages of children in each sample (preschool vs infancy). It could also be the case that fear of negative child evaluation may not be a specific mechanism for development of child social fears; the anxiety these fears raise in parents may prompt them to transmit negative information about a range of topics. This would need to be considered in future work, before the proposed link between parental social fear, fear of negative child evaluation, and

development of child social fear can be evaluated. Overall the current study findings provide tentative support for the information transmission pathway (Rachman, 1977), including within a parenting pathways model (Creswell et al., 2011).

#### **4.4.2 Clinical implications.**

As noted above, the limited power in the current study to detect significant associations between variables (along with the possibility of Type I error) mean that clinical implications can only be preliminary and hypothetical. The lack of a clinical group in the current study also prevents strong conclusions being drawn regarding the mechanisms of development relating to clinically significant, and impairing, childhood anxiety. However, a tentative suggestion would be that an absence, or lack, or positivity in maternal information transfer could be a clinically important area for intervention. This would also seem a more acceptable stance than highlighting to parents what they are doing wrong; it may seem less blaming to encourage (and possibly train) parents to be more positive. One study has found child interpretations and social anxiety symptoms to be reduced following parent-administered cognitive bias modification training (Lau, Pettit & Creswell, 2013), so there may also be potential for training parents to promote positivity in their more general discussions with their children. The current findings cannot support such direct implications, yet this could be an area to focus on in future research, and potentially interventions.

### **4.5 Future Research**

#### **4.5.1 Study designs.**

The current study indicates several directions for future research in the area. Prospective longitudinal designs would allow the issue of causality to be investigated, and examine developmental factors within the proposed pathways to child anxiety. Similarly,

longitudinal data on parental SIAS, BFNE-S, and FNCE scores, information transfer and child outcomes would help clarify which are the active mechanisms in the process, and the direction of effects. Within such longitudinal work, it would be important to include follow-up assessments of children, to assess for anxious symptoms further on in the child's development.

Further adaptation of the study design may enable more causal pathways to be elucidated. As noted above, emerging work with slightly older children suggests interpretation bias training children can be successfully administered via parents' reading of bedtime stories, and that this can reduce child social anxiety symptoms (Lau, Pettit, & Creswell, 2013). While this is still a novel area, adapting the current methodology to include interpretation bias training by parents for this younger age group would be an exciting future direction.

#### **4.5.2 Samples.**

While it was hoped that the current study would recruit mothers with a range of anxious symptoms, this did not happen. More direct and focused recruitment targeting parents who may struggle with their own anxiety, could increase numbers in the higher symptom range. Adapting the recruitment strategy by inviting mothers to return questionnaires by post, then completing observational assessments with only those scoring in the top and bottom quartile (the use of an 'Extreme Groups Approach'; EGA) could provide greater power to detect effects using the sample size of observations (Preacher et al., 2005). With this approach, the time delay between the completion of questionnaires and observations would need to be carefully considered (i.e., enough time to minimise the influence of having completed the questionnaires first, but not too long that symptoms may have changed by the time of observations). Additionally, recruitment strategies to increase uptake would be needed to gain a sufficient sample size to enable this

methodology. While more mothers may be happy to complete questionnaires by post, there is a risk of a proportionally greater drop out of socially anxious mothers at the observational stage, a difficulty encountered in other doctoral observational work (Johnston, in preparation). Providing a greater incentive (e.g., monetary reward, advice on managing child/parental anxiety) may help with recruitment in general, and also encourage socially anxious mothers to take part. Alternatively, if mothers were able to take part either remotely (e.g., completing questionnaires online/by post) or without social interaction with a stranger (e.g., submitting a recording of their discussion electronically), this may reduce the barriers to participation.

One major area for future research involves the inclusion of fathers in further studies. Ideally, sufficient resources would enable both parents to be participate in information transfer tasks (separately, and possibly in combination), to examine potential differences in discourse style. Bögels and Phares (2008) have proposed very differing roles for mothers and fathers in a child's development within their model of parenting influences on child anxiety, and the inclusion of both parents would allow comparisons of these effects. For example, it might be expected that fathers would be more challenging in their discussions with their child, linked to their hypothesised role of 'play and challenge' compared to the maternal role of 'care and protect' (Bögels & Phares, 2008).

A more ethnic and socio-economically diverse sample would allow consideration of the influence of these variables on maternal information transfer, and also allow greater generalizability of findings. While greater effects of maternal anxiety may be predicted in the context of adversity, other studies have suggested a reduced impact of parenting behaviours, such as control, on child anxiety in lower socioeconomic samples (van der Bruggen, Stamms, & Bögels, 2008). Greater variation in the demographic characteristics of future samples would allow exploration of such factors.

Obtaining clinical samples (both of clinically anxious parents, and children) would allow the pathways to childhood anxiety be explored in a sample where effects are most extreme. As mentioned above, the use of parents as trainers of interpretation bias in intervention studies for anxious children (or even prevention work), as well as the potential for training anxious parents in positive discussion styles, would also be useful avenues for further research with clinical samples.

#### **4.6 Overall Conclusions**

The aim of the current study was to examine relationships between maternal social anxiety, verbal information transfer and child representations in a naturalistic, observational framework. Specifically, the verbal information transmission pathway (Creswell et al., 2011; Rachman, 1977; 1991) and the concept of fear of negative child evaluation (Schreier & Heinrichs, 2010; de Vente et al., 2011) were explored. These mechanisms have been proposed to play a role in the intergenerational transmission of anxiety, and research has suggested they may be linked to the development of child anxiety. However, previous research on information transfer has largely relied on experimental designs and artificial tasks, lacking ecological validity. The current study aimed to address some of the limitations, by investigating naturalistic information transfer in a community sample of mothers and their preschool children, using starting school as a real-life, upcoming social challenge context. Child representations following maternal descriptions of school were also assessed.

A number of non-significant results were found in the current study, which may be partly explained by lack of power to detect more subtle effects than anticipated, as well as low levels of social anxiety symptoms across the sample. However, mothers with higher social anxiety symptom scores were significantly less likely to make any positive general comments about school in their descriptions, compared to mothers with lower social

anxiety symptoms. Importantly, significant associations were found between overall maternal negativity, as well as overall maternal positivity in school descriptions, and child representational negativity. Other key findings included significant associations between a specific question about maternal concern over their child starting school, and information transfer variables; and fear of negative child evaluation being significantly associated with lack of positivity in maternal descriptions.

The possibility of both Type I and Type II error, as well as some methodological weaknesses (potential lack of bias in self-selected sample, low anxiety symptomology) mean the current study findings need to be interpreted with caution. However, they provide preliminary support for the verbal information transfer pathway operating in a naturalistic context. Further work is needed to replicate the findings, and to investigate the processes in a clinical sample. Possible clinical interventions based on the study findings include using more specific measures to identify mothers who may struggle to provide positive information to their children about upcoming events, and intervention work promoting a positive parental discourse style.



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## **Appendices**

### **Appendix A: Parent Information Sheet Child Expectations of School Project**

#### **Who is doing this research?**

This research is being done by the University of East Anglia (UEA). The main researcher is Dr Laura Pass, a Trainee Clinical Psychologist, who is supervised by Kiki Mastroyannopoulou and Dr Helen Dodd at UEA. The research is being undertaken as part of the course requirements for the UEA Doctorate in Clinical Psychology.

#### **Why are we doing this research?**

Starting school is an important time for young children, and with lots of new challenges to face it can sometimes make parents and children a bit worried. Little is known about worry in young children, partly because they find it hard to report on how they feel. Parents may play an important role in explaining upcoming events to children, and creating expectations. We are looking at how mothers give information about the social challenge of school to their children, and how children act out social stories about school, using toy props in a play task.

It is hoped that this research will help us to learn more about worry in young children, and how parents can help their children be confident and optimistic about upcoming challenges. We also hope to learn more about how a play task can be used to find out how children feel.

#### **Do we have to take part?**

No, it is entirely voluntary to take part. If you and your child decide to participate, you will be asked to sign a consent form saying that you have agreed to take part in this research. You will be given a copy of the consent form. If you do not take part, this will not have any negative consequences for you.

#### **What does this research involve?**

If you agree to take part, you will be contacted by a researcher to obtain some background information (e.g. where your child will be going to school), and arrange a suitable session time. This can be done at the preschool/nursery/playgroup your child attends, or at your home. Questionnaires will also be given to you, which ask about family information (e.g., how many siblings your child has) as well as symptoms of anxiety, stress and low mood. These can be completed at the session, or returned by post/drop box at your child's preschool.

The session involves a play-like task, which most children find really fun! Firstly, we will ask you to speak to your child about the social challenge of starting school. This will be followed by the researcher using toys to act out different school-related stories with your child, where your child can decide the endings. The researcher will describe a scenario then ask your child to create an ending to each, using the toy props as required. Most children love to choose how the stories end!

The play session will be video recorded, but the camera will be directed away from your faces. The session will also be audio-recorded to make sure the sound quality is ok. This is because we will be looking at what mums and children say, and how children finish their stories using the toy props.

#### **How long will the tasks take?**

The session will take around 20 minutes complete. The questionnaires, that can be completed separately, take 10-15 minutes to complete.

#### **What will happen to our information?**

We will keep all information about you private and safe, in line with UEA and National Research Ethics Service (NRES) guidelines. The study materials (e.g. DVDs of sessions, paper copies of questionnaires) will not contain any identifying information. Once you consent to participate you will be assigned a unique identification number which we will use instead of your name. All of these study materials will be kept in a locked cabinet at UEA. Any electronic information related to the study will be kept on a password protected memory stick. All personal information (e.g. contact details, consent forms) will be stored separately to study information, and everything will be kept securely locked away. You can ask for the information we have collected about you to be destroyed at any time, or returned to you (before it will be destroyed 5 years after study

completion), by contacting Laura Pass ([l.pass@uea.ac.uk](mailto:l.pass@uea.ac.uk)), the course ([clinpsyd@uea.ac.uk](mailto:clinpsyd@uea.ac.uk)) or by returning the withdrawal request postcard you will be provided with.

#### **What if there's a problem?**

If you have any questions about this study, you should ask to speak to the researcher Laura Pass (details below) who will do her best to answer your questions. You can also contact the study supervisor Kiki Mastroyannopoulou (details below). If you remain unhappy and wish to complain formally, you can do this by contacting Kiki Mastroyannopoulou.

#### **What will happen to the results of this study?**

The results will be written up as part of the requirements for the UEA Doctorate in Clinical Psychology. In addition to this it is hoped that this study may be published in scientific journals, and if so will appear one to two years after the end of the research study. We will not be able to provide individual feedback on your questionnaires or the play task, but a summary of the results can be sent to your home address at the end of the study if you would like to hear about what we found out.

#### **What are the advantages and disadvantages of taking part?**

There are no known disadvantages to taking part. The session is a fun, child-focused activity very similar to natural play, and most families enjoy taking part. The questionnaires do ask about your mood and anxiety levels, however these are voluntary and you do not have to complete these if they cause you any distress. NHS Direct contact details (Tel: 0845 46 47, website [www.nhsdirect.nhs.uk](http://www.nhsdirect.nhs.uk)) will be provided to all families at the end of their participation, in case of any distress.

#### **Who has approved the research?**

The research has been reviewed and given a favourable opinion by UEA Research Ethics Committee and allowed to proceed (Reference Number: 2011/2012-47).

#### **What happens next?**

If you are happy to take part, please contact Laura Pass by:

- Email: [L.Pass@uea.ac.uk](mailto:L.Pass@uea.ac.uk)
- Text/Call: **07842 976 157**
- Returning the Consent form and Contact Details sheet in the stamped addressed envelope provided

We will then contact you to arrange the session.

#### **Who can I contact if I have any questions?**

If you have any questions please contact Laura Pass, who will be happy to discuss any aspect of this research (Email: [L.Pass@uea.ac.uk](mailto:L.Pass@uea.ac.uk), Tel: **07842 976 157**).

Alternatively, if you would like further information about the project you can contact Kiki Mastroyannopoulou (UEA Supervisor) School of Medicine & Health Sciences, University of East Anglia, Norwich, Norfolk, NR4 7TJ. Tel: 01603 593 961 Email: [K.Mastroyannopoulou@uea.ac.uk](mailto:K.Mastroyannopoulou@uea.ac.uk).

## Appendix B: Parent Consent Form Child Expectations of School Project

### Consent Form

**Please initial all boxes you agree with:**

I have read the Invitation letter and Information Sheet, dated 08.08.12 (Version 1.2)	
I have had an opportunity to ask questions	
I feel that I have received enough information about the study and satisfactory answers to my questions	
I understand that my child and I are free to withdraw from the study at any time, without having to give a reason	
I am happy for me and my child, ....., to take part in the study	
I am happy for me and my child to be video and audio recorded during the assessment	
I am happy for the research team to securely store the video and audio records	
I understand that any of my data collected during the study may be looked at by individuals from UEA regulatory authorities, who monitor the conduct of research to ensure it is being carried out correctly and ethically. I give permission for these individuals to have access to my data.	
I would like to be sent a summary of the study findings once they are complete	
I am happy to be contacted about future research	

Name of Participant (Mother) .....

Name of Participant: (Child).....

Date: .....

Mother's signature: .....

Name of Researcher: Laura Pass.....

Date: .....

Signature: .....

**Appendix C: Contact Details and Demographics Form  
Child Expectations of School Project**

Family Contact Details Sheet

Mother's full name.....

Child's full name:.....

Address:.....

.....

Preferred contact telephone number:.....

Alternative telephone number:.....

Email address:.....

Best method/time to contact: .....

Best days/time for visit.....

Pre-school, nursery or playgroup your child attends:

.....

Primary School your child is due to attend, and start date (or if you are still deciding/ waiting to hear, please give details of your preferred schools):

.....

Maternal DOB: ...../...../.....

Child DOB: ...../...../.....

Details of birth order and siblings: (e.g. Only child, first born of two etc):

.....

Ethnicity of mother: .....

Ethnicity of child: .....

Maternal co-habitation with partner? Yes / No / Decline to answer

If so, is this with someone who your child regards as their father? Yes / No / Decline to answer

At what age did you leave full time education? ..... years

What is your highest qualification? (e.g. GCSE, O Level, A level, NVQ, BSc, PhD etc)

.....

What is your relationship to the child taking part in the study (e.g. mother, step- mother, foster mother)

.....

What is your marital status? (please tick)

- Single
  
- Cohabiting: please state this person's relationship to the child:

.....

- Married
  
- Same-sex civil partnership
  
- Other, please state:

.....

Any further details

Please feel free to use this space to give any further details you think would be helpful to know:

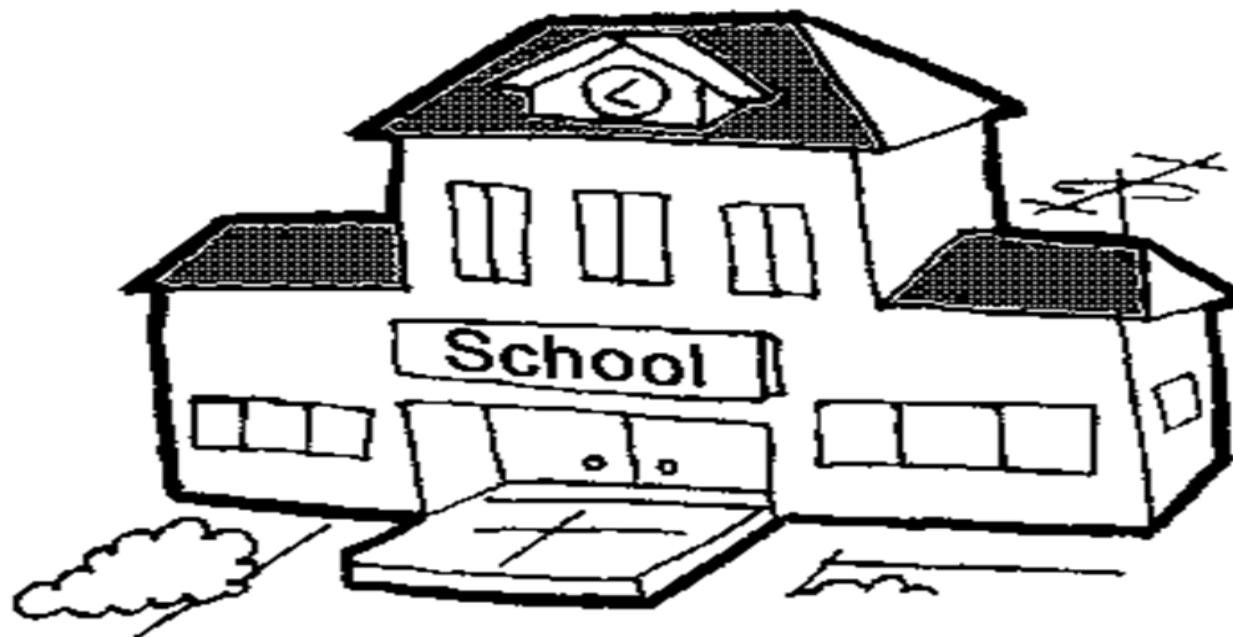
.....  
.....  
.....  
.....  
.....  
.....

Thank you!



### Appendix D: Child School Picture

My name is.....



I am ..... years old

I am going to ..... school in September!



## Appendix E: Maternal Questionnaires

### Appendix E.i: Social Interaction Anxiety Scale (SIAS)

For each question, please circle a number to indicate the degree to which you think the statement is characteristic or true of you. The rating scale is as follows:

0 = Not at all characteristic or true of me

1 = Slightly characteristic or true of me

2 = Moderately characteristic or true of me

3 = Very characteristic or true of me

4 = Extremely characteristic or true of me

	Not at all	Slightly	Moderately	Very	Extremely
1. I get nervous if I have to speak to someone in authority (teacher, boss).	0	1	2	3	4
2. I have difficulty making eye contact with others	0	1	2	3	4
3. I become tense if I have to talk about myself or my feelings	0	1	2	3	4
4. I find difficulty mixing comfortably with the people I work with.	0	1	2	3	4
5. I find it easy to make friends of my own age.	0	1	2	3	4
6. I tense up if I meet an acquaintance in the street.	0	1	2	3	4
7. When mixing socially I am uncomfortable.	0	1	2	3	4
8. I feel tense if I am alone with just one person.	0	1	2	3	4
9. I am at ease meeting people at parties etc.	0	1	2	3	4
10. I have difficulty talking with other people.	0	1	2	3	4
11. I find it easy to think of things to talk about	0	1	2	3	4
12. I worry about expressing myself in case I appear awkward.	0	1	2	3	4
13. I find it difficult to disagree with another's point of view.	0	1	2	3	4
14. I have difficulty talking to an attractive person of the opposite sex.	0	1	2	3	4
15. I find myself worrying I won't know what to say in social situations.	0	1	2	3	4
16. I am nervous mixing with people I don't know well.	0	1	2	3	4
17. I feel I'll say something embarrassing when talking	0	1	2	3	4
18. When mixing in a group, I find myself worrying I will be ignored.	0	1	2	3	4
19. I am tense mixing in a group.	0	1	2	3	4
20. I am unsure whether to greet someone I know only slightly.	0	1	2	3	4

**Appendix E.ii: Depression, Stress and Anxiety Scale  
(21 items; DASS-21)**

DASS21	ID:	Date:
<p>Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you <i>over the past week</i>. There are no right or wrong answers. Do not spend too much time on any statement.</p> <p><i>The rating scale is as follows:</i></p> <p>0 Did not apply to me at all            1 Applied to me to some degree, or some of the time            2 Applied to me to a considerable degree, or a good part of time            3 Applied to me very much, or most of the time</p>		
1	I found it hard to wind down	0 1 2 3
2	I was aware of dryness of my mouth	0 1 2 3
3	I couldn't seem to experience any positive feeling at all	0 1 2 3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0 1 2 3
5	I found it difficult to work up the initiative to do things	0 1 2 3
6	I tended to over-react to situations	0 1 2 3
7	I experienced trembling (eg, in the hands)	0 1 2 3
8	I felt that I was using a lot of nervous energy	0 1 2 3
9	I was worried about situations in which I might panic and make a fool of myself	0 1 2 3
10	I felt that I had nothing to look forward to	0 1 2 3
11	I found myself getting agitated	0 1 2 3
12	I found it difficult to relax	0 1 2 3
13	I felt down-hearted and blue	0 1 2 3
14	I was intolerant of anything that kept me from getting on with what I was doing	0 1 2 3
15	I felt I was close to panic	0 1 2 3
16	I was unable to become enthusiastic about anything	0 1 2 3
17	I felt I wasn't worth much as a person	0 1 2 3
18	I felt that I was rather touchy	0 1 2 3
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0 1 2 3
20	I felt scared without any good reason	0 1 2 3
21	I felt that life was meaningless	0 1 2 3



**Appendix E.iii: Brief Fear of Negative Evaluation- Straightforward Items (BFNE-S)**

ID:

Date:

Please read each statement carefully and indicate how characteristic it is of you according to the following scale:

- 1 = Not at all characteristic of me
- 2 = Slightly characteristic of me
- 3 = Moderately characteristic of me
- 4 = Very characteristic of me
- 5 = Extremely characteristic of me

1	I worry about what other people will think of me even when I know it doesn't make any difference	0	1	2	3	4
2	I am frequently afraid of other people noticing my shortcomings	0	1	2	3	4
3	I am afraid that others will not approve of me	0	1	2	3	4
4	I am afraid that people will find fault with me	0	1	2	3	4
5	When I am talking to someone, I worry about what they may be thinking about me	0	1	2	3	4
6	I am usually worried about what kind of impression I make	0	1	2	3	4
7	Sometimes I think I am too concerned with what other people think of me	0	1	2	3	4
8	I often worry that I will say or do the wrong thing	0	1	2	3	4

**Appendix E.iv: Fear of Negative Child Evaluation Scale (FNCE)**

**Opinions about your Child**

© CFNE, Majdandžić, de Vente & Bögels, 2008

Read each of the following statements carefully and circle the number that best describes how characteristic the statement is of you according to the following scale:

0	1	2	3	4
Not at all characteristic of me	Slightly characteristic of me	Moderately characteristic of me	Very characteristic of me	Extremely characteristic of me

1. I worry about what other people will think of my child even when I know it doesn't make any difference. 0 1 2 3 4
2. It bothers me a lot if I know people have an unfavourable impression of my child. 0 1 2 3 4
3. I worry about what kind of impression my child makes on others. 0 1 2 3 4
4. I am afraid that others will reject my child. 0 1 2 3 4
5. I am afraid that others will not approve of my child. 0 1 2 3 4
6. I worry about other people's opinion of my child. 0 1 2 3 4
7. I am usually worried about what kind of impression my child makes. 0 1 2 3 4
8. If I know someone is judging my child, it bothers me a lot. 0 1 2 3 4
9. Sometimes I think I am too concerned with what other people think of my child. 0 1 2 3 4
10. I often worry that my child will misbehave in the presence of others. 0 1 2 3 4

Do you personally feel worried about your child starting school? (Please circle)  
Yes / No

☺ Thank you for your help! ☺

**Appendix E.v: Preschool Anxiety Scale Revised (PAS-R)**

**CHILDHOOD CONCERNS SURVEY**

Below is a list of items that describe children. For each item please circle the response that best describes your child. Use the scale below from not at all true to very often true. Please answer all the items as well as you can, even if some do not seem to apply to your child.

- 0: Not at all true
- 1: Seldom true
- 2: Sometimes true
- 3: Quite often true
- 4: Very often true

- 1. Has difficulty stopping him/herself from worrying..... 0 1 2 3 4
- 2. Worries that he/she will do something to look stupid  
in front of other people..... 0 1 2 3 4
- 3. Is afraid of doctors and/or dentists.....0 1 2 3 4
- 4. Is scared to ask an adult for help (e.g., a preschool  
or school teacher).....0 1 2 3 4
- 5. Would be upset at sleeping away from home .....0 1 2 3 4
- 6. Is scared of heights (high places).....0 1 2 3 4
- 7. Is afraid of meeting or talking to unfamiliar people.....0 1 2 3 4
- 8. Worries that something bad will happen to his/her  
parents..... 0 1 2 3 4
- 9. Is scared of thunderstorms..... 0 1 2 3 4
- 10. Is afraid of talking in front of the class (preschool  
group) e.g., show and tell.....0 1 2 3 4
- 11. Worries that something bad might happen to him/her  
(e.g., getting lost or kidnapped), so he/she won't be  
able to see you again..... 0 1 2 3 4
- 12. Is nervous of going swimming..... 0 1 2 3 4
- 13. Worries that he/she will do something embarrassing  
in front of other people.....0 1 2 3 4
- 14. Is afraid of insects and/or spiders.....0 1 2 3 4
- 15. Becomes distressed about your leaving him/her  
at preschool or with a babysitter..... 0 1 2 3 4
- 16. Is afraid to go up to a group of children to join their  
activities..... 0 1 2 3 4
- 17. Is frightened of dogs..... 0 1 2 3 4
- 18. Has nightmares..... 0 1 2 3 4
- 19. Worries about doing the right thing..... 0 1 2 3 4
- 20. Is afraid of the dark..... 0 1 2 3 4
- 21. Asks for reassurance when it doesn't seem necessary..... 0 1 2 3 4
- 22. Is wary of large animals..... 0 1 2 3 4
- 23. Acts shy and quiet around new people..... 0 1 2 3 4
- 24. Seems nervous in new or unusual situations..... 0 1 2 3 4
- 25. Gets upset if s/he makes a mistake.....0 1 2 3 4
- 26. Becomes distressed if separated from parents..... 0 1 2 3 4
- 27. Gets upset if something unexpected happens..... 0 1 2 3 4
- 28. Is afraid of loud noises..... 0 1 2 3 4

## Appendix F: Useful Resources Handout

### Useful Resources

If you are concerned about how you, or your child, is feeling at the moment, the details below can give you more information about help in your local area.

**Your own GP** (contact details will vary):

This is the first point of call if either you or your child are finding things difficult. GP's are experienced at helping people with mental health and physical health problems, and can refer you to the best place to receive extra help.

**NHS Direct** [www.nhsdirect.nhs.uk](http://www.nhsdirect.nhs.uk), Tel: 0845 46 47

This website/contact number is a national service, but they can direct you to local services.

**Mind** <http://www.mind.org.uk/> Tel: 0300 123 3393

A mental health charity, with lots of useful information and advice about mental health.

**Young Minds** <http://www.youngminds.org.uk> Tel: 0808 802 5544

A website for young people's mental health and wellbeing, with a special section and helpline for parents.

**Parent Line** [www.familylives.org.uk](http://www.familylives.org.uk) Tel: 0808 800 2222

A resource for parents, dealing with a range of family issues.

**Self-help books:**

**Child anxiety/shyness:**

*Overcoming your child's fears and worries: Creswell & Willetts (2007)*

*Helping your anxious child: A step by step guide for parents: Rapee & Wignall (2008)*

These books are practical guides to help parents support their children in managing and overcoming anxiety, with useful techniques and strategies.

**Adult anxiety/shyness:**

*Overcoming Anxiety: Kennerley (2009)*

*Overcoming Social Anxiety and Shyness: Butler (2009)*

These books are part of the 'Overcoming' series, and are easy to read, practical guides to managing and overcoming your own anxiety.

If you would like to discuss any aspect of the Child Expectations of School study, please contact Laura Pass ([L.Pass@uea.ac.uk](mailto:L.Pass@uea.ac.uk), Tel 07842 976 157).

## **Appendix G: Ethical Approval Documentation**

**Faculty of Medicine and Health Sciences Research Ethics Committee**



Laura Pass  
Elizabeth Fry Building  
Norwich Medical School  
University of East Anglia  
Norwich NR4 7TJ

**Research & Enterprise Services**  
West Office (Science Building)  
University of East Anglia  
Norwich Research Park  
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Telephone: +44 (0) 1603 591574  
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Web: [www.uea.ac.uk/researchandenterprise](http://www.uea.ac.uk/researchandenterprise)

17<sup>th</sup> August 2012

Dear Laura

**Child Expectations of School: Maternal social anxiety, information transfer and child representations  
Reference 2011/2012-47**

The amendments to your above proposal have been considered by the Chair of the Faculty Research Ethics Committee and we can confirm that your proposal has been approved.

Please could you ensure that any further amendments to either the protocol or documents submitted are notified to us in advance and also that any adverse events which occur during your project are reported to the Committee. Please could you also arrange to send us a report once your project is completed.

The Committee would like to wish you good luck with your project

Yours sincerely

A handwritten signature in blue ink that reads 'Yvonne Kirkham'. The signature is written in a cursive style with a large initial 'Y'.

Yvonne Kirkham  
Project Officer

**Faculty of Medicine and Health Sciences Research Ethics Committee**



Laura Pass  
Elizabeth Fry Building  
Norwich Medical School  
University of East Anglia  
Norwich NR4 7TJ

**Research & Enterprise Services**  
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Email: [fmh.ethics@uea.ac.uk](mailto:fmh.ethics@uea.ac.uk)

Web: [www.uea.ac.uk/researchandenterprise](http://www.uea.ac.uk/researchandenterprise)

18<sup>th</sup> December 2012

Dear Laura

**Project Title: Child Expectations of School: Maternal Social Anxiety, Information Transfer, and Child Representations. Reference: 2011/2012-47**

Thank you for your e-mail dated 13/12/12 notifying us of the amendments you would like to make to your above proposal. These have been considered by the Chair of the Faculty Research Ethics Committee and we can now confirm that your amendments have been approved.

Please can you ensure that any further amendments to either the protocol or documents submitted are notified to us in advance, and also that any adverse events which occur during your project are reported to the Committee.

Please can you also arrange to send us a report once your project is completed.

Yours sincerely,

A handwritten signature in blue ink that reads 'Yvonne Kirkham'.

Yvonne Kirkham  
Project Officer

## **Appendix H: Maternal Description Task**

### **Appendix H.i: Maternal Description Task Instructions**

#### Researcher script:

(To child): First of all, I want mummy to tell you some important things about what starting school might be like. You can keep on colouring your picture, as long as you listen at the same time- it's important to keep your ears open! (explain further if needed).

(To mum) Mum, I'd like you to tell (child's name) about what you think it's important for them to know about starting school. Here is a card with details of the topics to cover (give instructions). I'll be timing you to let you know when a minute is up for each topic, but don't worry if you go a bit over, just finish up your conversation. You can move on sooner than a minute if you run out of things to say. It's ok if (child's name) wants to say something back too!

Do you have any questions? (Start timing and audio recording).

Afterwards: "Thank you (mum)! And thank you (child's name) for listening so hard, well done!" [sticker given to child to stick onto school picture].

#### Written instructions given to mothers:

Please spend up to around 1 minute talking to your child about each topic. It's ok if your child wants to say something too!

Please tell your child something you think it is important for them to know about.....

- 1) Making friends at school
- 2) Teachers at school
- 3) Playtime at school
- 4) Older children at school

## Appendix H.ii: Maternal Description Task Coding Scheme

*Note: Code for the entire mother conversation (not per topic)*

**Threat comment(s) present: Yes/No**

*e.g. Are you scared of the older children?*

**and if there is threat, is this resolved? Yes/No**

*e.g. Older children can help you find your way round school*

**Positive social comment(s) present: Yes/No**

*e.g. You'll make lots of new friends*

**Positive general comment(s) present: Yes/No**

*e.g. You're starting school in Sept- how exciting!*

**Anxious words mentioned: Yes/No**

*e.g. Are you worried about the older children?*

**Negative evaluation by others: Yes/No**

*e.g. The bigger children might not want to play with you*

**Positive evaluation by others: Yes/No**

*e.g. You might come home from school on your first day and say 'Mummy, I made a new friend!'*

**Positivity scale:        0                    1                    2                    3**

0: No positivity at all

1: Mild or minimal positivity

2: Clear positivity or more than 1 instance

3: Consistent positivity

**Negativity scale:        0                    1                    2                    3**

0: No negativity at all

1: Mild or minimal negativity (1 instance)

2: Clear negativity or more than 1 instance

3: Consistent negativity



## **Appendix I: Doll Play Task**

### **Appendix I.i: Doll Play Researcher Script**

#### Scenario 1: Older children:

You're in the playground at big school (name), and you see a group of older children who are a bit bigger than you, who are also in the playground. They look over and say something you can't quite hear.

What do you think they are saying? How do you feel? Can you show me what you do? What do the other children do? How does the story end?

#### Scenario 2: Teacher:

You are in the classroom, and busy at your desk working. You are busy doing a drawing in your class when someone comes to tell you the teacher is looking for you.

Why is the teacher looking for you? Can you show me what you do? How does the story end?

#### Scenario 3: Playground game:

You've done lots of things in school and now it's time for your break. The bell rings and you go out in the playground. Some children from the other class who you don't know are already there, and they are playing a great game that you really like (ask child to give example of a game they like to play, and use this) As you walk near them, you can hear the children laughing.

Why are the children laughing? How do you feel when you're near the children and you hear them laughing? Can you show me what you do? How does the story end?

(If this doesn't end positively, say: then one of your friends sees you and you play together and have fun.)

#### Fun scenario (uncoded):

Now, this time (child's name) you get to completely make up the story! Can you tell me a story about a really fun time at school?

(If child struggles, ask: What about a fun time at preschool, or at home? Provide support to create a positive ending).

## Appendix I.ii: Doll Play Coding Scheme

*Note: Code each scenario separately, then global codes across all doll play. If experimenter error means a code is not able to be scored, code as missing (9999)*

### Scenario 1: Older children (in playground looking over and saying something)

- *What are the children saying?*

#### **Threat interpretation: Yes/No**

Threat examples: Older children being mean, They don't want me to play

If non-threat:

**Positive** (e.g. Can they play with me, Hello, I love you, They like me, This is a nice day at school)

**Neutral** (e.g. They want to play on the swings, There's a school person, This is big school)

**DK**

**No response**

- *How do you feel?*

**Positive** (e.g. Happy, fine, good)

**Negative** (e.g. Not good, sad, shy, angry)

**Neutral** (e.g. combination of negative and positive emotions, Funny, Silly)

**DK**

**No emotion response**

- *What do you do/what happens next?*

**Approach older children: Yes/No** (can be at any point after question, as long as this is not initiated by the experimenter)

**Any Verbal anxiety: Yes/No**

**Any social interaction: Yes/No** (can be at any point in the story, and involve any other individuals not just the older children. Even minimal interaction like others saying hello is coded)

#### **Negative evaluation by others:**

**Yes** (Any clear indication the study child is not socially accepted, e.g. They don't like me, They don't want me to play)

**No**

#### **Positive evaluation by others:**

**Yes** (Any clear indication that the study child is socially accepted, e.g. mention of 'friends', They like me, They ask me to play) Note: Not just 'play together' (this could be coded as social interaction however)

**No**

### Scenario 2: Classroom teacher (looking for child)

- *Why is the teacher looking for you?* **Threat interpretation: Yes/No**

Threat examples: To tell me off, Because she's angry at me (or threat shown by aggressive action of teacher towards child, e.g. teacher doll hitting child and knocking them over)

If non-threat:

**Positive** (e.g. To make sure I'm alright, She wants to play with me)

**Neutral** (e.g. It's lunchtime, It's playtime, It's home time, To tell me something, To do some writing, To play with the blocks, They want to know what I'm doing)

**DK**

**No response**

- *How do you feel?*

**Positive** (e.g. Happy, fine, good)

**Negative** (e.g. Not good, sad, shy, angry)

**Neutral** (e.g. combination of negative and positive emotions, Funny, Silly)

**DK**

**No emotion response**

- *What do you do/what happens next?*

**Approach teacher: Yes/No** (can be any time in story after the child is told the teacher is looking for them)

**Any Verbal anxiety: Yes/No**

**Any social interaction: Yes/No** (can be at any point in the story, and involve any other individuals not just the teacher. Approaching the teacher is considered social interaction)

**Negative evaluation by others:**

**Yes** (Any clear indication the study child is not socially accepted, e.g. The teacher tells me off. 'I'm naughty' is not strong enough unless this is explicitly said by the teacher or others)

**No**

**Positive evaluation by others:**

**Yes** (Any clear indication that the study child is socially accepted, e.g. mention of 'friends', The teacher wants me to play with her, She wants to put my picture up on the wall, My friends want me to play outside) Note: Not just 'play together' (this could be coded as social interaction however)

**No**

### Scenario 3: Children laughing (in playground)

- *Why are the children laughing?*

**Threat interpretation: Yes/No**

Threat examples: They don't want me to play, They don't like me (it has to be explicitly obvious as threat, if in doubt code as non-threat)

If non-threat:

**Positive** (e.g. They are having fun, It's a fun game, They like playing hide and seek, They say "Would you like to play with us")

**Neutral** (e.g. They're playing football, They think I'm funny, They're trying to catch me)

**DK**

**No response**

- *How do you feel?*

**Positive** (e.g. Happy, fine, good)

**Negative** (e.g. Not good, sad, shy, angry)

**Neutral** (e.g. combination of negative and positive emotions, Funny, Silly)

**DK**

**No emotion response**

- *What do you do/what happens next?*

**Approach older children: Yes/No** (can be at any point after question, as long as this is not initiated by the experimenter)

**Any Verbal anxiety: Yes/No**

**Any social interaction: Yes/No** (can be at any point in the story, and involve any other individuals not just the other children. Even minimal interaction like others saying hello is coded)

**Negative evaluation by others:**

**Yes** (Any clear indication the study child is not socially accepted, e.g. They don't like me, They don't want me to play)

**No**

**Positive evaluation by others:**

**Yes** (Any clear indication that the study child is socially accepted, e.g. mention of 'friends', They like me, They ask me to play, They say 'Do you want to be our friend?') Note: Not just 'play together' (this could be coded as social interaction however)

**No**

Global codes (across all 3 scenarios):

**Positivity:     0       1       2       3**

0: No positivity at all

1: Mild or minimal positivity

2: Clear positivity or more than 1 instance

3: Consistent positivity

(Note: 3 can be coded even if positivity is not in 1 scenario, as long as there are other multiple instances which are very clearly positive)

**Negativity:     0       1       2       3**

0: No negativity at all

1: Mild or minimal negativity (1 instance)

2: Clear negativity or more than 1 instance

3: Consistent negativity

(Note: 3 can be coded even if negativity is not in 1 scenario, as long as other multiple instances which are very clearly negative)

### Appendix J: Recruitment details

- 275 Pre-schools, nurseries, playgroups, children’s centres and childminders contacted by email, phone and post.
- 51 Primary schools contacted by email, phone and post.
- 43 centres and 2 childminders agreed to help with recruitment (this varied from agreeing to display a poster about the research, to handing out flyers/information packs to families, to allowing the researcher to recruit in person from the premises).
- 215 information packs given to parents via these centres (either directly by the researcher or through the centre staff).
- 300+ flyers given out to parents via these centres and through families who had already participated (some preschools printed the flyers out themselves without providing details on how many were distributed, so an accurate number given out could not be calculated).
- 109 mothers expressed a written interest in the study (e.g. through email, text, phone call or returning completed consent forms), with many more accepting flyers, information sheets or information packs.

### Appendix K: Additional Statistical Information

#### Appendix K.i: Exploration of Data and Assumption Testing

Table A1

*Descriptives and Statistics Assessing Questionnaire Distributions*

Questionnaire	Histogram	P-P plot	Zskew	ZKurtosis	Shapiro-Wilk test
SIAS	Slightly positively skewed	Non-normal	.998/.295= 3.38	.858/.582= 1.47	.934(63), p = .002
DASS-21 Depression	Very non-normal, positive skew	Non-normal	2.51/.30= 8.37	6.57/ .59= 11.14	.667(63), p<.001
DASS-21 Anxiety	Very non-normal	Non-normal	3.03/ .300= 10.1	10.48/ .586= 17.88	.568(63), p<.001
DASS-21 Stress	Very non-normal	Non-normal	1.10/ .297= 3.70	.646/ .586= 1.10	.899(63), p<.001
BFNE-S	Very non-normal	Non-normal	.652/ .299=2.18	.054/ .590= 0.09	.947(63), p = .009
FNCE	Non-normal (dip in middle)	Non-normal	.565/ .295= 1.92	-.496/ .582= - .085	.948(63), p = .010
PAS-R	Fairly normal	OK	.241/ .295= .817	-.450/ .582= - .773	.980(63), p>.05

**Appendix K.ii: Inter-rater Reliability**

Table A2:

*Inter-rater Reliability Statistics for Maternal Description Task Variables*

Maternal Description Variable (N = 18)	Kappa/Intraclass correlation
Number of threat comments made	1
Proportion of threat comments that were resolved by mother	1
Positive social comment(s)	- <sup>a</sup>
Positive general comment(s)	.769
Any anxious words used	1
Suggestion of negative evaluation by others	1
Suggestion of positive evaluation by others	1
Overall maternal negativity	.944 (ICC)
Overall maternal positivity	.892 (ICC)
Overall maternal negativity binary (0/1 vs 2/3)	1
Overall maternal positivity binary (0/1 vs 2/3)	- <sup>a</sup>

<sup>a</sup> Could not be computed as all instances were 0

Table A3

*Inter-rater Reliability Statistics for Original Doll Play Variables*

Child Doll Play Variable (N = 18)	Kappa/Intraclass
1 S1 Threat Interpretation	- <sup>a</sup>
2 S1 Interpretation response	1
3 S1 How do you feel?	.764
4 S1 Approach older children	.784
5 S1 Negative evaluation	- <sup>a</sup>
6 S1 Positive evaluation	.855
7 S1 Social interaction (with anyone)	.682
8 S1 Verbal anxiety	- <sup>a</sup>
9 S2 Threat Interpretation	- <sup>a</sup>
10 S2 Interpretation response	.896
11 S2 How do you feel?	1
12 S2 Approach teacher	.774
13 S2 Negative evaluation	- <sup>a</sup>
14 S2 Positive evaluation	.826
15 S2 Social interaction (with anyone)	.379
16 S2 Verbal anxiety	- <sup>a</sup>
17 S3 Threat interpretation	1
18 S3 Interpretation response	.618
19 S3 How do you feel?	.792
20 S3 Approach other children	.895
21 S3 Negative evaluation	.441
22 S3 Positive evaluation	.767
23 S3 Social interaction (with anyone)	.774
24 S3 Verbal anxiety	- <sup>a</sup>
25 Overall positivity	.518
26 Overall negativity	.722

<sup>a</sup> Could not be computed as all instances were 0

Table A4

*Inter-rater Reliability statistics for Final Doll Play Variables*

Child doll play combined variable (N = 18)	Intra-class/ Kappa
Total Threat (S1+S2+S3)	1
Total Approach (S1+S2+S3)	.769
Total Verbal Anxiety (S1+S2+S3)	1
Total Neg evaluation (S1+S2+S3)	.779
Total Pos evaluation (S1+S2+S3)	1
Total social interaction (S1+S2+S3)	.719
Overall Positivity binary (0/1 vs 2/3)	.727 (kappa)
Overall Negativity binary (0/1 vs 2/3)	1 (kappa)
Overall Negativity aggregate binary	.769 (kappa)

**Appendix K.iii: Frequencies and Distributions of Doll Play Data**

**Total DP Approach (S1+S2+S3)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Approach in all 3 scenarios	13	19.7	20.6	20.6
	Approach in 2 of the 3 scenarios	19	28.8	30.2	50.8
	Approach in 1 of the 3 scenarios	23	34.8	36.5	87.3
	No approach across the 3 scenarios	8	12.1	12.7	100.0
	Total	63	95.5	100.0	
Missing	System	3	4.5		
Total		66	100.0		

**Total DP Negative evaluation (S1+S2+S3)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No negative evaluation in any of 3 scenarios	51	77.3	83.6	83.6
	Negative evaluation in 1 of the 3 scenarios	7	10.6	11.5	95.1
	Negative evaluation in 2 of the 3 scenarios	2	3.0	3.3	98.4
	Negative evaluation in all 3 scenarios	1	1.5	1.6	100.0
	Total	61	92.4	100.0	
Missing	System	5	7.6		
Total		66	100.0		

**Total DP Positive evaluation (S1+S2+S3)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Positive evaluation in all 3 scenarios	2	3.0	3.5	3.5
	Positive evaluation in 2 of the 3 scenarios	7	10.6	12.3	15.8
	Positive evaluation in 1 of the 3 scenarios	17	25.8	29.8	45.6
	No positive evaluation in any scenario	31	47.0	54.4	100.0
	Total	57	86.4	100.0	
Missing	System	9	13.6		
Total		66	100.0		

**Total DP Social interaction (S1+S2+S3)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	21	31.8	33.9	33.9
	1.00	19	28.8	30.6	64.5
	2.00	13	19.7	21.0	85.5
	3.00	9	13.6	14.5	100.0
	Total	62	93.9	100.0	
Missing	System	4	6.1		
Total		66	100.0		

**Total DP Anxious words used (S1+S2+S3)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	60	90.9	92.3	92.3
	1.00	5	7.6	7.7	100.0
	Total	65	98.5	100.0	
Missing	System	1	1.5		
Total		66	100.0		

**Total DP threat interpretation: Any across scenarios?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	56	84.8	86.2	86.2
	At least 1 threat interpretation	9	13.6	13.8	100.0
	Total	65	98.5	100.0	
Missing	9999.00	1	1.5		
Total		66	100.0		



**Total DP Social interaction (S1+S2+S3)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	21	31.8	33.9	33.9
	1.00	19	28.8	30.6	64.5
	2.00	13	19.7	21.0	85.5
	3.00	9	13.6	14.5	100.0
	Total	62	93.9	100.0	
Missing	System	4	6.1		
Total		66	100.0		

**Total DP Anxious words used (S1+S2+S3)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	60	90.9	92.3	92.3
	1.00	5	7.6	7.7	100.0
	Total	65	98.5	100.0	
Missing	System	1	1.5		
Total		66	100.0		

**Total DP threat interpretation: Any across scenarios?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	56	84.8	86.2	86.2
	At least 1 threat interpretation	9	13.6	13.8	100.0
	Total	65	98.5	100.0	
Missing	9999.00	1	1.5		
Total		66	100.0		

**Total Interpretation response (S1+S2+S3)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	27	40.9	41.5	41.5
	1.00	16	24.2	24.6	66.2
	2.00	15	22.7	23.1	89.2
	3.00	6	9.1	9.2	98.5
	5.00	1	1.5	1.5	100.0
	Total	65	98.5	100.0	
Missing	System	1	1.5		
Total		66	100.0		

**Total Emotion (S1+S2+S3)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	12	18.2	21.4	21.4
	1.00	3	4.5	5.4	26.8
	2.00	12	18.2	21.4	48.2
	3.00	18	27.3	32.1	80.4
	4.00	3	4.5	5.4	85.7
	5.00	3	4.5	5.4	91.1
	6.00	2	3.0	3.6	94.6
	9999.00	3	4.5	5.4	100.0
	Total	56	84.8	100.0	
Missing	System	10	15.2		
Total		66	100.0		

**Appendix K.iv: Inter-correlations**

Table A5

**Inter-correlations Between Maternal Description Variables**

	Presence of unresolved threat	Absence of positive general comments	Presence of anxiety related word(s)	Lack of Positive evaluation suggestion(s)	Presence of Negative evaluation suggestion(s)	Overall Maternal negativity
Presence of unresolved threat	1					
Absence of positive general comments	-.047	1				
Presence of anxiety related word(s)	.534**	-.008	1			
Lack of positive evaluation suggestion(s)	.149	-.077	-.109	1		
Presence of Negative evaluation suggestion(s)	.108	.062	.307*	-.241^	1	
Overall maternal negativity (0-1, None/minimal vs 2-3, Clear/Consistent)	.458**	-.035	.458**	.036	.398**	1
Overall maternal positivity (2-3 Clear/ consistent vs 0-1 none /minimal)	.241^)	.576**	.160	.024	.083	.261*

*NB: All two tailed p-values ^= p<.1, \*= p<.05, \*\*=p<.01*

Table A6

**Inter-correlations Between Doll Play variables**

Variable	Negativity aggregate binary	Positivity aggregate 0-9	Overall Positivity binary	Overall Negativity binary
Negativity aggregate binary (0 vs 1+)	1			
Positivity aggregate 0-9	.117	1		
Overall Positivity binary (Clear/consistent vs None/minimal)	.015	.623**	1	
Overall Negativity binary (None/minimal vs Clear/consistent)	.536**	-.053	.063	1

*NB: All two tailed p-values ^= p<.1, \*= p<.05, \*\*=p<.01*

**Appendix K.v: Additional Analyses**

Table A7

*Additional Correlations Between BFNE-S and Maternal Description Variables*

Maternal Description Variables	BFNE-S
Presence of unresolved threat	.075
Absence of positive general comments	.261*
Presence of anxiety related word(s)	.106
Suggestion of positive evaluation	-.060
Suggestion of negative evaluation	-.044
Overall maternal negativity (None/minimal vs Clear/Consistent)	.143
Overall maternal positivity (Clear/ consistent vs none /minimal)	.230*

*NB: All 1-tailed p-values, ^= p<.1, \*= p<.05, \*\*=p<.01*

As shown in Table A7, both the absence of positive general comments, and overall maternal positivity were significantly correlated with BFNE-S scores in simple correlations via the randomization procedure ( $p<.05$ ). However, as the BFNE-S was significantly associated with maternal age and depression scores, the analyses were re-run in a bootstrapped partial correlation, controlling these variables. In these analyses, there were no significant associations between BFNE-S and any maternal description variables (indicated by all 95% BCa confidence intervals overlapping zero). However, as none of the simple bootstrapped correlations showed a significant association either, it is not possible to conclude whether the difference is due to the influence of the covariates, or the difference between statistical tests.

Table A8

*Additional Correlations Between PAS-R and Doll Play variables*

DP variable	PAS-R
Negativity aggregate binary	.159
Overall Negativity (None/minimal vs Clear/consistent)	.122
Overall Positivity (Clear/consistent vs None/minimal)	.094

*NB: All 1-tailed p-values, ^= p<.1, \*= p<.05, \*\*=p<.01*

There were no significant associations found between the PAS-R and any of the three doll play variables (all  $p$ 's  $>.1$ ), either with or without controlling for other variables.