THESIS

An experimental study examining the relationship between parenting behaviours, responsibility beliefs and obsessive-compulsive symptoms in non-clinical children and their mothers

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Rosie Burton

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ABSTRACT

Background and Objectives

Inflated responsibility (Salkovskis, 1985) is proposed as a central concept in understanding the development and maintenance of OCD. Salkovskis et al. (1999) proposed that inflated responsibility develops during childhood and parenting behaviours assume a significant role in the development of this cognitive vulnerability. The aim of this research was to investigate if parenting behaviours mediate the relationship between maternal responsibility beliefs and the development and maintenance of OCD like behaviours in their non-anxious children.

Method

This study used an experimental between-subjects design. 38 children aged 9–12 years were exposed to a high responsibility condition. Their mothers were randomly allocated to either a condition of inflated responsibility or no responsibility. During a sweet sorting task, maternal behaviours were coded for the constructs of warmth and control and the amount of reassurance giving was measured. In addition, the OCD like behaviours of the child were measured. State anxiety was measured pre and post task in mothers and their children.

Results

The results demonstrated that the experimental manipulation was not successful in increasing either maternal or child subjective responsibility beliefs. However, mothers in a condition of inflated responsibility demonstrated significantly less warmth when reading sorting instructions to their child and significantly more control during the sorting task than mothers in a condition of no responsibility. No significant differences were found in reassurance giving or maternal warmth during the task phase. Additionally, no significant differences were observed in child

behaviours during the sorting task. State anxiety in both children and mothers reduced significantly from baseline to post task.

Conclusions

It is proposed that these findings suggest that the experimental manipulation did have an impact on maternal levels of control and warmth; however these differences were not strong enough in order to elicit an effect on children's behaviours. Methodological considerations are considered. Clinical and theoretical implications are discussed and recommendations made for future research.

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Chapter One

INTRODUCTION

1.1 General Overview

Obsessive Compulsive Disorder (OCD) is characterised by recurrent obsessions and/or compulsions that are time consuming (lasting at least one hour a day) and which cause marked distress or significant impairments in functioning (American Psychological Association [APA], 2000). OCD may have a negative impact on many areas of people's lives, including their family, as well as their social and academic functioning (Piacentini, Bergman, Keller & McCracken, 2003). In recent years, attention has been paid to both the role of cognitive appraisals and family environment in the development and maintenance of this disorder. Cognitive conceptualisations of OCD (Rachman, 1993; Salkovskis, 1985) emphasise the fundamental role of perceived responsibility in the development of obsessional cognitions. Salkovskis, Shafran, Rachman and Freeston (1999) hypothesised that inflated responsibility develops during childhood and is influenced by parental beliefs and behaviour. In addition, certain parenting styles characterised by criticism and control have been implicated in the development of anxiety disorders, including OCD.

The aim of this research is to investigate if parenting behaviours mediate the relationship between maternal responsibility beliefs and the development and maintenance of OCD like behaviours in their children. This research aim is based on theory and evidence relating to the impact of parenting style on the development of anxiety disorders in children, in addition to theory and evidence relating to the development and maintenance of childhood OCD. In Chapter One, an overview of OCD in children is presented, in particular, the theoretical frameworks used to

understand OCD and its associated treatments are described. An evaluation of cognitive theories of OCD, with an emphasis on thought action fusion, meta-cognitive beliefs and inflated responsibility is then presented. The latter part of the chapter discusses the role of the family in the development and maintenance of OCD. Finally the clinical rationale for conducting this research is outlined and the research hypotheses are stated

1.2 Childhood Obsessive Compulsive Disorder

1.2.1 Diagnostic Criteria

The Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV; APA, 2000) defines the essential features of OCD as recurrent obsessions and/or compulsions that cause marked distress, are time consuming (take more than 1 hour per day), or interfere significantly with a person's functioning. Obsessions consist of intrusive thoughts, images or impulses that are experienced as inappropriate and cause marked anxiety or distress. Compulsions are repetitive behaviours or mental acts that are completed in an attempt to defuse or relieve the anxiety caused by the obsessional thinking.

1.2.2 Characteristics of OCD in Children

Although symptoms of OCD in children are similar to those experienced by adults, a number of traits specific to children's developmental stages have been identified. It is thought that the content of obsessions may reflect the child's developmental stage (Salkovskis, 1985). In younger children, obsessions regarding contamination, exactness and symmetry are most frequently reported (Swedo, Rapoport, Leonard, Lenane & Cheslow, 1989). The most common compulsions in younger children include ordering, checking, hoarding, repeating and reassurance

seeking (Swedo et al., 1989). Older children and adolescents tend to report obsessions related to fear of contamination, thoughts of something terrible happening or thoughts relating to sexual or religious content (Thomsen, 1999). Compulsions in adolescents include more covert behaviours, such as cancelling thoughts, silent prayers or counting (Franklin et al., 1998).

Most children present with obsessions and compulsions but some, especially younger children, report compulsions only. It is thought that this may reflect their cognitive development and more specifically their ability to identify and express their thoughts (Swedo et al., 1989; Wever & Rey, 1997). Developmental differences are also reflected in the diagnostic criteria (DSM-IV; APA, 2000) as insight into the excessive and irrational nature of obsessional beliefs and compulsions is not required for children to receive a diagnosis.

Ritualistic and superstitious behaviours are normative to some extent in early childhood; therefore identifying the disorder in children presents a number of challenges for researchers and clinicians (Leonard, Goldberger, Rapoport, Cheslow & Swedo, 1990; Snider & Swedo, 2000). These behaviours seem to peak between the ages of two and five, though they may be present in varying degrees throughout childhood and adolescence (Evans et al., 2006). For example, young children may like some things done a certain way and will become agitated if their routine is upset (Gesell, 2007). Such behaviours can usually be understood in terms of developmental milestones involving mastery and control and usually diminish by middle childhood and are replaced by collecting, hobbies and focused interests. Moore, Mariaskin, March and Franklin (2007) differentiate developmentally appropriate obsessive compulsive type behaviours from clinical OCD. They propose that developmentally congruent OCD type behaviours occur early in

childhood, are rare during adolescence, are common to large numbers of children and are associated with mastery of important developmental transitions. In contrast behaviours that may be identified as OCD occur somewhat later and always produce dysfunction rather than mastery.

1.2.3 Epidemiology

1.2.3.1 Prevalence. OCD is more common in youth than once thought and until recently it has been considered a rare disorder in childhood and adolescence (Marien, Storch, Geffken & Murphy, 2009). Lifetime prevalence rates vary but are reported to be between 0.1 and 4% (Douglass, Moffitt, Dar, McGhee & Silva, 1995; Heyman et al., 2001; Rapoport et al., 2000; Valleni-Basile et al., 1996). A UK epidemiological study found that in a sample of 10, 438 children aged 5 to 15 years, 25 children were identified as having OCD, giving a weighted overall prevalence of 0.25% with prevalence rising with increasing age (Heyman et al., 2001; 2003). Heyman et al. (2001; 2003) attributed their lower prevalence rates as being the result of using 15 years as the maximum cut off age, whereas other studies have screened up to 18 years. In addition, they found that 88% of the children they identified as having OCD were not diagnosed. These data lend support to Jenike's characterisation of OCD as a 'hidden epidemic' (Jenike, 1989, p.539). It is thought that the under diagnosis of OCD in children surrounds OCD specific factors such as secretiveness and lack of insight as well as general factors such as lack of access to treatment resources (Moore et al., 2007).

1.3.2.2 Onset and course. There is a general consensus in the literature that OCD onset peaks around puberty and early adulthood (Pauls, Alsobrook, Goodman, Rasmussen & Leckman, 1995). In children, the age of onset is typically reported to be around 10 years of age (range 6.9-12.5 years) (Geller et al., 1998; Last, Perrin,

Hersen & Kazdin, 1992). Irrespective of early onset cases, the average time elapsing between onset and first clinical presentation is approximately seven to eight years (Yaryura-Tobias & Neziroglu, 1983), highlighting the stigma associated with mental health difficulties. Boys appear more likely to have pre-pubertal onset, whereas girls are more likely to have OCD that starts in adolescence (Tükel et al., 2005), although the gender ratio has been found to be more equal in adolescents and adulthood (Geller et al., 1998; Swedo et al., 1989).

The course of OCD in young people is variable with some children experiencing a chronic course with fluctuating severity, while others experience significant periods of remission with episodic exacerbation (Bolton, Luckie & Steinberg, 1995). Stewart et al. (2004) carried out a meta-analysis of 16 studies investigating the course of OCD. They reported that OCD persisted in 41% of cases. OCD was more likely to persist among those with longer hospital admissions, earlier age of onset and longer duration of OCD before receiving a diagnosis. Micali et al. (2010) investigated the long term outcomes of 142 children and adolescents with OCD. Similarly, at nine year follow up the persistence rate of OCD was 41%, and 40% of participants had a psychiatric diagnosis other than OCD. The main predictor of persistent OCD was duration of illness at assessment and high levels of baseline psychopathology predicted other psychiatric disorders at follow-up.

With regard to psychosocial outcomes, Stewart et al. (2004) found that in comparison to controls, adults with a history of childhood OCD were less likely to be married or living with a partner and were more likely to experience social or peer difficulties, isolation, unemployment and difficulties sustaining a job.

1.2.4 Co-morbidity

Childhood OCD is associated with a range of other disorders, including tic disorders, other anxiety disorders, affective disorders, eating disorders, externalising disorders and autistic spectrum disorder [ASD] (Heyman et al., 2001; Ivarsson, Melin & Wallin, 2008; Mancebo et al., 2008; Sheppard et al., 2010; Stein et al., 2010). Rates of co-morbidity vary significantly across studies with recent studies indicating that 76-84% of children and adolescents with OCD also meet diagnostic criteria for other psychiatric disorders (Heyman et al., 2001; Ivarsson et al., 2008). Anxiety and neuropsychiatric disorders tend to be the most common co-morbid diagnoses. For example, Ivarsson et al. (2008) found that 47% of children and adolescents with OCD met criteria for a neuropsychiatric disorder (Tourette's Syndrome [TS], Attention Deficit Hyperactivity Disorder [ADHD] or ASD. This has led some researchers to propose that child-onset OCD represents a distinct subtype of OCD, bearing a close genetic relationship to neuropsychiatric disorders and it has been hypothesised that they may share a common or similar aetiological pathway (Eichstedt & Arnold, 2001). Similarly, Ivarsson et al. (2008) found that 40% of children with OCD also met criteria for another anxiety disorder. Rasmussen and Eisen (1990) found that these disorders tended to precede the appearance of obsessive-compulsive symptoms. It is not clear whether other anxiety disorders are a risk factor for OCD per se, or whether the expression of anxiety disorders is connected to a common aetiological process that gives rise to both OCD and its co-morbid correlates (Moore et al., 2007).

Differential diagnosis between OCD and these other disorders can be difficult as they share some common features. For example, attentional difficulties or impulsive behaviours resultant from preoccupation with obsessions and

compulsions may be labelled as features of ADHD. In addition, other anxiety disorders, such as generalised anxiety disorder [GAD], are characterised by cognitive appraisals associated with OCD such as thought-action fusion and perfectionism (Comer, Kendall, Franklin, Hudson, & Pimentel, 2004). Furthermore, some of the compulsions seen in childhood OCD such as ritualistic, hoarding or repetitive behaviours are typical behaviours seen in children with ASD (Ivarrson et al., 2008). However, according to Baron-Cohen and Wheelwright (1999) the obsessions and compulsions seen in individuals with ASD are simpler in their nature and most importantly are usually a source of pleasure and excitement, not anxiety or distress (Tantam, 2000). Nevertheless, these phenomenological similarities can make differential diagnosis difficult.

Due to the high co-morbidity observed in those with OCD, in addition to its heterogeneous features, a debate exists around its position on the diagnostic spectrum (Ivarsson et al., 2008; Stein et al., 2010). The term 'obsessive compulsive spectrum disorders' has been coined in order to conceptualise the similarities in presentation found between these various disorders (Bartz & Hollander, 2006).

1.3 Models of OCD

1.3.1 Biological Models of OCD

There are three main theories about the biological basis for OCD and these point to genetic, neurobiological and immunological factors in the aetiology of OCD (Arnold & Richter, 2007; Larson, Storch & Murphy, 2007; Rosenberg, MacMaster, Mirza, Easter & Buhagiar, 2007).

1.3.1.1 The Genetic Hypothesis of OCD. Twin and family studies have led to a better understanding of the contribution of both genetic and environmental

factors in the development of OCD. Results from family and twin studies suggest that genetic factors are implicated in the transmission and expression of OCD (Rosario-Campos et al., 2005; van Grootheest, Cath, Beekman & Boomsma, 2005). Concordance rates for OCD are significantly greater in monozygotic twins (MZ) than in dizygotic twins (DZ) (Arnold & Richter, 2007). However, there are limited twin studies investigating the genetic basis of childhood OCD (Bolton, Rijsdijk, O'Connor, Eley, 2003; Hudziak, 2004). Hudzaik (2004) found that significant additive genetic (range 45-58%) and unique environmental influences (range 42-55%) are present in OCD. A review of the findings based on twin studies of children and adults was compiled by van Grootheest et al. (2005). The authors concluded that the heritability for obsessive compulsive symptoms ranges from .45 to .65 for children.

Family studies have demonstrated that first degree relatives of patients with OCD have elevated rates of OCD as well as anxiety, mood, ADHD and TS. Hanna, Himle, Curtis and Gillespie (2005) examined first and second degree relatives of 35 children with OCD and of 17 healthy controls. The life time prevalence of OCD was significantly higher in first degree relatives than in control relatives (22.5% versus 2.6%). The difference between clinical and control first degree relatives increased on inclusion of sub-threshold OCD (27.4% versus 2.6%). However, there were no significant differences between clinical and control second degree relatives. In contrast, Reddy et al. (2001) reported a prevalence rate of 4.96% in first degree relatives of 35 young people with OCD, while OCD was not observed in relatives of controls. In contrast to other studies (Hanna et al., 2005; Rosario-Campos et al., 2005;), no siblings of the clinical sample had a diagnosis of OCD and none of the first degree relatives

had sub-threshold OCD. The authors concluded that paediatric cases of OCD were non-familial. However, a limitation of this study was the small sample size. Furthermore, the authors discussed that their findings of a low rate of OCD in first degree relatives could be related to only moderate clinical symptomatology and the relatively short duration of the illness in their clinical sample.

Other studies have found that familial aggregation of OCD is concentrated primarily in families where the OCD has been early onset (Nestadt et al., 2000). For example, Nestadt's study indicated that first degree relatives of OCD probands were approximately six times more likely to have OCD compared to control relatives and that OCD was more common in relatives of child onset compared with adult onset probands. Interestingly, they detected no cases of OCD in relatives of patients with an age of onset greater than 18 years. This has led researchers to propose that paediatric onset OCD has a stronger genetic component compared to OCD beginning later in life (Arnold & Richter, 2007)

Although these data lend support to a genetic component in OCD, the specific genes and mechanisms through which they operate are unclear (Pauls, 2008; Walitza et al., 2010). Given that genetics feature in OCD development, explaining the heterogeneity of the disorder is a further problem. It is also possible that studies exaggerate heritability by not controlling for shared environmental influences (Abramowitz, Taylor & MacKay, 2009).

1.3.1.2 Immunology Theory. Recently, a relationship between group A beta-hemolytic streptococcal (GAS) infection and the onset of pre-pubertal OCD and tic disorders has been proposed (Swedo et al., 1998). A neurological disorder called Sydenham's chorea may follow such an infection, and obsessive compulsive symptoms can be associated with the chorea. It was discovered that

some children would develop OCD and/or tic disorders following a GAS infection and in absence of Sydenham's chorea. This syndrome is known as paediatric autoimmune neuropsychiatric disorders associated with streptococcal infections (PANDAS) (Larson, et al., 2007).

Research supporting the association of GAS infections with OCD and tics continues to be reported (Mell, Davis & Owens, 2005). Correlating timing and certainty of a GAS infection with neuropsychiatric onset, however, is difficult and the relationship between GAS and OCD symptom exacerbation in paediatric patients is not clear. Thus protocols for diagnosis and treatment of PANDAS are provisional (Murphy et al., 2004). PANDAS would appear to be a distinct sub-group of OCD (Swedo et al., 1998; Swedo et al., 2004), potentially affecting around 6% of children with OCD (Mell et al., 2005). Further research aimed at establishing a definitive association between GAS and OCD is necessary to provide clarity and direction in the treatment of OCD based upon an autoimmune theoretical framework.

1.3.1.3 Neurobiology of OCD. Evidence from studies investigating the neurobiology and neurochemistry of OCD suggest that distinct neuro-anatomical structures are involved in OCD (Rosenberg & MacMillan, 2002). Structural neuro-imaging studies have demonstrated alterations in the cortico-striatal-thalamic circuits implicated in the pathogenesis of OCD (Rosenberg et al., 2007). This area includes the basal ganglia, the prefrontal cortex and the thalamus. However, the exact nature of the mechanisms underlying OCD is poorly understood (Maia, Cooney & Peterson, 2008). The neurobiological model has gained significant support from neuro-psychopharmacology research. Serotonin and dopamine are the two principle neurotransmitters implicated in OCD. The serotonin hypothesis for

OCD has come largely from clinical trials demonstrating the superiority of selective serotonin reuptake inhibitors (SSRIs) to drug placebo in the treatment of paediatric and adult OCD (March et al., 1998) To date, SSRIs are the only medications ever shown to be more effective than a placebo in children and adults with OCD (Rapoport, Leonard, Swedo & Lenane, 1993; Swedo et al., 1989). However, insufficient data mean that the mechanisms through which these pharmacological interventions work are poorly understood and further research to understand the complex neurobiological mechanisms underlying the disorder is needed.

1.3.2 Summary of the Biological Theories of OCD

A genetic influence in the aetiology and phenotypic expression of OCD has been established. However, current research suggests that environmental factors are equally as influential as heritability in the development of OCD (Abramowitz et al., 2009). Neurobiological research may provide insight into the role that specific structures and neurotransmitters have in OCD; however, research is at an early stage and is inconclusive. Furthermore, there is a lack of a clear underlying biological mechanism that can account for the efficacy of pharmacological and psychological treatment in OCD and in turn account for the development and maintenance of the disorder.

1.4 Psychological Models of OCD

This section examines the behavioural and cognitive models of OCD and the treatments derived from them.

1.4.1 Behavioural Model of OCD

The behavioural model of OCD is based on Mowrer's (1960) two stage theory of the acquisition and maintenance of fear, combining both classical conditioning (stage one) and operant conditioning (stage two). In Mowrer's first

stage, a neutral stimulus is transformed into a conditioned stimulus (CS) when it is repeatedly paired with an aversive unconditioned stimulus (UCS). The neutral stimulus could be a specific situation, an object, a thought, an image, doubt or impulse that pose no objective threat but come to evoke fear. Consequently, the individual learns by association that the presentation of the CS leads to the UCR, which in turn becomes a conditioned response (CR). Therefore, according to this model, a child may develop a fear of acquiring an illness from doorknobs (neutral stimulus) after being told that bacteria gets transferred from 'dirty' hands to doors (UCS). The belief that doorknobs are 'dangerous' may then result in a fear (CR) of touching doorknobs.

Mowrer suggested that in the second stage of the model the feared stimulus is avoided as much as possible; this is based on the principles of operant conditioning. The avoidance is negatively reinforced by the reduction in distress. Avoidant and safety seeking behaviours (compulsions), such as using a tissue to open doors, serve to avoid the feared consequences and, through the process of repetition, people learn that compulsions or safety seeking behaviours lead to the reduction in their anxiety associated with obsessions. However, because the reduction in anxiety is temporary, the cycle of distress and relief is frequently repeated. Consequently, stage one is proposed as the mechanism through which OCD is acquired, and stage two the mechanism through which it is maintained (Abramowitz et al., 2007).

1.4.1.1 Exposure and Response Prevention (ERP). Behavioural models led to the development of Exposure and Response Prevention (ERP) as a treatment for OCD (Foa & Kozak, 1986). On the basis that OCD reflects a learned behaviour, and compulsions are carried out to reduce anxiety associated

with negative thoughts and beliefs, ERP seeks to break this cycle and help the person with OCD learn that their anxiety can be tolerated. The idea is that if an individual is exposed to a feared stimulus (either directly or through imagination) over an extended period of time, the individual will learn that they are able to tolerate the feared stimuli and that the anxiety will gradually reduce without the need of carrying out the compulsion. This cycle of exposure and response prevention is repeated until the individual becomes habituated to the feared stimuli, and learns that even when the compulsions are not carried out, the feared catastrophe does not occur (Abramowitz, et al., 2007; Albano, Knox & Barlow, 1995).

Abramowitz, Whiteside and Deacon (2005) carried out a meta-analysis of 18 randomised controlled trials of young people with OCD. They found that ERP was associated with more improvement in symptoms from pre- to post-test when compared to SSRIs and placebo. Although this evidence supports the use of ERP with children and adolescents, its use has been questioned due to the observation that children find ERP aversive and challenging (Storch et al., 2007), and that it is associated with a high drop-out rate. Bolton and Perrin (2008) reported a 20% drop-out rate, and a 40% drop-out rate was reported by Allsopp and Verduyn (1990). In addition, the behavioural model is only partially helpful in explaining the development and maintenance of OCD. For example, it does not explain why some patients do not appear to have a history of relevant conditioning experiences that might lead to obsessional fears. Furthermore, OCD symptoms may change over time, using a tissue to open doors may be replaced by other compulsions that serve to maintain a patient's level of perceived safety

(Abramowitz et al., 2007). These and other limitations led clinicians and researchers to consider cognitive explanations of OCD.

1.4.2 Cognitive Behavioural Models of OCD

Cognitive models of OCD hypothesise that catastrophic misinterpretation of normally occurring intrusive thoughts give rise to obsessions and compulsions (Allsopp & Williams, 1996; Purdon & Clark, 1994; Rachman & De Silva, 1978). From the cognitive behavioural perspective, avoidance behaviour and compulsive rituals are understood as maladaptive efforts to prevent or remove obsessions or intrusions, and to prevent feared consequences of these intrusions. There are thought to be several mechanisms whereby avoidance and rituals are counterproductive. First, based on behavioural explanations of maintenance of symptoms, the cognitive behavioural model suggests that temporary relief provided by the compulsions maintains the problem, as the person does not learn that the feared outcome does not happen. Second, also borrowed from the behavioural model, the compulsions provide an immediate reduction in anxiety thereby preventing the natural reduction in anxiety to occur. Third, compulsive rituals are thought to lead to an increase in the frequency of obsessions by serving as reminders of obsessional intrusions and thereby triggering their reoccurrence (Abramowitz et al., 2007). For example, thought suppression involves conscious attempts to control thoughts, which leads to an increase in the unwanted thought occurring (Wells, 1997).

A wide range of cognitive misinterpretations have been linked to the development and maintenance of OCD (The Obsessive Compulsive Cognitions Working Group [OCCWG], 1997). These include thought-action fusion (TAF)

(Rachman, 1993), the meta-cognitions model (Wells & Papageorgiou, 1998), and inflated responsibility (Salkovskis, 1985).

1.4.2.1 Thought-Action Fusion (TAF). TAF is described as a cognitive bias whereby thoughts and actions are treated as equivalent (Rachman, 1993). Rachman and Shafran (1999) argued that TAF is central in the development and maintenance of OCD as it leads to misinterpretations of intrusive thoughts as meaningful, personally significant and likely to have serious consequences. According to Rachman (2003), there are two components of TAF. The first is 'TAF morality', this refers to the belief that thinking about an action is morally equivalent to carrying it out (e.g. thinking about harming someone is as bad as actually harming someone). The second is 'TAF likelihood'. This is the belief that thinking about a feared event increases the likelihood of that event occurring. Rachman (2003) proposed that both constructs will lead to high levels of distress and as such will result in individuals engaging in neutralising behaviours to prevent the feared negative events from happening.

1.4.2.1.1 Empirical evidence for the relationship between TAF and OCD in children. In children 'magical thinking' is seen as parallel to TAF in adults (Bolton, Dearsley, Madronal-Luque & Baron-Cohen, 2002). 'Magical thinking' is thought of as a normative part of child development and is believed to lessen as children develop a greater understanding of their own thinking (Bolton, 1996). Evans et al., (2002) found that in young children aged 3 to 8 years there was a moderate relationship between magical thinking and compulsions and rituals. A more recent study examined the relationship between TAF and ritualistic and compulsive-like behaviours in 313 non-clinical children (aged 7-14) (Evans, Hersperger & Capaldi, 2011). They found that in younger children the best

predictor of compulsive like behaviours was physiological anxiety and in older children TAF was the best predictor of compulsive-like behaviours. They concluded that as children become older, they generally experience less TAF, and are also less ritualistic, as developmental psychology models would predict. However, those children who do tend to be more ritualistic at older ages are more likely to engage in TAF than children who do not present with compulsive or ritualistic type behaviours (Evans et al., 2011).

However, it has been proposed that TAF may be a general indicator of psychopathology and negative affect rather than being a specific marker of OCD. Muris, Meesters, Rassin, Mercklebach and Campbell (2001) found that TAF was significantly correlated with symptoms of OCD, anxiety and depression in 427 adolescents aged 13 to 16 years. Barrett and Healy-Farrell (2003) also found that TAF was higher amongst children (aged 7-13 years) with OCD and children with anxiety compared to non-clinical controls. Furthermore, Simonds, Demetre and Read, (2009) found that in a sample of 102 school children (aged 5-10 years) magical thinking was correlated with obsessive –compulsiveness in addition to other forms of anxiety. In contrast, Libby, Reynolds, Derisley and Clark (2004) employed a group of adolescents (aged 11 to 18) and found that TAF liklihood was significantly higher in the OCD group compared to the group with other anxiety disorders and those with no anxiety disorders.

1.4.2.2 The meta-cognitive model. Meta-cognition refers to the appraisal, monitoring and control of thinking. The meta-cognitive model of OCD proposes that it is the belief about the meaning and/or dangerous consequences of intrusive thoughts that underlie the development of obsessional thinking (Wells, 1997; Wells & Matthews, 1994). The model hypothesises that if thoughts are imbued

with negative significance, the individual activates beliefs about rituals or strategies that can be used to reduce distress and/or threat. In the model, negative appraisals of intrusions and beliefs about rituals interact in moderating the subsequent level of anxiety experienced (Wells, 2000). These strategies also increase the frequency of intrusive thoughts, through, for example, constant thought monitoring, which increases the salience of thoughts, beliefs or images (Purdon & Clark, 1999). The model also highlights the role of beliefs about neutralising behaviours. Wells (2000) reports on a tendency for individuals to employ idiosyncratic internal criteria in order

to guide neutralising behaviours. For example, people with OCD report on attempting to achieve a specific feeling state in order to signal that it is safe to discontinue a compulsive behaviour.

Overall, the meta-cognitive model explains the role of meta-cognitive beliefs in the maintenance, but not the aetiology of OCD. It suggests that treatment should focus on identifying and modifying meta-cognitive beliefs about intrusions and emotions, and that beliefs about the need to perform rituals should also be targeted (Wells, 2000).

1.4.2.2.1 Empirical evidence for the relationship between meta-cognitive beliefs and OCD in children. To date, research on meta-cognitive beliefs and obsessive compulsive symptoms in children has concentrated on non-clinical samples of adolescents (Reynolds & Reeves, 2008). Cartwright-Hatton, Mather, Illingworth, Harrington and Wells (20

04) found that in adolescents aged 13 to 17 years, meta-cognitions were significantly associated with obsessive-compulsive symptoms. However, there were also significant correlations between meta-cognitive beliefs and symptoms

of depression and anxiety, suggesting that, like TAF, meta-cognition may be a general marker of negative affect or psychopathology. Subsequently, Mather and Cartwright-Hatton (2004) found that after controlling for age, gender and depressive symptoms, meta-cognition but not inflated responsibility was a significant predictor of obsessive compulsive symptoms. This is in contrast to Matthews, Reynolds and Derisley (2007) who found that inflated responsibility and meta-cognitions independently predicted OCD symptoms in a sample of 233 non-clinical adolescents.

1.4.2.3 Inflated responsibility. Salkovskis (1985) proposed that people with OCD interpret their intrusive thoughts as meaning that they are responsible for harm to self or others, unless they take action to avoid that harm. Responsibility, in this context refers to the belief that one possesses power to cause or prevent subjectively crucial negative outcomes (Salkovskis, Rachman, Ladouceur & Freeston, 1992, personal communication cited in Ladouceur et al., 1995). Salkovskis (1985) suggested that people with OCD misinterpret their intrusive thoughts, images and impulses as indicating that danger is imminent and that they are personally responsible for preventing any potential harm that may occur as a result of this threat. This appraisal leads to anxiety, which in turn increases urges to engage in various forms of anxiety neutralising behaviour (such as checking or reassurance seeking). There is evidence from correlational questionnaire designs that OCD symptoms are associated with responsibility beliefs in adults (Rheume, Freeston, Dugas, Letarte & Ladouceur, 1995; Wilson & Chambless, 1999). This association seems to be specific for OCD, especially for checkers, and not to be characteristic of anxiety disorders in general (Foa, Amir, Bogert, Molnar & Przeworski, 2001).

However, inferences about causality cannot be drawn from correlational designs. Experimental designs allow the examination of the causal link between responsibility and OCD symptoms. Ladouceur et al. (1995) developed an experimental paradigm in order to investigate the causal relationship between responsibility and compulsive behaviour. They recruited 40 non-clinical adults who were asked to sort medications based on their colour. A high responsibility group was told that their work would have a direct impact on treatment safety and efficacy for a widespread virus in a South-East Asian country. Those in the reduced responsibility group were told the study was interested in the perception of colour. A manipulation check demonstrated that the experimental manipulation had been successful, with participants in the high responsibility condition reporting significantly higher levels of perceived responsibility for harm, probability of harm and severity of harm following the task. Participants in a condition of high responsibility hesitated and checked more than those in a condition of reduced responsibility. In addition, participants in this group were more preoccupied with errors and reported higher levels of anxiety. Other studies have also found that inducing responsibility in non-clinical adults leads to an increase in OCD - like behaviour compared to control participants (Bouchard, Rheaume & Ladouceur, 1999; Ladouceur, Rheaume & Aublet, 1997; Mancini, D'Olimpio & Cieri, 2004).

A smaller amount of research has experimentally manipulated responsibility in clinical samples of adults with OCD. Lopatka and Rachman (1995) found that in 30 participants with OCD a decrease in perceived responsibility was followed by a decrease in discomfort and by a decline in the urge to carry out compulsions. Arntz, Voncken and Goosen (2007) manipulated responsibility in adults with OCD,

anxious controls and non-clinical adults using a similar task to Ladouceur et al. (1995). Checking behaviours were higher in those with OCD in the high responsibility condition compared with all the other groups.

1.4.2.1.1 Empirical evidence for the relationship between inflated responsibility and OCD in children. Several studies have examined the relationship between inflated responsibility and OCD symptoms in non-clinical children and adolescents. Magnusdottir and Smari (2004) found that in 202 children aged 10 to 14 years, responsibility attitudes were a significant predictor of obsessive compulsive symptoms, when age, gender and depression were controlled. Similarly, Matthews et al. (2007) examined inflated responsibility and OCD symptoms and found that inflated responsibility was a better predictor of OCD symptoms than TAF or meta cognitive beliefs. In addition TAF did not independently predict OCD symptoms, but was linked to OCD through inflated responsibility. Libby et al. (2004) found that young people (aged 11-18 years) with OCD reported significantly higher levels of responsibility than anxious children and non-clinical controls. However, Barrett and Healy-Farrell (2003a) found that in a slightly younger sample (7-13 years), children with OCD had higher responsibility scores than non-clinical controls, but that they did not significantly differ from children who had other anxiety disorders.

To date, only a handful of studies have employed experimental designs in order to explore the causal relationship between responsibility beliefs and OCD-type behaviours. Barrett and Healy-Farrell (2003b) used an experimental design with children and adolescents with OCD (n=41, aged 7-17 years). Responsibility was manipulated in their study by varying the presence of others during a behavioural avoidance task (BAT), in which participants exposed themselves to a

situation that ordinarily results in compulsive behaviour. They found that inflated perceptions of responsibility were not associated with increased levels of distress, avoidance or ritualising behaviours.

In contrast, Reeves, Reynolds, Coker and Wilson (2010) reported on an experimental study with 81 non- clinical children aged 9-12 and found that inflated responsibility was causally related to OCD-type behaviours. Based on Ladouceur et al. (1995), children were randomised to three levels of responsibility; high responsibility, moderate responsibility and reduced responsibility. Children were asked to sort sweets into those with and without nuts, for later distribution to class of children, one of whom had a nut allergy. Children in the high responsibility condition were told that the sweets would not be checked prior to being given to the class of children. Children in the reduced responsibility condition were not given any information about who would check the sweets and children in the no responsibility condition were told that the researcher would be checking the sweets. The experimental manipulation was demonstrated to be successful with children in the high responsibility condition scoring significantly higher on their perceptions of perceived responsibility than children in the moderate responsibility condition, and children in the moderate responsibility condition scored significantly higher than children in the reduced responsibility condition. Behaviours typical of OCD (hesitations, checking, time taken) were associated with the children's level of responsibility: children in the inflated responsibility group were slower and checked and hesitated more and children in the moderate responsibility group fell between those with inflated and those with reduced responsibility. A limitation to this study is the lack of a true control group; the inclusion of one would have strengthened the link between inflated responsibility and OCD-type behaviours. The discrepancy

between findings of Barrett and Healy-Farrell (2003b) and Reeves et al. could be due to the power of the experimental manipulation used in the studies and the wide age range employed in Barrett and Healy-Farrell's study. Additionally, it could be attributed to the use of different populations. It is possible that the impact of manipulating responsibility is more powerful in a non-clinical group of young people where baseline levels of responsibility appraisals are not already elevated.

1.4.3 Cognitive Behaviour Therapy (CBT)

The National Institute for Health and Clinical Excellence (NICE, 2006) recommends CBT as the treatment of choice for OCD in children and young people. However, as highlighted by NICE (2006), these guidelines are mainly based on the efficacy of CBT in adult populations, clinical practice and observations. The empirical evidence on the efficacy of CBT for children and adolescents is quite limited.

In comparison to the adult OCD literature, the evidence-base for CBT for childhood OCD consists mainly of case series and open trials of individual, family or group based treatments (Franklin et al., 1998; March, Mulle, & Herbel, 1994; Piacentini, Bergman, Jacobs, McCracken, & Kretchman, 2002; Scahill, Vitulano, Brenner, Lynch & King, 1996; Wever & Rey, 1997). To date, there have been only five randomized controlled trials (RCTs) of CBT for paediatric OCD (Barrett, Healy-Farrell, & March, 2004; Bolton & Perrin, 2008; Freeman et al., 2008; POTS, 2004; Williams et al., 2009). A recent meta-analysis demonstrated that CBT and pharmacotherapy were the only treatments effective in alleviating OCD symptoms, with CBT showing greater pooled effect sizes than pharmacotherapy (Watson & Rees, 2008).

Exposure-based CBT involving family members is considered the frontline intervention for children with OCD, (NICE, 2006). This recommendation is based mainly on clinical judgement and is highlighted as a research priority by NICE. Including family members in the treatment of OCD in children is thought to have a number of benefits; firstly, to reduce family involvement in, and reinforcement of compulsions; secondly, to indirectly address parental distress, and thirdly, to provide support and encouragement to the child in carrying out ERP and engaging in therapy (Barrett et al., 2004; Freeman et al., 2003). However, there is little research to date which supports this theory. One of the RCTs of CBT for OCD which evaluated long term outcome was conducted by Barrett et al. (2004). These researchers evaluated efficacy of CBT with a family component (cognitive-behavioural family-based therapy [CBFT]) and sought to assess the utility of individual CBFT and group CBFT. There were no significant differences between treatment conditions and results were maintained at 3- and 6-month follow-up. In 2009, O'Leary, Barrett and Fjermestad conducted a 7 year follow up. Results of this follow-up study showed around 87% of the sample were diagnosis free 7 years post-treatment. The study supported research showing that gains made during treatment can be maintained long term (March, Mulle & Herbel, 1994) and provides support for long-term stability of CBFT treatment effects for children with OCD. This treatment study is the longest follow-up study to date published for childhood OCD; however, the results are compromised by the lack of statistical power associated with the small sample size. It is possible that a lack of power may have accounted for the lack of differences found across groups; hence, larger studies need to be conducted to attempt to replicate these findings.

1.4.4 Interim Summary

Cognitive models propose that the appraisal of intrusive thoughts, and not the intrusive thoughts themselves, is critical to the development of OCD. Given the growing experimental evidence supporting the hypothesis that inflated responsibility plays an important role in the development of OCD, the next logical step is to give some thought to the origins of inflated responsibility beliefs. Since inflated responsibility beliefs are seen in children, it seems plausible that the family may play a role in the development and maintenance of such beliefs. Furthermore, NICE (2006) recognise the importance of the family in the treatment of OCD and exposure-based CBT involving family members is considered the frontline intervention for children with OCD. However, this recommendation is based mainly on clinical judgement and furthering our understanding of the role the family plays in the development and sustenance of OCD will help develop effective treatments as a result. The next section therefore considers and evaluates research exploring the role of the family in childhood OCD.

1.5 The Role of the Family in Childhood OCD

Parents often provide the greatest quantity of learning experiences to children throughout their development. As a result of frequent and prolonged contact with parents, the degree to which parents provide anxiety-related learning experiences may be a significant factor related to a child's development of anxiety. The increased prevalence of OCD within first degree relatives, combined with the increased familial clustering of early onset OCD can be explained, in part, by genetics (see section 1.3.1.1). Environmental factors, such as parenting experiences, may also contribute, although this has been a relatively neglected area of study to

date. A number of authors have speculated about the mechanisms through which parents and family processes may influence the development and maintenance of childhood OCD symptoms and this section reviews such research.

1.5.1 The Role of Reassurance in OCD

Excessive reassurance seeking (ERS) is considered one of the key safety seeking behaviours of OCD. In the context of OCD, reassurance seeking can include persistent requests for information to reduce the expectation of threat associated with intrusive thoughts, even when one is fully aware of the answer. ERS, like other safety behaviours, contributes to the maintenance of the original threat beliefs by preventing disconfirmation of obsessional thoughts. Additionally, because this response produces a short-term reduction in anxiety, the behaviour is reinforced (Rachman, 2002).

Rachman (2002) conceptualised reassurance seeking as 'checking by proxy' (p.629) as the function of both behaviours is to reduce anxiety by attempting to reduce the likelihood of a negative feared event. In addition, ERS serves to decrease perceived responsibility for such negative outcomes. Similar to compulsive checking, ERS is hypothesised to prevent disconfirmations of obsessional thoughts (e.g. If I don't seek reassurance regarding germs on the doorknob, I am bound to get ill) and is reinforced by temporary reductions in both anxiety and perceived responsibility when requests for reassurance are given (Parrish & Radomsky, 2006). Hence like checking behaviours ERS is often targeted in the treatment of OCD. However, examinations of whether ERS and compulsive checking may be maintained by similar cognitive distortions, such as inflated responsibility, are scarce.

In a study conducted by Parrish and Radomsky (2006), non-clinical participants (n=100) performed a pill sorting task using a variation of Ladouceur et al.'s (1995) responsibility manipulation paradigm. Participants were randomly allocated to four experimental conditions: high responsibility-high reassurance; high responsibility-low reassurance; low responsibility-high reassurance; and low responsibility-low reassurance. Participants were asked to rate their anxiety, urges to seek reassurance, urges to check, and confidence, before and after the experimental manipulation. Consistent with Rachman's (2002) theory, participants reported greater urges to check and to seek reassurance under conditions of high (vs. low) responsibility, which was taken to suggest that these two behaviours may be functionally equivalent and/or driven by similar processes. The hypothesis that repeated reassurance would lead to increases in anxiety, urges to check and urges to seek reassurance was not supported. However, methodological limitations may limit the interpretation of the results. Reassurance was given in a standardised manner which may have reduced the validity of the experimental manipulation. In addition, participants received very precise feedback, which may not reflect the quality of feedback usually received by individuals with OCD (Parrish & Radomsky, 2006).

There is limited and only preliminary research investigating the role of reassurance in childhood OCD. Reynolds, Wator, Parker, De Wolff and Austin (Study One; in prep) sought to address some of the limitations of the Reeves et al. (2010) study by including a control group and included reassurance seeking as a dependent variable in a sample of 69 non-clinical children (9-11 years). Using the same sweet sorting paradigm, children were randomised into one of three conditions; high responsibility, reduced responsibility and no responsibility

(control condition). It was found that children in the high responsibility group sought more reassurance from an unknown adult compared to children in the control and reduced responsibility conditions. These results were replicated in a further study whereby instead of an unknown adult, the child's mother was present in the room (Study Two, Reynolds et al., in prep). Children's responsibility led to an increase in reassurance seeking in addition to checking and time taken to complete the task.

The notion of reassurance seeking and reassurance giving in childhood OCD implies a reciprocal process between parents and children. Reynolds et al. (Study Three) hypothesised that based on their results from study one and two, children who are given inflated responsibility in the presence of a parent would exhibit similar levels of reassurance seeking when children were with an unknown adult, and further that children's reassurance seeking would elicit reassurance giving from the parent. Study three was interested in the impact of maternal beliefs on reassurance giving and in turn the impact of maternal reassurance giving on children's OCD behaviours and anxiety. Again, their study was based on Reeves et al.'s experimental paradigm, however in this study maternal responsibility was manipulated in addition to children's responsibility. Mothers (n=36) were randomised to either a condition of high responsibility or no responsibility and all children were in a condition of high responsibility. It was found that mothers in the high responsibility condition gave more reassurance to their children than mothers in the no responsibility condition. In addition, children in the high maternal responsibility condition sought more reassurance than children in the low maternal responsibility condition. The authors concluded that children's reassurance seeking was causally related to

their mother's reassurance giving. However, there are a number of limitations to this study which limit the findings. The researcher was not blind to the experimental condition when administering the task or when coding the maternal and child behaviours, inviting the possibility of some systematic bias. In addition, glancing was used as a behavioural measure of maternal reassurance giving. The authors reflected that it is possible that mothers glanced at their child because they were taking an interest in their child rather than because they wanted to provide them with reassurance. Nonetheless, this study provides preliminary evidence for a causal relationship between maternal beliefs (responsibility) and behaviours (reassurance giving) and safety behaviours in children (reassurance seeking), thus providing support for a possible causal pathway between the family and OCD.

1.5.2 Family Accommodation in OCD

Parents and siblings often become involved in a child's OCD rituals as an attempt to reduce the distress associated with their obsessions and compulsions. It is thought that families play a critical role in maintaining childhood OCD through their involvement and accommodation of their child's rituals. Accommodation refers to actions taken by family members to facilitate rituals (e.g. providing extra hand wash), providing reassurance and acquiescing to the child's demands (e.g. checking the door is locked). Although such behaviours are well intentioned, they typically result in greater distress and impairment by reinforcing the child's involvement in rituals and avoidance as well as impacting significantly on family members' lives and contributing to increased negative family dynamics (Steketee & Van Noppen, 2003).

Calvocoressi et al. (1995;1999) developed the Family Accommodation Scale (FAS) for OCD to assess the relationship between family accommodation and the impact on family distress. The results indicated that 89% of families accommodated the symptoms of a family member with OCD and that these behaviours were significantly related to family stress and burden, disharmony between family members and a rejecting attitude of the affected individual. Regarding childhood OCD, Cooper (1996) demonstrated the presence of considerable personal distress in the parents and siblings of children with OCD. In addition, incidences of family accommodation were higher in the parents of youth with OCD compared to family members of adults with OCD. Sibling accommodation and distress were examined in a qualitative study conducted by Barrett, Rasmussen and Healy (2001). They found that siblings also accommodated the OCD symptoms, and experienced considerable distress due to the presence of OCD in their sibling. More recently, Storch et al., (2007) examined the relationship between family accommodation, OCD symptom severity, functional impairment and internalising and externalising behaviour problems in a sample of 57 children and adolescents (aged 7 to 17 years) with OCD using the FAS. They found that family accommodation was high across families, with families most commonly reporting providing reassurance to the child, followed by participating in the child's rituals. In addition they found that family accommodation was positively related to symptom severity, parent - rated functional impairment (but not child-rated functional impairment) and externalising and internalising behaviour problems.

Taken together these studies of family accommodation offer consistent evidence that childhood OCD is associated with significant disruption in family life. Although the family's accommodation of the symptoms is well intentioned, this

form of involvement in the disorder plays a powerful maintaining role. Specifically, verbal reassurance, active participation in rituals and avoidance of anxiety provoking stimuli typically provide short term relief for the child and for the family, thereby reinforcing the continuation of these behaviours and the child's OCD (Farrell & Barrett, 2007). Given that families become so involved in the disorder, leading to reciprocal negative outcomes within families, it is not surprising that researchers have more recently sought to investigate whether family interaction styles differentiate families where one member has OCD compared to other families.

1.5.3 Parenting Style and Anxiety

The accumulating evidence that childhood OCD has a negative impact on family members has led researchers to question whether this in turn may affect the quality of family relationships and family interaction patterns. Contemporary models of family processes recognise that behaviour within families is reciprocally determined. Given that research examining family factors in childhood OCD is scarce, some authors have generalised from research examining the role of the family in other childhood anxiety disorders, as well as research involving anxious parents.

Wood, Mcleod, Sigman, Hwang and Chu (2003) propose four potential pathways that could account for the aggregation of anxiety in families. 1) some behaviours exhibited by anxious parents may cause anxiety in their children; 2) children's own anxiety may elicit anxiogenic patterns of parental behaviour; 3) shared genetic vulnerability may account for both parent and child anxiety; 4) genetic similarities, parental responses to their child's anxiety and other risk factors affect each other in a reciprocal feedback loop.

There are a variety of parenting behaviours that affect children within these four pathways. While categorisation of parent behaviours has been complex and inconsistent, the parenting literature has generally referred to two over arching meta-constructs of parenting style in the development of childhood anxiety. One overall style is characterised by controlling, intrusive and protective behaviours while the other is characterised by lack of warmth, negativity and criticism (Hudson & Rapee, 2001). In previous research, the index of control is rather broadly defined as a pattern of overprotection, autocratic parental decision-making, excessive regulation of children's activities and routines, and instruction to children on how to think or feel, all of which encourage the child's dependence on the parent and a fearfulness of the world (Wood et al., 2002). The index of warmth refers to a number of behaviours characterised by acceptance, affection, and responsiveness, as well as emotional involvement in children's lives. Parenting characterised by high control is thought to convey the message to the child that he or she is incapable of handling novel or challenging situations and thus reduces learning by restricting exposure to such experiences (Hudson & Rapee, 2001). Low warmth is thought to convey the message to the child that the world is not safe and that he or she will not be supported in facing challenges (Moore, Whaley & Sigman, 2004). A maladaptive pattern of parental involvement and negativity has therefore been said to reinforce a child's existing vulnerability to anxiety by increasing a child's perception of threat, reducing a child's perceived control over threat and ultimately increasing a child's avoidance of threat (Hudson & Rapee, 2001; Moore et al., 2004). Several theoretical models have emphasised the differing role of warmth (but not control) in the development of childhood anxiety (Chorpita & Barlow, 1998; Hudson &

Rapee, 2001; Manassis & Bradley, 1994; Rubin & Mills, 1991). This has resulted in two competing theories, affectionate control and affectionless control (DiBartolo & Helt, 2007).

The affectionate control model (Rubin & Mills, 1991; Thomasgard & Metz, 1993) predicts that parents of anxious children will be more controlling than parents of non anxious children, but not necessarily any less warm since some parents attempt to protect their child from distress by responding in a highly affectionate or emotionally warm manner. Affectionless control models (Chorpita & Barlow, 1998; Parker, 1983) propose that parents of anxious children are similarly more controlling but display low levels of affection and emotional warmth. A growing literature has examined parenting behaviours in families with a clinically anxious child, termed bottom-up studies (Dumas, LaFreniere & Serketich, 1995; Eley, Napolitano, Lau & Gregory, 2010; Hudson & Rapee, 2001; Siqueland, Kendall & Steinberg, 1996). In contrast, only a handful of studies have used observational methods to assess the impact of specific parenting styles associated with anxious parents, termed top-down studies (Challacombe & Salkovskis, 2009; Moore, et al., 2004; Whaley, Pinto & Sigman, 1999).

DiBartolo and Helt (2007) evaluated the two aetiological models of affectionate control and affectionless control. They found that affectionless control models are incompatible with findings from bottom up studies showing that anxious children do not necessarily receive parenting that is low in warmth compared to non anxious peers. Each of the bottom-up studies in their review found relatively high levels of control exhibited by parents of anxious children but only 40% of these studies found lower levels of parental warmth as would be

predicted by the affectionless control models. However, all of the top down studies reviewed found that parents with an anxiety disorder exhibited lower levels of warmth towards their children. On balance, the affectionate control theory better accounted for the empirical evidence generated by observational studies in which the child is anxious. The review indicates that controlling parental behaviour is most typical of anxious children's families whereas parental behaviour low in warmth and control is most typical of families with an anxious parent (DiBartolo & Helt, 2007).

1.5.4 Parenting Style and OCD

Although research investigating family interaction and childhood OCD is relatively scarce, a number of preliminary findings from correlational and observational studies have provided some evidence to suggest that, relative to non-clinical families, families with a child who has OCD may be characterised by increased reciprocal negative interactions.

1.5.4.1 Correlational studies investigating family environments and OCD. Studies examining parental childrearing and OCD symptoms in non-clinical samples suggest that parenting may have a significant role in the aetiology of OCD. Aycicegi, Harris and Dinn (2002) employed a sample of 130 university students (aged 17-23) in order to examine the relationship between parenting style and OCD symptoms. Their hypothesis that a more controlling parenting style was associated with OCD symptom expression was supported. In addition, Ehiobuche (1988) found, in three samples from different cultures, that college students with high scores on a measure of obsessionality reported that their parents were more rejecting, overprotective, and displayed less emotional warmth in comparison to control participants.

The findings from research with clinical samples using correlational designs are consistent with research from non-clinical samples. Valleni-Basile et al. (1995) explored the quality of the family interactions, using a self report questionnaire in adolescents with OCD. This study reported significantly less emotional support, warmth and closeness in their family compared to nonclinical controls. Chambless, Gillis, Tran and Steketee (1996) examined parental warmth and overprotection from the perspective of both treatment seeking adult patients and their parents. Eighty-seven participants (18-62 years) completed questionnaires, 52 with OCD and 35 with panic disorder with agoraphobia. According to offspring, their parents most often raised them using affectionless control, i.e. lower emotional warmth and higher overprotection, whereas parents most often rated themselves as having provided optimal parenting. Specificity of parenting between OCD and panic disorder patients was not apparent other than for report of maternal overprotection in patients with OCD. Wilcox et al. (2008) reported on data from 465 families and examined the association between parental bonding and OCD in children at high familial risk. Paternal care appeared to be a protective factor and maternal over protection a risk factor for OCD in their children in the absence of high familial loading.

These studies offer some preliminary support to suggest that family environments in families with a child with OCD are characterised by less emotional warmth and increased control compared to other families, however they are limited due to the subjective biases associated with relying on retrospective self report measures. Further, given the correlational nature of these studies it is difficult to determine the direction of effects between parent and child behaviour. It is equally plausible that anxiety prone children may alter

family interactions or perceive parental behaviours differently as a result of general distress (Farrell & Barrett, 2007).

1.5.4.2. Observational studies investigating family interaction style and OCD. Observational studies allow for a more objective measurement of family interaction style. Only two studies to date have employed this methodology in order to investigate family processes in families where one member has OCD. Barrett, Shortt and Healy (2002) conducted an observational study examining parent child behaviours, with a sample of families whose child had OCD (n=22) compared to families who had a child with another anxiety disorder (n=22), an externalising disorder (n=21) or no psychiatric diagnosis (n=22). The primary aim of this study was to examine whether family interaction could differentiate families with a child with OCD from other clinical and non clinical children. The study involved minute by minute macro-coding of mother, father and child behaviours, during two standardised 15 minute family discussion tasks. Interestingly, the variables that best distinguished OCD families from the other groups showed a different pattern from the anxious families. Parents of children with OCD exhibited less positive problem solving and were less rewarding of their children's independence and less confident of their children's ability than other parental groups. Mothers in the OCD group displayed less warmth towards their child than mothers in the non clinical and anxious group. Likewise children with OCD also displayed less warmth than children in the anxious or non clinical group. Thus families with a child who has OCD might be characterised as displaying less emotional warmth and more control in their interactions in the face of problem solving discussions, thereby supporting the affectionless control theory of the development of anxiety in children. Interestingly, and importantly,

mothers of children in the anxious group were distinct from mothers in the other groups in that they scored very high in both warmth and control and were thus characterised by affectionate control. This indicates that the parenting pathways to the development of anxiety and OCD are somewhat different.

A number of drawbacks limit the findings of this study. A relatively small number of fathers were involved which restricts the generalisibity of the findings to the whole family unit. Another possible limitation was that the researchers decided to use standard threat scenarios that could be applied to all children across groups. A family discussion related to a child's actual fears might have provided greater external validity. Discussions based on OCD fears might also have offered more relevance and clinical utility when exploring issues relating to family involvement in treatment. In addition, all observations were made in the clinic. Future research could implement all observations in a more naturalistic setting, such as the home environment. Finally, from family studies of OCD (Pauls et al., 1995) it is known that 15-20% of first degree relatives of children with OCD also have OCD themselves; therefore it is possible that the parenting behaviours observed might have been associated with parental OCD rather than childhood OCD.

Challacombe and Salkovskis (2009) evaluated three groups of mothers with their children, aged 7-14 years. The groups were defined in terms of maternal OCD (n=23), maternal panic disorder (n=18) and healthy controls (n=20). Mother-child interactions were investigated using self report, informant report and independent assessment. Consistent with previous research, anxious mothers (from both the OCD and panic disorder groups) were less promoting of autonomy and less warm than control mothers during a discussion task. In terms of OCD specific findings, children of mothers with OCD were observed to show

more anxiety in interactions compared to both comparison groups. The mothers with OCD were more likely to demonstrate criticism and emotional over-involvement with their children compared to healthy controls, thus supporting the affectionless control model from the anxiety literature. Interestingly, child anxiety and maternal warmth in interactions was related to the extent to which mothers with OCD perceived their children to be aware of their problems. These mothers reported that they would be more punitive of behaviours that indicated anxiety than mothers with panic or no disorder. In these circumstances, they reported that they would also be less likely to let the child avoid the fearful situation. The authors note that this reported behaviour may be driven by concerns that their child may learn obsessional behaviours from them (Challacombe & Salkovskis, 2009). This hypothesis is further supported by the findings that in the OCD group there was a relationship between mother's perception of their anxiety having a negative impact on their child and higher problem and lower competence scores on the child behaviour checklist (Achenback & Rescorla, 2001). The authors hypothesised that this may indicate that mothers with OCD had a more realistic appraisal of the impact on their child than mothers with panic disorder, whose children showed lower competence scores overall. If mothers with OCD are conscious of affecting their children, it may also be true that, compared with other anxiety disorders, the children of mothers with OCD are more vigilant to their parent's anxieties (Challacombe & Salkovskis, 2009).

A number of methodological drawbacks limit the findings of this study. Although all anxious mothers met DSM-IV diagnostic criteria for their disorders, it is possible that the sample who agreed to participate in the study included a

high proportion of mothers who were particularly aware of the impact of their anxiety on their children and who therefore actively sought to minimise harm to their children. In addition, parenting behaviours may serve a causal or maintaining role depending on the age of the child (Moore et al., 2004). The authors noted that the cross-sectional nature of the design and the large age range of the children may have masked potential effects of age on interaction quality (Challacombe & Salkovskis, 2009).

1.5.5 Cognitive Vulnerabilities to OCD Within Families

In addition to examining the impact of parenting style on the development of OCD, researchers have also sought to determine whether members of the same family share the same cognitive styles that are central to the cognitive theory of OCD, and subsequent presence of OCD symptoms in the child.

The Obsessional Beliefs Questionnaire ([OBQ], Obsessive Compulsive Cognitions Working Group [OCCWG], 2005) was developed to assess each belief domain thought to underlie clinical obsessions: 1) inflated responsibility, 2) overestimation of threat, 3) perfectionism, 4) intolerance of uncertainty, 5) over-importance of thoughts, and 6) importance of controlling one's thoughts. Research with the OBQ has demonstrated that individuals with OCD score higher than university students and non-clinical controls on all six subscales of the OBQ (OCCWG, 2005). Research confirms that obsessive beliefs, as measured by the OBQ, are associated with OCD symptoms even after controlling for general negative affect (Faull, Joseph, Meaden, & Lawrence, 2004; Tolin, Woods & Abramowitz, 2003).

Rector, Cassin, Richter and Burroughs (2009) examined familial vulnerability for OCD by comparing maladaptive beliefs between adults with

OCD, their non-affected first-degree relatives (n=24), and non- affected controls (n=87) using the OBQ. First degree relatives scored significantly higher than controls on inflated responsibility and overestimation of threat. Furthermore, relatives of adults with early onset OCD also scored significantly higher than controls on both inflated responsibility and overestimation of threat, suggesting a familial-based vulnerability for the development of certain maladaptive beliefs, particularly in early onset cases. Pietrefesa, Schofield, Whiteside, Sochting and Coles (2010) examined the relationships between cognitive biases in children (ages 9–17 years; n=28) with OCD and their mothers using the same questionnaire. A moderate and positive correlation was found between children's and mother's beliefs regarding inflated responsibility and overestimation of threat. However, perfectionism and certainty beliefs were not significantly correlated, and unexpectedly, beliefs regarding the importance and control of thoughts were negatively correlated. These findings support the notion that familial loading may be particularly strong for specific maladaptive beliefs, namely, responsibility and threat beliefs. However, the small samples employed limit the power of both studies; indeed larger samples may have allowed for more differences to emerge and further analyses exploring a subset of high OBQ probands (Rector et al., 2009).

Jacobi, Calamari and Woodward (2006) also used the OBQ in order to examine the relationship between 126 parents and their adolescent children on beliefs associated with OCD. Parent's responsibility beliefs significantly predicted their own OCD symptom scores. Similarly, adolescent's beliefs about responsibility also predicted their OCD symptom score. In addition, adolescent responsibility beliefs mediated the relationship between parent and adolescent OCD symptoms.

Jacobi et al. (2006) concluded that specific cognitive beliefs may not be learned from parents directly, but that parental attitudes to responsibility early in childhood may place the child at risk of developing cognitive vulnerabilities to OCD.

Responsibility beliefs as a core vulnerability factor for the development of OCD is consistent with prominent cognitive accounts of the disorder (Salkovskis, 1985; Salkovskis et al.,1999). The finding that early onset OCD is associated with increased elevation of inflated responsibility and exaggerated threat beliefs in first-degree relatives compared to community controls (Rector et al., 2009) supports Salkovskis' et al.'s (1999) theory on the origins of inflated responsibility. Salkovskis et al. (1999) proposed that inflated responsibility develops during childhood and parenting behaviours assume a significant role in the development of this cognitive vulnerability. This is with the exception of cases where inflated responsibility develops following a significant life event. The following section addresses the role parenting may play in the development of this particular cognitive bias.

1.5.6 The Role of Parenting in Inflated Responsibility

Social learning theory seeks to explain behaviour in terms of a reciprocal interaction between cognitive, behavioural and environmental factors. Bandura (1977) proposed that individuals learn from one another through explicit or implicit modelling. Contemporary social learning theory proposes that operant conditioning (reward and punishment) has an influence on the extent to which particular behaviours are exhibited. It is suggested that the expectation of reinforcement, both positive and negative in addition to punishment will affect cognitive processes that promote learning (Ormrod, 2008). Therefore, children may develop inflated responsibility beliefs as a consequence of having a

particular style of thinking reinforced or punished, either implicitly or explicitly in their family environment.

Salkovskis et al., (1999) proposed five pathways which may be involved in the development of responsibility beliefs. These possibilities include: 1) An early developed and broad sense of responsibility for averting threat that is deliberately or implicitly encouraged and promoted during childhood by significant figures and circumstances, leading to enduring and 'justified' beliefs about the importance of a sense of responsibility; 2) Rigid and extreme codes of conduct and duty; 3) Childhood experience in which sensitivity to ideas of responsibility develops as a result of being shielded from it; this may include over indulgence, and/or may be the consequence of the implication or declaration of incompetence by those around the child; 4) A specific incident or series of incidents in which actions or inaction actually contributed in a significant way to a serious misfortune which affects oneself or, often more importantly, others and 5) An incident in which it wrongly appeared that one's thoughts and/or actions or inaction contributed to a serious misfortune.

Salkovskis' first three pathways potentially involve the influence of the family on the cognitive processing of children with OCD. The first pathway focuses on the child's beliefs about the relationship between personal influence over, and being responsible for, negative consequences. It is hypothesised that children who from an early age are given excessive responsibility for taking care of the family's welfare or a particular individual within the family may develop excessive social conscientiousness (Waters & Barrett, 2000). In this case, behaviour is driven by the desire to prevent failure, rather than support success. In the second pathway, children are thought to develop a set of attitudes

concerning particular standards of thinking and behaving. This may originate from a variety of influential sources including school and the church in addition to the family, where a strict moral code exists. Certain codes for how to think and behave may instil an inflated sense responsibility, where fear of reprehension is high. The third pathway focuses on family environments that are characterised by high anxiety or worry in which the world is perceived as threatening or dangerous. In these families, parental over-protection or criticism for failures might be exhibited. Consequently the child may feel unsafe unless sheltered within the family home (Waters & Barrett, 2000).

Lawrence and Williams (2011) tested all five pathways by developing a novel measure, The Origins Questionnaire for Adolescents (OQA). In this study, adolescents with OCD (n=16) were compared to non-clinical adolescents (n=16) on the OQA. Their results suggest that there are few significant differences between adolescents with a history of OCD and non-clinical adolescents in terms of their experiences of responsibility during development. However, the clinical group reported a greater sense of responsibility regarding experienced responsibility for specific incidents with a negative outcome. The authors note that from a practical perspective it might be that, because data were collected retrospectively, participants' recall of how responsible they felt at the time of the incident was affected by memory bias associated with anxiety symptoms. An alternative explanation for the lack of significant differences between the groups on the other pathways is that the OQA was insensitive to different developmental experiences. Salkovskis et al. (1999) suggested that the development of an inflated sense of responsibility could take the form an accumulation of multiple small experiences, each of which has an unsubstantial effect in isolation. A final

explanation given by the authors for the lack of difference is that the OQA is suitably sensitive, but an inflated sense of responsibility is not centrally important in the development of OCD.

There are inherent limitations to this study, which need to be considered when interpreting the results. As previously mentioned, information in this study was collected retrospectively, therefore, the reliability and validity of the information warrants caution. Additionally, the sample is potentially limited in two ways. Firstly, the sample is small, therefore, future research using this measure would benefit from recruiting a larger sample in order to increase the power of the results. Secondly, the clinical sample was not assessed within the study for a diagnosis of OCD, but was characterised by a diagnosis within CAMHS using the DSM-IV criteria. Despite these limitations, this is the only study to date that empirically investigates the aetiological pathways to inflated responsibility. Further research employing prospective and experimental designs is warranted investigating factors that contribute to the development and maintenance of responsibility beliefs in childhood.

1.5.7 The Relationship Between Parenting Style, Inflated Responsibility and OCD Symptoms

Taylor (2002) proposed an indirect relationship between early experiences, such as exposure to parenting style and OCD symptoms, based on research in panic disorder (Stewart et al., 2001). Stewart et al. (2001) found that early learning experiences alone do not directly cause panic attacks, instead early learning experiences influence anxiety sensitivity (cognitive vulnerability) which in turn influences the risk of suffering from panic attacks. Consistent with Salkovskis et al.'s pathways to inflated responsibility and research on parenting

styles in OCD, family environments high in control and low in warmth could be hypothesised to encourage an inflated sense of responsibility in the child. This hypothesis would predict that parenting style mediates the relationship between parental responsibility beliefs and OCD symptoms and responsibility beliefs in the child.

Kiff (unpublished thesis, 2009) adapted Taylor's framework in order to explore the relationship between responsibility beliefs, specific parenting styles and the presence of OCD symptoms in non-clinical families (n=74) using a cross sectional design (see Figure 1). It was found that greater adolescent and maternal inflated responsibility was associated with over-protective parenting from the perspective of both mothers and adolescents and furthermore, adolescent report of greater maternal over-protection and rejection was associated with adolescent OCD symptoms. However, the cross-sectional, correlational design of the study means that causal inferences cannot be made. In addition, adolescents needed to rely on their ability to recall specific parenting behaviours and practices, which may have introduced some respondent and recall bias. The present study aims to address these limitations by employing an experimental design with a younger sample in order that causal mechanisms can be investigated. The experimental design employed in the present study is based on the paradigm developed by Reeves et al. (2010) and has been shown to be successful in manipulating responsibility beliefs in children. The paradigm has also been used to experimentally manipulate responsibility in mothers (Study Three; Reynolds et al., in prep). In addition, the use of observational measures of maternal and child behaviours in the present study will allow maternal behaviours and child OCD symptoms to be explored in a more objective manner.

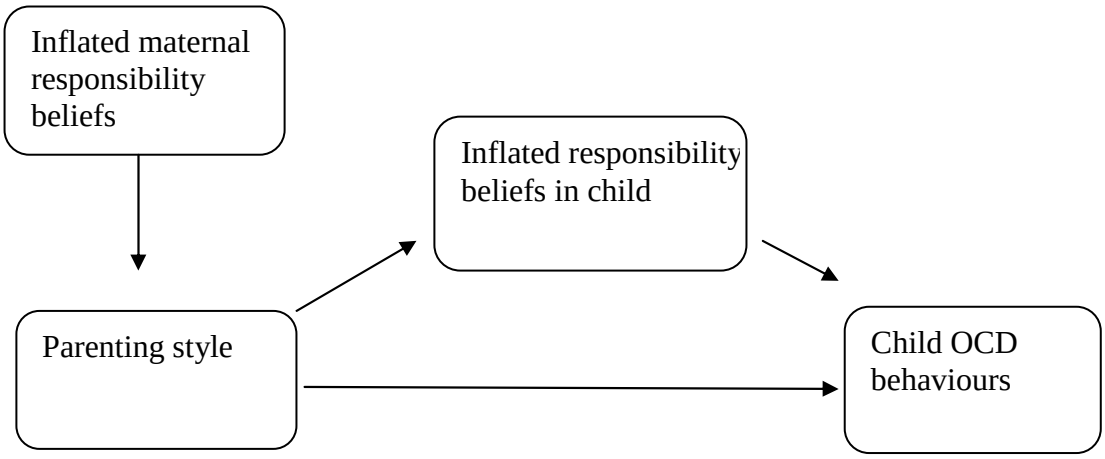

Figure 1. Hypothesised relationship between maternal and child inflated responsibility, parenting style and OCD symptoms (Kiff, 2009)

1.5.8 The Effects of Parent Sex in the Development of Anxiety

The majority of studies conducted to date that have examined family factors in the development of anxiety have either restricted their samples to mothers, or have included too few fathers to be able to look at differential effects of parent sex. Bögels and Phares (2008) proposed a number of assumptions about fathers that possibly contribute to the dearth of research investigating paternal factors. The first assumption suggested is that mothers 'matter more' than fathers. The data from studies involving mothers and fathers, however, do not seem to support this assumption (Bögels & Phares, 2008). The second assumption put forward is that because mothers spend more time with their children (Lamb, 2000), they have more impact. However, there is no evidence linking the amount of parental involvement with desirable child outcome, suggesting that it is the quality rather than the quantity of involvement that is most influential (Amato & Rezac, 1994). In addition, much of the influence of fathers and mothers on children's coping with anxiety might not go through

direct parent–child interaction. For example, Bögels and Phares (2008) posit that a father who is away from home a lot due to work commitments might give a positive and dynamic model to his child in how he explores the world, demonstrating that the world is a safe place to be. The third assumption is that mothers are thought to be easier to involve in research (Bögels & Phares, 2008). The studies including both fathers and mothers almost always suffer from a generalisability problem concerning the role of the father, because there are usually missing data on the fathers. The missing fathers might be either anxious or otherwise avoidant, might view themselves or are viewed by their partner as a less important parent, might be too busy to show up, are divorced, or otherwise absent or not accessible for their children.

Despite the lack of research including fathers, there is evidence from top-down, bottom-up, correlational as well as longitudinal studies that fathers play an important role in childhood anxiety, which may in some ways be different from that of mothers (for a review see Bögels & Phares, 2008). It has been suggested that fathers may typically take on a different role to mothers, due to biologically and socially reinforced characteristics. For example, fathers may be important agents for children to experience boisterous, stimulating and emotionally arousing play that encourages risk taking and facing challenges which may buffer against early separation, stranger and novelty anxiety. However, paternal unlimited behaviour and maternal lack of comfort giving could produce child anxiety. If one parent is not able to compensate for the behaviour of the other parent then this process might put a child at increased risk for anxiety (Creswell, Murray, Stacey & Cooper, 2011).

Overall, there is evidence from cross-sectional and longitudinal research in infancy, childhood, and adolescence suggesting that the father has an important and unique role in child development; a role that is different from that of the mother (Bögels & Phares, 2008). Given the evidence for a differing role of mothers and fathers, the current study sought to examine the role of mothers only. Including fathers as well as mothers may have made interpretation of the results difficult. The connections between fathers' parenting behaviours and children's anxiety suggest however, that it would be worthwhile for future research to explore the separate contributions of fathers which will give further insight in the aetiology of childhood anxiety and its prevention and treatment.

1.6 Clinical Relevance of Research

Research suggests that there is a relationship between family dysfunction and treatment response in CBT for OCD (Keeley et al., 2007). The relationship is considered reciprocal (Turner, 2006), in that family accommodation of obsessive compulsive symptoms elevates family distress, whilst greater family dysfunction and negative interaction (Barrett et al., 2005; Chambless & Steketee, 1999) are associated with poor treatment outcome. Therefore, in adapting treatment to children and adolescents recent research has emphasised that CBT treatment should include specific family based components (Barrrett et al., 2004; Freeman et al., 2008; Storch et al., 2007). However, the inclusion of other family members in the treatment protocol generally involves helping to manage the child's OCD, psycho-education and supporting the parents and siblings in managing their own difficulties that commonly occur when a family member has OCD.

Barrett et al. (2004) highlight that the nature of how children with OCD interact with their parents is not routinely addressed in treatment and it may be influential in determining the extent and maintenance of gains. Schlup, Farrell and Barrett (2011) conducted an evaluation of treatment outcome on family interactions within families with a child treated for OCD. This study included 44 children and adolescents with OCD and their mothers, who were involved in a controlled treatment outcome trial. Families engaged in a 5-minute problem focussed family discussion at pre and post treatment. Behavioural observational data of these interactions were compared to wait list control group. The results of this study demonstrated significant differences between treatment and waitlist control conditions on a number of behavioural dimensions from pre to post treatment, with ratings of negative behaviours decreasing and rating of positive behaviours increasing following treatment for those families who received family based CBT. These findings suggest that CBT with family involvement may have the potential to improve mother and child behaviours during interactions, and intervention could intervene in any maintaining role that family interactions may play in childhood OCD (Schlup et al., 2011).

In addition, it would appear important to establish the relationship between the presence of inflated responsibility in the parent(s) and the contextual influence that parenting behaviours (reassurance giving, criticism and control) have on the presence of the same cognitive constructs that predict OCD in children.

Consequently, this research seeks to lend support to involving family members in treatment protocols. Addressing family interaction processes more directly in the treatment of childhood OCD may further improve the quality of

family relationships, which may in turn lead to lower risk of relapse and to the stabilisation of long-term treatment success. Therefore, this research seeks to guide treatment in attending to the contribution that parental behaviours may have on the aetiology and maintenance of childhood OCD in the presence of inflated responsibility beliefs.

1.7 Chapter Summary

Childhood OCD has been associated with disruption in social and academic functioning, co-morbid emotional and behavioural problems and family dysfunction (Piacentini et al., 2003). In reviewing the cognitive models of OCD, inflated responsibility (Salkovskis, 1985) is proposed as a central concept in understanding the development and maintenance of the disorder. Correlational and experimental findings suggest that beliefs and appraisals play some role in causing and maintaining OCD symptoms. Salkovskis et al. (1999) hypothesised that an inflated sense of responsibility may be learned by the child through parents' explicit or implicit modelling of their expectations of that child, or other members of the family through implicit or explicit modelling. However, to date, research explicitly examining the relationship between parental beliefs and behaviours and the development of OCD in children is limited. A conceptual framework for exploring the relationship between parental responsibility beliefs, parenting style and OCD behaviours in children has been presented (Kiff, unpublished thesis; Taylor, 2002). A greater understanding of the role parenting style has on the development of cognitive vulnerabilities and OCD symptoms will have significant clinical implications through the development of family based cognitive behavioural therapies.

1.8 Research Aim, Questions and Hypotheses

1.8.1 Research Aim

This study aims to assess whether maternal responsibility beliefs impact on parenting behaviours and in turn whether parenting behaviours influence OCD symptoms in their child. In order to answer this question an experimental design is employed whereby mother-child dyads are either allocated to maternal high responsibility or no responsibility condition. During a sweet sorting task, maternal behaviours are coded for the constructs of warmth and control and the amount of reassurance giving is measured. In addition, the OCD like behaviours of the child are measured.

1.8.2 Research Questions

1. Do maternal responsibility beliefs affect reassurance giving and levels of warmth and control towards her child?
2. Do children exhibit more OCD type behaviours as a result of maternal responsibility beliefs?
3. Do responsibility beliefs affect state levels of anxiety in children?
4. Do responsibility beliefs affect state levels of anxiety in mothers?

1.8.3 Research Hypotheses

Hypothesis 1: Mothers in the high responsibility condition will provide more reassurance to their children, exhibit more controlling behaviours and less warmth than mothers in the no responsibility condition.

Hypothesis 2: Children with mothers in a condition of high responsibility will display more OCD type behaviours during the sweet sorting task than children with mothers in the no responsibility condition. This includes taking longer to do

the task, hesitating, checking and seeking reassurance more than children with mothers in the no responsibility condition.

Hypothesis 3: Levels of state anxiety in children will increase pre to post task. After completing the task children with mothers in the high responsibility condition will report higher levels of state anxiety than children with mothers in the no responsibility condition.

Hypothesis 4: Mothers in the high responsibility condition will report higher levels of state anxiety following the task than reported at baseline. Levels of state anxiety in mothers in the control condition will not change pre and post task.

Chapter Two

METHOD

2.1 Overview

In this chapter, a description of the design of the current study is presented. This is followed by a description of participants and ethical considerations. Subsequently a description of measures is presented. Finally, the procedure of the study is explained in detail.

2.2 Design

This study used a between-participants experimental design with mother and child dyads. Dyads were allocated to the experimental conditions (high or no responsibility) using a block randomisation method. The independent variable was maternal perceived responsibility, with the experimental condition given high responsibility and the control condition given no responsibility. Dependent variables were maternal behaviours (observational measures of control, warmth and reassurance giving), children's behaviours (observational measures of reassurance seeking, checks, hesitations, and time taken to complete task) and maternal and child state anxiety. Maternal warmth was measured during two periods; whilst the mother read the sorting task instructions to her child and whilst the child carried out the sorting task. Maternal and child state anxiety were also measured at two time points, pre and post task. All other dependent variables were measured continuously, during the sorting task.

Self report data were also collected before and after the experimental manipulation. Mothers' responsibility attitudes and positive and negative affect

and children's anxiety symptoms and responsibility attitudes at baseline were controlled in subsequent analyses.

2.3 Experimental task

The experimental task was adapted from Reeves et al. (2010). Children were asked to sort 120 sweets into three categories. In the present study mothers gave their children the experimental instructions which were written down and which they read out loud. Children were all exposed to inflated responsibility. Using a paradigm developed by Reeves et al. children were given a bag of 120 sweets of six different colours (blue, green, orange, gold, brown and white). They were told that the sweets would be distributed to a class of children, one of whom had a nut allergy. Their task was to sort the sweets so that they could be given to the class. Children were told that the blue and green sweets contained nuts, that the orange and gold sweets might contain nuts and that the brown and white sweets did not contain nuts and were asked to sort the sweets in those 3 categories. They were told that the researcher would not check the sweets so that they needed to sort the sweets as carefully as possible. The sorting instructions were given by their mothers. Half of the mothers were randomised to the high responsibility condition and half were randomised to the control (i.e. no responsibility) condition.

Mothers were given a written script (see Appendix A). Mothers allocated to the control condition were told that the sweets would not be distributed to a class of children and that it was simply an experiment. Mothers in this group were told by the researcher: "The sorting task requires your child to sort sweets based on whether they have nuts in them or not. The instructions state that these sweets will then be given to class of children where one child has

a nut allergy. However, this is an experiment. After your child has sorted the sweets I will not give the sweets to a group of children so it does not matter whether your child makes mistakes or not". Mothers allocated to the high responsibility condition were told "The sorting task requires your child to sort sweets based on whether they have nuts in them or not. These nuts will then be given to class of children where one child has a nut allergy. I will not be checking how they have sorted the sweets before I give them to the class of children". Mothers in both groups were given five minutes to read through the written script in order to become familiar with it prior to reading it to their child.

2.4 Participants

The participants were 38 mother-child dyads. Children were between 9 and 12 years old. This age group was selected as previous research indicates that children of this age have developed responsibility beliefs (e.g. Barrett & Healy, 2003; Mnusdottir and Smari, 2004). Additionally, OCD symptoms frequently emerge between the ages of 7.5 and 11.6 (Honjo et al., 1989, Thomsen & Mikkelsen, 1991). Mothers were between 30 and 48 years old.

2.4.1 Demographic Data

Thirty eight children and their mothers participated in the study. Seventeen of the children were male (44.7 %) and 21 were female (55.3 %). The mean age of the child sample was 9.73 (SD=0.76) and the mean age of the mothers was 40.26 (SD=5.15).

2.4.2 Inclusion and Exclusion Criteria

Children and mothers were excluded if they could not communicate in English or if the child had special educational needs (as determined by their teacher), as this could affect their ability to complete questionnaires or their

performance in the task. Additionally, children were excluded if they were under the care of Child and Adolescent Mental Health Services (CAMHS), were colour blind (as determined by the mother) or allergic to nuts.

Children were only able to take part if their mothers also consented.

2.4.3 Sample Size

The sample size was calculated based on data reported by Reynolds et al. (Study Three; in prep). They examined the effect of inflated responsibility on maternal reassurance giving to their child and reported an effect size of d = 1.6 (large effect size; Cohen, 1996) for maternal reassurance giving and an effect size of d = 0.7 (medium effect size; Cohen, 1996) for child reassurance seeking. A power calculation revealed that for an effect size of 0.7, a sample of 38 (19 in each group) would be sufficient for 90% power using MANOVA with four dependent variables (G*Power 3.1; Faul, Erdfelder, Lang & Buchner, 2007).

2.4.4 Recruitment

Children were recruited from eight primary schools in Norfolk, Suffolk and Essex. Thirty head teachers were contacted by letter (Appendix B) and given information regarding the study (Appendix C) and eight agreed to take part. Information packs were sent to mothers via the schools. Information packs consisted of an invitation letter (Appendix D), an information sheet (Appendix E), a consent form for mothers (Appendix F) and an information sheet and assent form children (Appendix G and H). To encourage participation, a £2 book token was offered to schools for every child taking part.

In total 386 information packs were sent out to parents of which 40 were returned, giving a response rate of 10.3%.

2.5 Ethical Considerations

Ethical approval was given by the Faculty of Medicine and Health Ethics Committee at the University of East Anglia (see Appendix I). Research with children requires careful consideration to be given due to potential ethical issues. Therefore, guidelines of the British Psychological Society were followed.

2.5.1 Consent

Head teachers and mothers were given an information sheet describing the objectives and procedures of the study. Mothers were given a telephone number and email address to contact the researcher for further information. When the consent and assent forms were returned the researcher followed up with a telephone call to mothers. During the telephone call mothers were encouraged to ask questions and to seek clarification.

Children were given an age appropriate information sheet and gave written assent to participate in the research. They were told that they did not have to take part even if their mother gave consent. The information sheets emphasised that participation was voluntary and that mothers and children could withdraw from the research at any point, without giving a reason. They were also told that withdrawal would not have any impact on the children's care or education.

2.5.2 Deception

The British Psychological Society's (BPS, 2009) ethical guidelines state that in order to study some psychological processes, it is sometimes necessary to withhold some details of test hypotheses from participants. In this study, children were given false information about their level of responsibility, and mothers in the high responsibility condition were also given false

information about the consequences of the task. The BPS guidelines state that the use of deception should be based on the reaction of participants once the deception is revealed. A version of the experimental task has been used previously (Reeves et al., 2010; Reynolds et al., in prep) and none of the participants (both mothers and children) became distressed. During the debrief mothers and children were asked about their experience of taking part. Mothers and children were told that the sweets would not be distributed to a class of children and the purpose of the study was explained to them. Mothers in the experimental condition were also provided with a debrief sheet to keep, with the researcher's contact details (Appendix J).

2.5.3 Managing Distress

None of the children or their mothers became distressed during the sorting task. One child reported psychological difficulties at clinically significant levels as measured by the Spence Children's Anxiety Scale (SCAS; Spence, 1998) and as agreed with the Ethics Committee, their parents were informed by letter and advised to contact their general practitioner if they had concerns (Appendix K).

2.5.4 Confidentiality and Anonymity

Data was managed in accordance with the Data Protection Act and in accordance with UEA's guidelines on Good Practice in Research. Raw data including written records and video tapes were kept in a locked cupboard. All participants were identified by unique identity numbers and mother and child questionnaires were linked numerically. Only the researchers held an identification list along with the raw data. Children and their mothers were informed that their identity would not be revealed in any research outputs.

2.6 Measures

2.6.1 Demographic Questionnaires

Mothers completed two demographic questionnaires whilst their child carried out the sorting task. These questionnaires gathered information on both the mother and child. These included information about age, gender and ethnicity and the child's and family's history of allergies (Appendix L, Appendix M).

2.6.2 Control Variables

*2.6.2.1 Positive and Negative Affect Schedule (PANAS; Watson, Clark and Tellegen, 1988).*The Positive and Negative Affect Schedule (PANAS; Appendix N) was used to assess mothers' positive and negative affect at baseline. The PANAS is a 20-item self-report measure of positive and negative affect (PA and NA) and used predominantly as a research tool rather than a diagnostic or clinical measure of anxiety or depression. Items are rated on a 1 (very slightly or not at all) to 5 (extremely) scale. Total scores range from 10 to 50 for each scale. The PANAS reflects dispositional dimensions, with high-NA epitomised by subjective anxiety, arousal, and agitation and low NA by subjective calm and relaxation. PA represents the extent to which an individual experiences pleasurable engagement with the environment. Thus, emotions such as enthusiasm and alertness are indicative of high PA, whilst lethargy and sadness characterise low PA (Jolly, Dyck, Kramer, & Wherry, 1994). Studies have shown that NA is highly related to both anxiety and depression and that PA is specifically related to depression and not anxiety (Crawford and Henry, 2004). The PANAS has good psychometric properties in a large sample (n=1003) drawn

from the general adult population in the UK (Crawford and Henry, 2004). The internal reliabilities of the PANAS scales, as measured by Cronbach α, were .89 for PA and .85 for NA (Crawford & Henry, 2004). Crawford and Henry (2004) compared the PANAS with the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995) and the Hospital Anxiety and Depression Scale (HADS; Zigmound & Snaith, 1983). As predicted, PA was more strongly negatively associated to depression than anxiety on both the scales (depression subscales, DASS and HADS -.48, -.52, respectively and anxiety subscales -.30, -.31 respectively) and NA was positively associated with both anxiety and depression subscales (depression subscales, DASS and HADS, .60, .44 respectively; anxiety subscales, .60, .65 respectively).

2.6.2.2 Responsibility Attitudes Scale (RAS; Salkovskis et al., 2000). The Responsibility Attitudes Scale (RAS; Appendix O) was used to measure inflated responsibility beliefs in mothers at baseline. The RAS is a 26 item questionnaire. Respondents rate the extent to which they generally experience these beliefs on a 7-point scale ranging from 1 (totally agree) to 7 (totally disagree). The RAS has good test-retest reliability (r = .94) and high internal consistency (alpha = .92; Salkovskis et al., 2000).

2.6.2.3 The Spence Children's Anxiety Scale (SCAS; Spence, 1998). The Spence Children's Anxiety Scale (SCAS; Appendix P) was used to measure anxiety and obsessive compulsive symptoms in the children at baseline. The SCAS is a 45 item self report measure of anxiety symptoms in children aged 8-12 years. It contains six subscales which include panic/agoraphobia, social anxiety, separation anxiety, obsessions/compulsions and fear of physical injury. The SCAS has high internal reliability, with co-efficient alpha of .92 and a

Guttman split-half reliability of .90 (Spence, 1998). The test-retest reliability in a sample of 120 children retested after 6 months was found to be .51 for the total score (Spence, 1998).

2.6.2.4 The Children's Responsibility Attitudes Scale (CRAS; Salkovskis & Williams, 2004). The CRAS is an adapted version of the RAS for children and was completed by children at baseline (Appendix Q). It consists of 20-items which ask the child to rate a series of statements such as 'I often feel responsible for things that go wrong' on a seven-point scale. The scores range from 20-140, with lower scores indicating higher levels of inflated responsibility. Internal consistency has been reported of $\alpha = .78$, which demonstrates acceptable reliability (Reeves et al., 2010).

2.6.3 Manipulation check: Measure of responsibility for harm, probability of harm and severity of harm (Reeves et al., 2010).

Salkovskis' definition of responsibility focuses on two related cognitive distortions: personal influence and potential negative outcome. Responsibility for harm relates to the belief that you are personally responsible for causing or preventing harm to yourself or others, whereas potential negative outcome relates to the interpretation of risk (including perceived severity of harm and probability of harm). In order to conceptualise these parts of the responsibility model, Reeves et al. (2010), created a series of six statements, made up of three subscales. Out of the six statements, two of the statements were designed to assess perceptions of responsibility for harm, two to assess perceptions of probability of harm and two to assess perceptions of severity of harm. Using a 5-point Likert scale, mothers and children in the current study were asked to rate how much they believed in each statement based on a scale of 0- 4, with 0

representing completely disagree and 4 representing completely agree (Appendix R-T). The thinking behind the six statements was to allow the researcher to obtain a measure of overall perceived responsibility and also obtain a measure of the various components that make up this construct. This also allows the researcher to ascertain which components of inflated responsibility are associated with OCD behaviours. In the current study, the measure demonstrated good overall internal consistency in mothers ($\alpha = .80$) and children ($\alpha = .82$).

Children were asked to complete the manipulation check pre and post task and mothers were asked to complete the manipulation check just once, following the task.

2.6.4 Dependent Variables

Dyads were videotaped whilst the mother was giving her child instructions and during the sorting task. A number of behavioural measures were rated from video-recordings of the experimental tasks.

2.6.4.1 Observational measure of warmth and control. Each mother-child interaction was rated on nine scales adapted from Hudson and Rapee (2001). The original coding schedule referred to a tangram task, the current schedule was adapted in order that it corresponded to the sweet sorting task. The nine sub-scales were constructed in order to represent the two theoretical constructs that have emerged in the literature as being important in the development of anxiety: control and warmth/negativity. The sub-scales consisted of a nine-point continuum ranging from 0 to 8, where four represented a neutral point on the scale. The nine scales measured a) general mood/atmosphere of interaction b) maternal degree of positive affect c) maternal tension d) maternal degree of verbal/non-verbal encouragement/criticism e) general degree of

maternal involvement f) the degree of unsolicited help g) the degree to which the mother touches the sweets, key or containers h) the mother's posture and i) the mother's focus during the task (Appendix U).

The first four of the above scales represent the degree of warmth/negativity in the task and the final five represent parental control, that is the amount of maternal involvement in the task. Higher scores on the warmth/negativity scale indicate elevated levels of criticism or negativity and higher scores on the control scales indicate higher levels of maternal control. For example, this extract from the schedule is the guideline for the minimum score on one of the warmth/negativity scales (general mood of interaction): *'The interaction is very positive. The parent is focused on the child and not concerned about the completion of task. The interaction is characterised by a lot of laughter or smiles. There is no evidence of stress. The parent appears confident in the child'*. The following extract is a guideline for the maximum score on one of the control scale (unsolicited help): '*The task is almost completely taken over by the parent. The child is not given the opportunity to complete the task on his or her own. The parent completes the task, even though the child may be willing to finish it. The parent is extremely intrusive'*.

Scores on the first four scales were averaged to produce a global warmth score and scores on the final five scales were averaged to give a global control score. The task was divided into two phases; mothers were rated on warmth only during the instructions giving phase and rated on both warmth and control during the task phase. Cronbach alphas for warmth (instructions) was .82, warmth (task) was .90 and control .89. A trainee clinical psychologist blind to group membership, rated all mother-child interactions. A graduate

psychologist, also blind to group membership rated 25% of the interactions to determine inter-rater reliability, which was found to be high for both warmth and control (ICC=.80, .89, .93 respectively). Interactions selected for double coding were chosen at random. In order to ensure adequate reliability for the coding of interactions, training was undertaken by both coders. Training consisted of rating four 'fictitious' interactions that exemplified four interaction styles; high control/low warmth, high control/high warmth, low control/low warmth and low control/high warmth.

2.6.4.2. Observational measure of maternal reassurance giving. Reassurance giving was rated from the video-recordings. This was a frequency count of specific behaviours during the sorting task. Reassurance giving is defined as: (a) helping the child with the task and (b) offering unprompted reassurance.

2.6.4.3 Behavioural measures for children. A number of behavioural measures were used to measure children's behavioural responses during the task. These were developed by Reeves et al. (2010). As before, children's behaviours were rated by a trainee clinical psychologist blind to group membership. In addition, a graduate psychologist double coded 25% of mother-child interactions.

1. Time. The time taken for the child to complete the task was measured in seconds using a stop watch. Timing commenced as soon as the child was told to start the sorting task and stopped when the child informed the researcher they had finished.

2. Checks. The number of checks the child made during the sorting task was counted. A check was defined as: (a) stopping the gaze or looking inside a particular container for at least 1 second or; (b) emptying the content of a

container in the participant's hand or on the table or; (c) asking the researcher or mother a question, for example about the colour of a sweet or; (d) looking at the colour key regarding whether a sweet contained nuts or; (e) sorting through the bowl's label or; (f) feeling the sweet for at least 1 second.

3. Hesitations. The number of hesitations a child made during the sorting task was counted. A hesitation was be defined as: (a) a close examination of the sweet for at least 1 second or; (b) a movement of a participant's hand between two different containers for at least 1 second.

4. Reassurance seeking. Reassurance was defined as: (a) looking and glancing at mother; (b) asking mother if they are doing the task right; (c) asking mother to assist; (c) asking mother what would happen if they did the task wrong.

2.6.4.4 State-Trait Anxiety Inventory-State Version (STAI-S; Spielberger, Gorusch & Lushene, 1970). The STAI has two subscales; only state anxiety was measured in this study. Mother's state anxiety was assessed twice, at baseline, and after they had read the instructions to their child. It has a possible range of scores from 20 to 80. Barnes, Harp and Jung (2002) investigated the reliability of the STAI-S and reported average internal consistency of the STAI-S to be α>.92. Correlations between the STAI-S and the Taylor Manifest Anxiety Scale (Taylor, 1953) and the Multiple Affect Adjective Check List (Zuckerman, Lubin & Robins, 1965) are *r*=. 80 and *r*=.52, respectively (Spielberger, Gorusch & Lushene, 1970). This measure is copyrighted and is not included in the appendices.

2.6.4.5 The State Trait Anxiety Inventory for Children (STAI-C; Spielberger, Edwards, Lushene, Montouri & Platzek, 1973). The STAI-C is a self report measure designed to assess state and trait anxiety in children between 9 and 12 years of age. It consists of two separate scales that measure state

anxiety (20 items) and trait anxiety (20 items) on a 3 point Likert Scale ranging from 0 (never true/not at all) to 2 (completely true/often). The scores on each scale range from 0 to 60. Only the state anxiety was administered in the study and was given on two occasions, once before the sorting task and once after the sorting task to measure changes in the child's level of state anxiety. The STAI-C is a widely used measure in clinical research with anxious children and has demonstrated good re-test reliability (r=.63 to .72; Finch, Kendall, Montgomery & Morriss, 1975). The state anxiety scale demonstrates good internal consistency, with an alpha reliability coefficient of .82 for males and .87 for females (Spielberger et al., 1973). The STAI-C was used to measure child anxiety before and after the task. This measure is copyrighted and is not included in the appendices.

2.7 Procedure

Children were recruited from eight schools in Essex, Suffolk and Norfolk. Information packs were sent home from school and mothers and children willing to participate were invited to return consent and assent form to the school office with a contact telephone number. They were then telephoned by the researcher. If parents and children met the inclusion and exclusion criteria a mutually convenient time for a home visit was arranged.

A block randomisation method was used to assign participants to the experimental condition to ensure equal numbers in each of the conditions. A staff member at UEA who was independent to the study calculated the random assignment of the experimental conditions for each of the blocks. In total seven blocks were created, five blocks of six participants and two blocks of four

participants. A number indicating group membership was placed in individual numbered sealed envelopes which were opened once in the family home.

Children were told that the experiment involved sorting different coloured sweets and answering some questions. They were reminded that it was not a test and they could stop at any point. Before they started the experimental task, children were asked to complete a number of questionnaires; the CRAS, the STAIC-S, the SCAS and the baseline of the manipulation check. The mothers were asked to complete the STAI-S, the PANAS and the RAS. After the mother completed the questionnaires the researcher spoke to the mother in a separate room. All mothers were asked to describe the task to their child and given the written instructions. Mothers in the high responsibility condition were given the same information about the task as their child, i.e. that the child's task is to sort sweets on the basis of nut content and that the sweets will be distributed to a class of children, one of whom has a nut allergy. Mothers in the control condition were told that this is an experiment only and that the sweets would not be distributed to children after the task.

Each dyad was videotaped during the instruction phase and whilst the child sorted the sweets. During the sorting task mothers completed the background information questionnaires. After the sorting task, the mother completed the state form of the STAI and the manipulation check. Children completed the state form of the STAI-C and the post-task manipulation check.

At the end of the experiment mothers and children were debriefed about the nature of the task. Children were given a certificate of participation and if their parent allowed it some sweets to thank them for participating. The school received a £2 book token for every child who participated.

2.8 Plan for Statistical Analysis

Three stages of data analysis were planned. The first stage included data screening and preparation. Where data were not normally distributed log transformations were used to improve the distribution if possible. The internal consistency of the observational measures of control and warmth, the STAI, the STAIC and the manipulation checks were also calculated.

The second stage of analysis involved between-group comparisons on potential confounding variables, inter-rater reliability for the behavioural measures used and presents between and within group comparisons on the manipulation checks.

The research hypotheses were tested in the third stage. To test if the experimental manipulation affected maternal control, warmth and reassurance giving a MANCOVA was carried out with reassurance giving, warmth (instruction phase), warmth (task phase) and control as dependent variables and RAS as a covariate. A MANCOVA was employed to reduce the chance of Type 1 errors occurring. Consideration was given to the assumptions underpinning MANCOVA, such as normal distribution of data, random sampling method, homogeneity of variance and assumption of homogeneity of regression slopes.

Chapter 3

RESULTS

3.1 Overview

This chapter is organised into three main sections. The first section presents demographic data for participants including age, gender and ethnic origin. It describes how the data were handled, including the process of transforming variables which were not normally distributed, and the internal consistency of the observational measures of control and warmth, the STAI, the STAIC and the manipulation checks. The descriptive statistics for all measures used are also presented.

The second section presents between-group comparisons on potential confounding variables, inter-rater reliability for the behavioural measures used and presents between and within group comparisons on the manipulation checks. The research hypotheses are tested in the third section. The chapter concludes with a summary of results, and addresses each research hypothesis in turn.

3.2 Demographic Data

The demographic characteristics were explored for the whole sample (mothers and children) and both control and experimental groups. Table 1 presents the gender and age distribution in the whole sample and each of the groups. The age range of the children was 9.1-12.3 years. Mother's age ranged from 30 to 48 years.

Table 1. Gender and age of participants

	N	Males	Females	Mean Age	Standard Deviation (SD)
			Children		
Whole sample	38	17	21	9.73	.76
Control	19	8	11	9.68	.20
Experimental	19	9	10	9.78	.14
			Mothers		
Whole sample	38		38	40.26	5.15
Control	19		19	39.53	1.26
Experimental	19		19	41.00	1.11

The majority of the child participants were white British (86.8%), reflecting the demographic of the local area. One participant identified as white other, two participants identified as British mixed, and two participants identified as British Indian. Information was also collected on whether the children had allergies and whether there were any members of the family with an allergy. Of the children, 21% reported an allergy themselves, and 29% of mothers reported that at least one member of the family had an allergy. Chi square analysis revealed there was no significant difference between the groups of children regarding presence of allergies $\chi^2 = (1) = .00$, $p = 1$.

3.3 Treatment of Data

The data were entered into an SPSS spreadsheet and screened for anomalous values and missing data. Unusual variables were checked against original questionnaires to address errors in data entry. There were no missing data.

Histograms were generated in SPSS and used to visually examine the distribution of the data. Significant skew and kurtosis were explored using the following formulae (Tabachnick & Fidell, 2007).

Skew	Kurtosis
Standard error (SE) of skew	Standard error (SE) of kurtosis

Z scores for skewness and kurtosis were deemed significant at the .01 level if greater than 2.58 or less than -2.58. The .01 significance level was considered sufficient owing to the relatively small sample sizes within groups (Field, 2000). Where data were not normally distributed log transformations were used to improve the distribution if possible. The SCAS, SCAS OCD subscale, RAS, CRAS, STAIC (pre and post), PANAS-P, total scores on the manipulation checks, STAI (pre), time, checks, reassurance giving, warmth and control were normally distributed. The PANAS-N, the separate constructs of the manipulation check, STAI (post), hesitations and reassurance seeking were not normally distributed. The child constructs of the manipulation check, the STAI (pre and post), reassurance seeking and giving were successfully transformed using log transformation. The PANAS-N, maternal constructs of the manipulation check and the variable of hesitations were analysed using non-parametric tests.

Please refer to appendix V for further detail on the data requiring transformation.

3.4 Internal Consistency of Measures

Cronbach's alpha (α) was used to assess the internal consistency of the STAI, STAIC, manipulation check and the maternal coding of warmth and control. The STAI and STAIC was administered pre and post task, therefore it was important to assess the internal consistency so that changes could be accurately attributed to the experimental manipulation. A Cronbach alpha of above 0.8 indicates good internal consistency (Bryman & Cramer, 2001). The Cronbach alpha for the STAI was .83, STAIC, .81, manipulation check (mothers), .80, manipulation

check (child), .82, warmth, .90 and control, .89, all demonstrating good internal consistency.

3.5 Descriptive Statistics

This section presents descriptive data for each measure used in the main analyses. Data are presented for the whole sample and for each of the two groups.

3.5.1 Children's Covariate Measures

Table 2 presents descriptive data for the SCAS and CRAS. The mean scores on the SCAS for both groups were below the mean clinical cut-off score of 42.48 reported by Spence (1998). The scores of one child were above 42.48 indicating that they might be experiencing clinical levels of anxiety. The parents of this child were informed by letter, as detailed in the Method Section 2.5.4 of this thesis. The data for this child were included in the analysis. Mean scores on the OCD subscale of the SCAS ranged from 4.05 to 5.47, somewhat lower than 6.09 reported by Spence (1998).

Table 2. Descriptive Statistics for the SCAS and CRAS

	Range	Min	Max	Mean	SD	Median
			SCAS TOTAL			
Whole Group	56	8	64	27.45	1.84	27
Control	56	13	64	28.73	3.02	27
Experimental	34	8	42	26.16	2.14	27
			SCAS OCD			
Whole Group	12			4.76	.46	4
Experimental	8	0	8	4.05	.46	4
Control	12	2	14	5.47	.78	5
			CRAS			
Whole Group	92	41	133	75.10	3.10	73
Control	54	52	106	73.57	3.27	72
Experimental	92	41	133	76.53	5.34	76

Note. *N*=38

3.5.2 Maternal Covariate Measures

The descriptive data for the PANAS and RAS are presented in Table 3.

Table 3. Descriptive statistics for the PANAS and RAS

	Range	Min	Max	Mean	SD	Median
			PANAS-P			
Whole Group	25	20	45	34.74	.96	36
Control	22	21	43	34.84	1.26	36
Experimental	25	20	45	34.63	1.48	36
			PANAS-N			
Whole Group	15	10	25	13.03	0.61	12
Control	15	10	25	13.37	0.98	12
Experimental	12	10	22	12.68	0.74	12
			RAS			
Whole Group	73	64	137	97.63	3.15	96
Control	67	64	131	90.47	4.14	88
Experimental	65	72	137	104.79	4.26	100

Note. N=38

3.5.3. Manipulation Check: Measure of responsibility for harm, probability of harm and severity of harm for children (Reeves et al., 2010)

Table 4 presents data for the total scores on the manipulation check and Table 5 presents data for the separate constructs within the manipulation check.

Table 4. Descriptive statistics for the manipulation check (total)

	Range	Min	Max	Mean	SD	Median
			Child Pre-Task			
Whole Group	13	0	13	4.71	3.15	4.00
Control	9	1	10	4.47	2.96	4.00
Experimental	13	0	13	4.94	3.39	4.00
			Child Post-Task			
Whole Group	16	0	16	5.21	4.33	3.50
Control	16	0	16	6.15	4.54	5.00
Experimental	13	0	13	4.26	3.99	3.00
			Maternal Post-Task			
Whole Group	6	0	6	1.28	1.83	0.00
Control	6	0	6	1.26	1.93	0.00
Experimental	5	0	5	1.31	1.76	0.00

Note. N=38

Table 5. Descriptive statistics for the constructs of perception of responsibility for harm, probability of harm and severity of harm

	Range	Min	Max	Mean	SD	Median
			Pre-Task Responsibility for Harm (Child)			
Whole Group	5	5	5	2.34	1.41	2
Control	5	0	5	2.26	1.37	2
Experimental	5	0	5	2.42	1.50	2
			Pre-Task Probability of Harm (Child)			
Whole Group	7	0	7	1.52	1.53	1
Control	4	0	4	1.52	1.38	1
Experimental	7	0	7	1.52	1.71	0
			Pre-Task Severity of Harm (Child)			
Whole Group	5	0	5	.84	1.12	0
Control	2	0	2	.68	.88	0
Experimental	5	0	5	1.00	1.33	1
			Post-Task Responsibility for Harm (Child)			
Whole Group	6	0	6	2.68	1.80	2
Control	6	0	6	3.05	1.95	2
Experimental	6	0	6	2.31	1.60	2
			Post-Task Probability of Harm (Child)			
Whole Group	5	0	5	1.39	1.71	1
Control	5	0	5	1.63	1.80	1
Experimental	5	0	5	1.16	1.64	0
			Post-Task Severity of Harm (Child)			
Whole Group	5	0	5	1.18	1.44	0.5
Control	5	0	5	1.47	1.50	1
Experimental	4	0	4	.89	1.37	0
			Responsibility for Harm (Mother)			
Whole Group	5	0	5	.92	1.44	.00
Control	5	0	5	.94	1.43	.00
Experimental	5	0	5	.89	1.49	.00
			Probability of Harm (Mother)			
Whole Group	2	0	2	.18	.45	.00
Control	2	0	2	.16	.50	.00
Experimental	1	0	1	.21	.42	.00
			Severity of Harm (Mother)			
Whole Group	2	0	2	.18	.39	.00
Control	2	0	2	.15	.37	.00
Experimental	1	1	1	.21	.41	.00

Note. N=38

3.5.4 Dependent Measures for Children

3.5.4.1. Time taken, number of checks, hesitations and times reassurance sought. Table 6 displays the descriptive statistics for time, checks, hesitations and reassurance seeking.

Table 6. Descriptive statistics for time taken (seconds), number of checks, hesitations and times reassurance sought.

	Range	Min	Max	Mean	SD	Median
				Time		
Whole Group	769	147	916	447.06	160.55	446.50
Control	509	180	689	445.07	121.28	487
Experimental	769	147	916	449.05	195.62	446
				Checks		
Whole Group	35	2	37	14.13	7.58	12
Control	30	2	23	12.53	8.63	12
Experimental	30	7	37	15.73	8.83	12
				Hesitations		
Whole Groups	65	0	65	19.5	13.75	14.5
Control	65	0	65	20.26	14.76	14
Experimental	44	1	45	18.73	13.00	14
				Reassurance Sought		
Whole Group	23	0	23	6.42	6.44	4.50
Control	23	0	23	7.42	6.99	5
Experimental	20	0	20	5.42	5.85	3

Note. *N*=38

3.5.4.2. The Strait Anxiety Inventory for Children – State Form (STAIC-S; Spielberger, Edwards, Lushene, Montouri & Platzek, 1973). The descriptive data for the STAIC-S are presented in Table 7.

Table 7. Descriptive data for the STAIC-S Pre and STAIC-S Post

	Range	Min	Max	Mean	SD	Median
				STAIC-PRE		
Whole Group	13	20	33	27.66	.61	29
Control	13	20	33	27.47	.89	29
Experimental	13	20	33	27.84	.85	29
				STAIC-POST		
Whole group	17	20	37	25.89	.75	26.50
Control	12	20	32	24.79	1.02	23
Experimental	17	20	37	27.00	1.06	28

Note. *N*=38

3.5.5 Dependent Measures for Mothers

3.5.5.1. Reassurance giving, warmth and control. The descriptive statistics are displayed in Table 8 for the variables of reassurance giving, warmth and control.

Table 8. Descriptive statistics for maternal behavioural dependent variables

	Range	Min	Max	Mean	SD	Median
			Reassurance Giving			
Whole Group	10	0	10	2.00	2.56	1
Control	6	0	6	1.58	1.70	1
Experimental	10	0	10	2.42	3.20	1
			Warmth (Instructions Phase)			
Whole Group	4.00	0.5	4.50	2.18	.87	2.33
Control	2.50	0.5	3.00	1.90	.68	2
Experimental	4.00	0.5	4.50	2.46	.97	2.3
			Warmth (Task Phase)			
Whole Group	3.50	1.00	4.50	2.22	1.07	2
Control	2.50	1.50	4.00	2.05	.98	1.75
Experimental	3.50	1.00	4.50	2.40	1.15	2.25
			Control			
Whole Group	7.00	1.00	8.00	3.19	1.49	3.2
Control	4.00	1.00	5.00	2.64	1.25	2.40
Experimental	6.00	2.00	8.00	3.73	1.59	3.40

Note. *N*=38

3.5.5.2. State Trait Anxiety Inventory –State Form (STAI-S; Spielberger, Gorusch & Lushene, 1970).

Table 9 displays the descriptive statistics for the STAI (pre and post).

Table 9. Descriptive statistics for the STAI-S (pre and post)

	Range	Min	Max	Mean	SD	Median
			STAI-PRE			
Whole Group	25	20	45	28.13	.96	28
Control	18	22	40	28.79	1.18	28
Experimental	25	20	45	27.47	1.52	28
			STAI-POST			
Whole Group	25	20	45	26.31	.96	24.5
Control	17	20	37	27.16	1.23	26
Experimental	25	20	45	25.47	1.52	23

Note. *N*=38

3.6 Comparisons on Demographic and Confounding Variables

To reduce Type 1 errors a MANOVA was used to compare the groups on age, total SCAS, anxiety subscale, OCD subscale, CRAS, RAS, PANAS-P, STAI-C (pre) and STAI (pre). Consideration was given to the assumptions underpinning MANOVA, such as normal distribution of data, random sampling method and homogeneity of variance, prior to choosing this test. Box's test indicated that the assumptions of homogeneity of covariance matrices, F (55, 4185) = 1.03, p = .40, had been met. There was no significant multivariate between groups difference on covariate measures F (10, 27) = .74, p=.68. Univariate tests revealed a significant difference between the groups on the RAS, $F(1)=5.81$, $p<.05$, therefore this variable was controlled for in the subsequent analysis.

As the PANAS-N was not normally distributed, the non-parametric Mann-Whitney U test was used. There was no significant difference between groups on the PANAS-N, U=171, p=.78. Differences between groups on the categorical variable of gender were examined using Pearson's Chi Square test. No significant differences were observed χ^2 (1)=.1, p=.74.

3.7 Inter-Rater Reliability

Intra-class correlations were used to measure inter-rater reliability for checks, hesitations, reassurance seeking, and reassurance giving, warmth and control. Data from nine participants (25% of the sample) were randomly selected and double rated by a 2nd researcher who was blind to the experimental conditions. The reliability coefficients were all above .76 (see Table 10) indicating good inter-rater reliability (Landis & Koch, 1977).

Table 10. ICC for behavioural dependent variables

Variable	ICC
Checks	.82
Hesitations	.91
Reassurance seeking	.76
Reassurance giving	.97
Warmth (Instructions)	.80
Warmth (Task)	.89
Control	.93

3.8 Manipulation Check

A within groups t-test was carried out to explore the effect of the manipulation (total score) on children (as a whole group) pre and post task. The analysis revealed no significant within-group difference t (37) = .55, *p*=.46. A mixed factorial ANOVA was employed to compare the groups on the manipulation check pre and post task, with group entered as the between subjects factor (experimental, control) and time (pre/post sorting task) as the within subjects factor. There was no significant group by time interaction F (1, 36) = 3.28, p =.07. A further between groups t-test was carried out in order to see whether the two groups differed post task. The analysis revealed no significant difference between the groups, t (36) = -1.36, p = .18. A between groups t-test was carried out to explore the effect of the manipulation on their mothers, the analysis revealed no significant between groups difference, t (36) = .87, *p*=.93.

In order to explore the effects of the manipulation in more depth, within-groups t-tests were carried out on each construct. The analysis revealed no significant within-group difference on the variables of responsibility for harm, t (37) = -1.11, *p*=.27; probability of harm t (37) = 1.15, *p*=.26 and severity of harm, t (37)

= -.89, p = .38. As the variables on the maternal manipulation check were not normally distributed a Mann Whitney U test was carried out in order to investigate between groups differences post task on the variables of responsibility, severity and probability of harm. The analysis revealed no group differences in responsibility for responsibility of harm U = 179, p=.96; probability of harm U = 198, p=.43; severity of harm U = 190, p=.68.

3.9 Interim Summary

The STAIC, STAI, manipulation checks and the measures of warmth and control demonstrated good internal consistency. At baseline there were no significant between-group differences in age, gender, child state anxiety, child responsibility levels, OCD, maternal positive affect and maternal negative affect. Univariate analysis indicated that was a significant group difference on the RAS, with the experimental group demonstrating more responsibility than the control group. The RAS will therefore be controlled for in subsequent analyses. There was good inter-rater reliability for all behavioural measures, indicating that the data were rated in a reliable manner.

There was no significant within group difference on the children's manipulation check pre to post task. In addition, there was no significant between group difference post task. Furthermore, no between group difference was found on the maternal manipulation check, indicating that the manipulation had been unsuccessful regarding both the maternal and child experimental manipulation. The following section addresses how the data were used to test the research hypotheses.

3.10 Hypotheses Testing

3.10.1 Hypothesis 1: Mothers in the high responsibility condition will provide more reassurance to their children, exhibit more controlling behaviours and less warmth than mothers in the no responsibility condition.

To test if the experimental manipulation affected maternal control, warmth and reassurance giving a MANCOVA was carried out with reassurance giving, warmth (instruction phase), warmth (task phase) and control as dependent variables, RAS as a covariate and group membership (experimental, control) as the independent variable. Box's test indicated that the assumptions of homogeneity of covariance matrices, F (10, 6196) = 1.75, p >.05, had been met. In addition, the assumption of homogeneity of regression slopes was tested. There was no significant covariate by group interaction, indicating that the relationship between the dependent variables and RAS is the same across both groups, F (4,31) = 1.94, p>.05.

There was a significant multivariate between groups difference F (4, 32) = 2.71, p <.05. Subsequent univariate analyses indicated that there were significant group differences in maternal warmth (instructions phase) F (1, 35) = 4.27, p=.04 and control F(1, 35) = 7.23, p=.01. There was no significant between group difference in reassurance giving F (1,35) =1.00, p=.32 and maternal warmth (task phase) F (1, 35) =.82, p=.37. Figure 2 shows the mean ratings for warmth, control and reassurance giving.

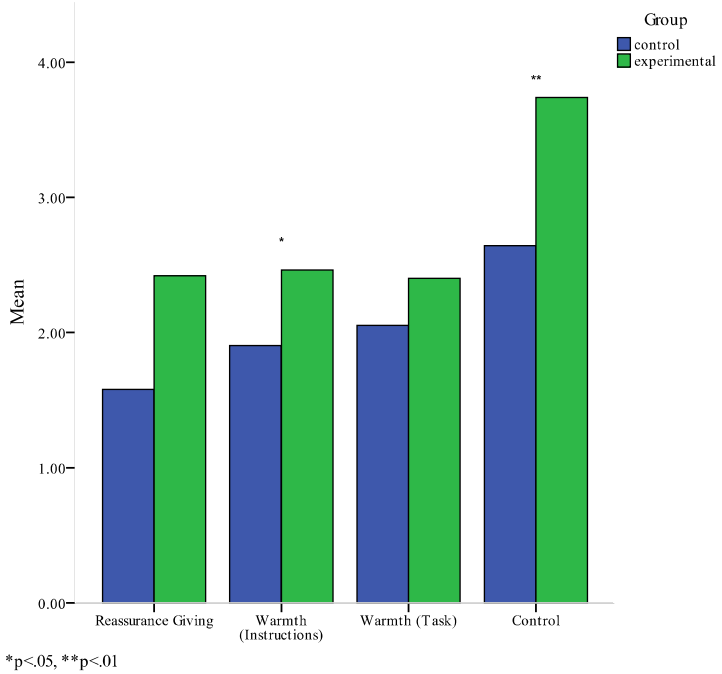

Figure 2. Mean ratings for reassurance giving, warmth (instructions phase), warmth (task phase) and control (task phase).

Thus mothers in the experimental group, who believed that their child had high responsibility, displayed significantly less warmth whilst giving instructions to their child and significantly more control during the sweet sorting task than mothers in the control condition. In addition mothers in the experimental condition received higher ratings (i.e. less warmth) on all three of the warmth sub-scales i.e. the mood of interaction, maternal affect and maternal tension (see Figure 3) but this was not significant; MANCOVA F (3, 33) = 2.00, p = .13. Subsequent univariate analyses indicated that there was a significant group difference in maternal mood of interaction F (1, 35) = 6.24, p=.01, but not in maternal affect F(1,35) = 1.97, p=.17 or tension F (1,35) = 2.22, p=.15.

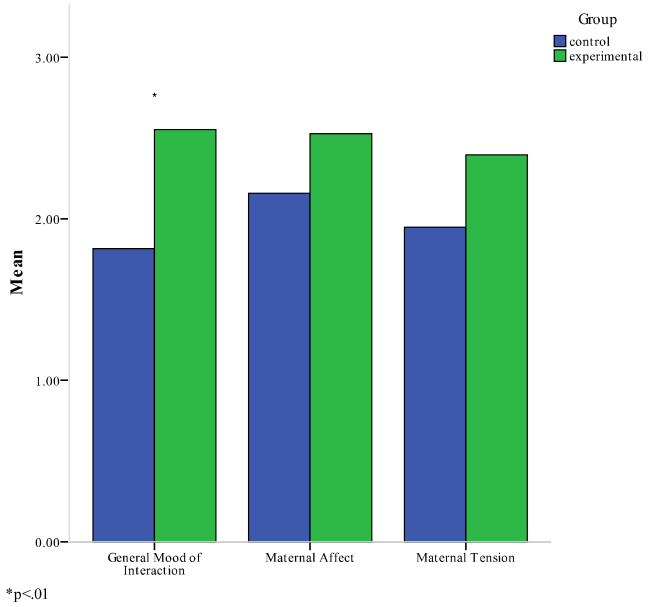

Figure 3. Mean ratings for mood of interaction, maternal affect and maternal tension during the instructions phase

There was no overall difference in maternal warmth during the task phase. Maternal warmth was calculated from the sub-scales of 'general mood of the interaction', 'maternal positive affect', 'maternal tension' and 'amount of encouragement/criticism'. Mothers in the experimental condition received higher ratings (i.e. less warmth) on all four scales (see Figure 4). A MANCOVA revealed no significant multivariate difference between the groups, F (4,32) = 1.76, p=.16.

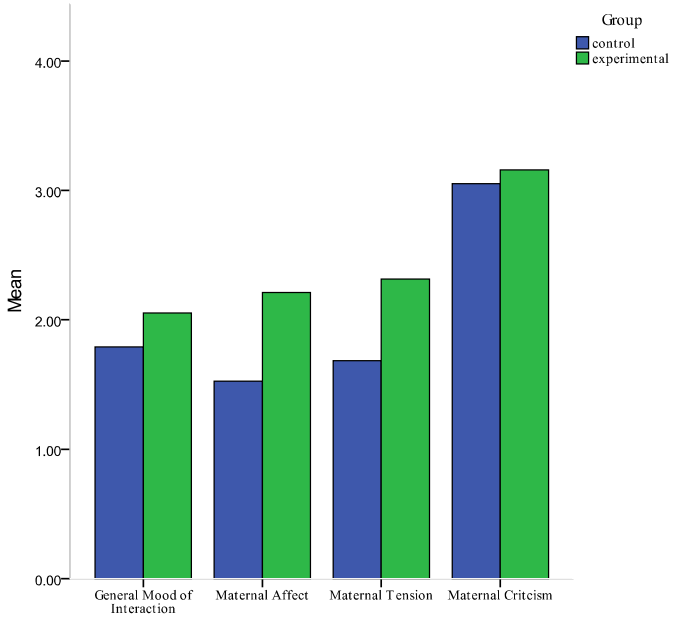

Figure 4. Mean ratings for mood of interaction, maternal affect, maternal tension and maternal criticism during the task phase

Scores on the control factor (task phase) were calculated from the sub-scales of 'general degree of maternal involvement', the 'degree of unsolicited help', the 'degree to which the mother touches the sweets or containers', the 'mother's posture and the mother's focus during the sorting task'. A MANCOVA revealed no significant multivariate between group differences F (5, 31) = 1.67, p = .17. However subsequent univariate analyses indicated that there were significant between group difference in maternal involvement F (1,35) = 4.08, p=.05, and posture F(1,35) = 5.55, p=.02, but not unsolicited help, F(1,35) = 3.12, p=.08; touching, F(1,35) = .89, p=.35 and focus, F(1,35) = 3.62, p=.07. (See Figure 5).

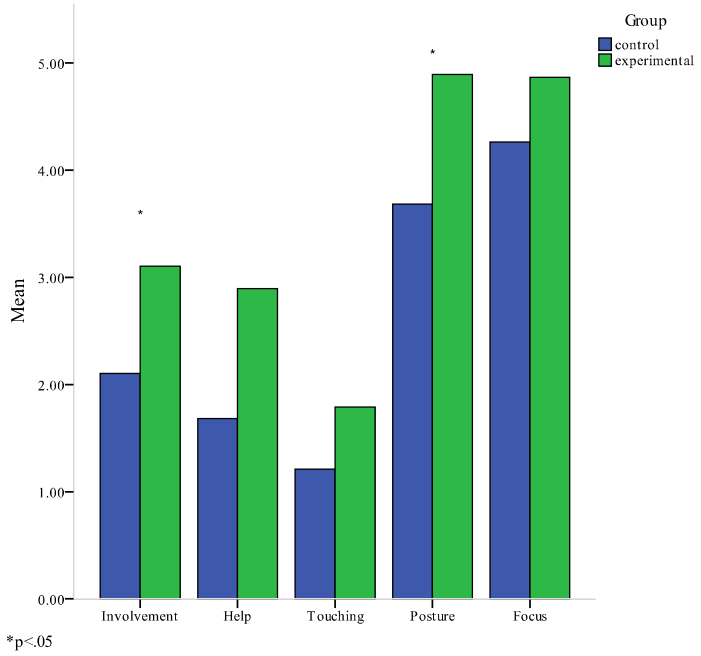

*Figure 5.*Mean ratings for degree of involvement, help, touching, posture and focus.

3.10.2 Hypothesis 2: Children with mothers in a condition of high responsibility will display more OCD type behaviours during the sweet sorting task than children with mothers in the no responsibility condition. This includes taking longer to do the task, hesitating, checking and seeking reassurance more than children with mothers in the no responsibility condition.

Children's behaviour during the task was compared using a MANCOVA with reassurance seeking, time and checks as dependent variables, RAS as a covariate and group membership (experimental, control) as the independent variable. There was no significant covariate by group interaction, indicating that the relationship between the dependent variables and RAS is the same across both groups, F (3, 32) = 1.65, p>.05. There were no significant multivariate or univariate between group differences, F (3,33) = 1.45, p=.24. Therefore the manipulation of mother's beliefs did not have a significant effect on children's behaviours. The variable of 'hesitations' was not normally

distributed, therefore a Mann Whitney U test was used to investigate between groups differences in the amount of hesitations. This was not significant; U = 172, *p*=.82.

3.10.3 Hypothesis 3: Levels of state anxiety in children will increase pre to post task. After completing the task children with mothers in the high responsibility condition will report higher levels of state anxiety than children with mothers in the no responsibility condition.

A mixed factorial ANCOVA was used to compare the groups on state anxiety at baseline and after the task, with group entered as a between subjects factor (experimental, control) and time (pre/post sorting task) as within subjects factor. There was no significant covariate by group interaction, indicating that the relationship between the STAIC and RAS was the same across both groups, F (2, 35) = 1.11, p>.05. There was a significant group by time interaction F (2, 35) = 4.77, p <.05 (see Figure 6). Post-hoc main effects revealed that there was no significant effect of group F (1, 35) = .36, p=.55, however there was a significant effect of time F (1, 35) = 9.21, p<.01. Further paired t-tests revealed that state anxiety significantly reduced in the control group pre to post task, t (18) = 2.84, p = .01, however state anxiety did not significantly reduce in the experimental condition, t (18) = 1.12, p = .27 pre to post task.

A t-test was used to compare children's post task scores on the STAIC. There was no significant difference between the groups following the sweet sorting task, t (36) = 1.5, p = .14.

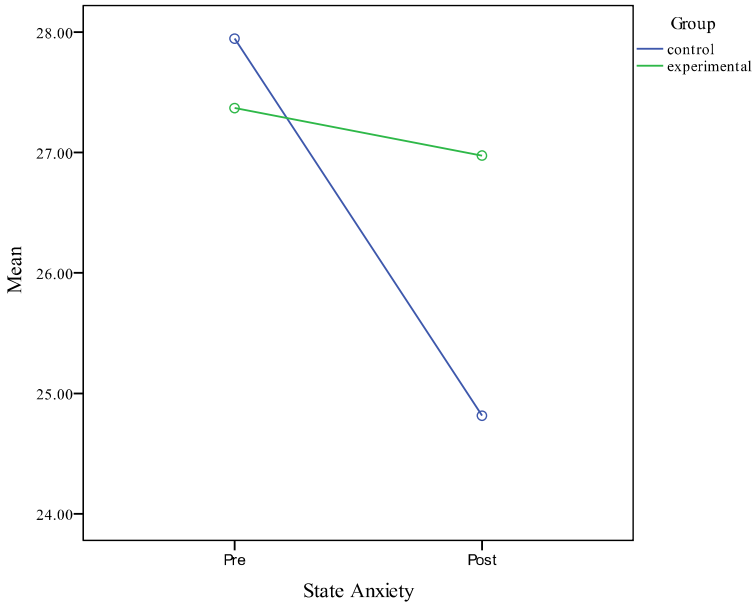

Figure 6. Mean scores on the STAIC (pre and post task)

3.10.4 Hypothesis 4: Mothers in the high responsibility condition will report higher levels of state anxiety following the task than reported at baseline. Levels of state anxiety in mothers in the control condition will not change pre and post task.

A *t*-test was used to compare maternal post task scores on the STAI. There was no significant difference between the groups on state anxiety following the sweet sorting task t (36) = -1.05, p=.30. A mixed factorial ANCOVA was used to compare the groups on maternal state anxiety pre and post task, with group entered as a between subjects factor (experimental, control) and time (pre/post sorting task) as within subjects factor. As before, consideration was given to the assumption of homogeneity of regression slopes. There was no significant covariate by group interaction, indicating that the relationship between the state anxiety and RAS was the same across both groups, F (2,35) = .85, p>.05. There was no significant group by time interaction F(1,

35) = 0.47, p = .50. Post-hoc main effects revealed that there was no significant effect of group F (1,35) = .61, p=.44, however there was a significant effect of time, F (1, 35) = 5.53, p<.05. Therefore, the results indicate that there was a significant reduction in state anxiety following the sweet sorting task across both groups (see Figure 7).

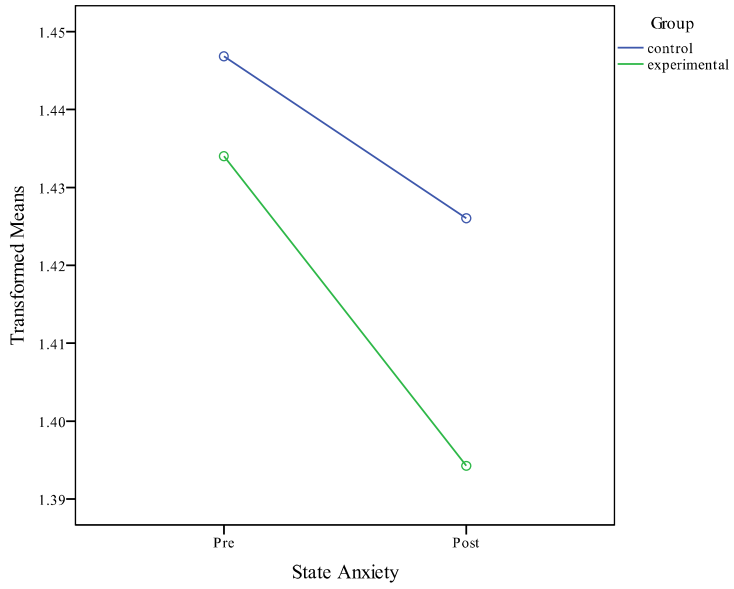

Figure 7. Transformed mean scores on the STAI (pre and post)

3.11 Summary of Results

This section summarises the findings in relation to each of the research hypotheses.

Hypothesis 1: In a condition of high responsibility mothers will provide more reassurance to their children, exhibit less warmth and more control than mothers in the no responsibility condition.

This was tested using a between-groups MANCOVA. There was a significant multivariate difference between the groups. Univariate analyses revealed significant between group differences in control and warmth (instructions

phase), with mothers in the experimental condition displaying less warmth during the instructions phase and more control during the task phase. No significant between group differences were observed in reassurance giving or warmth during the task phase. Therefore the hypothesis was partially supported.

Hypothesis 2: Children with mothers in a condition of high responsibility will display more OCD type behaviours during the sweet sorting task than children with mothers in the no responsibility condition. This includes taking longer to do the task, hesitating, checking and seeking reassurance more than children with mothers in the no responsibility condition.

This hypothesis was tested using a between groups MANCOVA and a non-parametric Mann-Whitney U test. There were no significant between group differences found in any of the child behavioural dependent variables. This hypothesis was not supported.

Hypothesis 3: Levels of state anxiety in children will increase pre to post task. After completing the task children with mothers in the high responsibility condition will report higher levels of state anxiety than children with mothers in the no responsibility condition.

A mixed factorial ANCOVA was employed in order to compare the groups on state anxiety pre and post task. There was a significant group by time interaction and post-hoc main effects revealed that there was no significant effect of group, however there was a significant effect of time. Further paired *t*-tests demonstrated that state anxiety significantly reduced in the control group pre to post task, , however state anxiety did not significantly reduce in the experimental condition, pre to post task. Therefore, the results indicate that there was a significant reduction in state anxiety following the sweet sorting task in the

control group only. A *t*-test was used to compare children's post task levels of state anxiety. There was no significant difference between the groups on their state levels of anxiety following the sweet sorting task, therefore this hypothesis was not supported.

Hypothesis 4: Mothers in the high responsibility condition will report higher levels of state anxiety following the task than reported at baseline. Levels of state anxiety in mothers in the control condition will not change pre and post task.

A mixed factorial ANCOVA was employed in order to compare the groups on maternal state anxiety pre and post task. There was no significant group by time interaction. Post-hoc main effects revealed there was a significant effect of time on state anxiety, in both groups state anxiety was significantly reduced post task. Therefore, the hypothesis was not supported.

Chapter Four

DISCUSSION

4.1 Overview

The aim of this chapter is to evaluate the results in the context of methodological limitations and relevant empirical literature. Firstly, the findings, in light of the research questions will be summarised. This is followed by a methodological critique. The potential implications for clinical practice and current theory of OCD are then presented. Subsequently, possible directions for future research are discussed. The chapter concludes with an overall summary of the thesis.

4.2 Summary of Findings

4.2.1. Manipulation Check

The experimental manipulation did not have a significant effect on either maternal or child subjective beliefs about their responsibility following completion of the task. Therefore, the manipulation was apparently not successful in increasing mothers' and children's levels of responsibility.

In previous research employing the same paradigm the manipulation has been shown to be successful in children (Reeves et al., 2010; Study One & Study Two, Reynolds et al., in prep). In addition, previous research employing adult samples has demonstrated that it is possible to manipulate responsibility beliefs in non-clinical adults using a similar pill sorting paradigm (Arntz et al., 2007; Bouchard et al., 1999; Ladouceur et al., 1995; Ladouceur et al., 1997; Parrish & Radomsky, 2006).

Reynolds et al. (Study Three, in prep) did not include a manipulation check for either mothers or children in their study and used the main dependent variable of

reassurance giving as an indication that their manipulation had been successful in mothers. The current study therefore is the first to formally evaluate the success of the experimental manipulation in mothers employing this sweet sorting paradigm, therefore these results have important implications for future experimental studies.

Taken in conjunction with the results from hypothesis one, the findings from the current study suggest that although the manipulation was not subjectively successful, the between group differences in warmth and control indicate that the experimental manipulation had been successful in mothers at some level. This is a significant and critical finding. An explanation for this discrepancy could be owed to the non-clinical sample employed. It has been found that people low in trait anxiety may have a bias away from threat to reduce subjective feelings of distress (Calvo & Miguel-Tobal, 1998; De Wilde & Rapee, 2008; Mogg, Bradley, & Hallowell, 1994). Therefore, one hypothesis is that the non-clinical sample used in this study may have biased against reporting differences on the subjective measure of responsibility. It is also possible that social desirability or lack of insight may have influenced the validity of the self report assessment of responsibility (Furnham, 1986).

Importantly, however, the theoretical and clinical implications of the findings of this study need to be interpreted in light of the possibility that responsibility beliefs were not successfully manipulated. Possibly other cognitive biases, such as intolerance of uncertainty, perfectionism or expectation of negative consequences were manipulated, which induced behaviours consistent with anxious parenting. Creswell, O'Connor and Brewin (2008) found that non-anxious parents who were given negative expectations regarding how their child would cope with complex tasks were more involved with their child than mothers who were given

positive expectations about how their child would cope. However, Cresswell et al. (2008) did not formally check the validity of their manipulation, and used maternal observational data as an indicator that their manipulation had been successful.

4.2.2 Research Question 1: Do maternal responsibility beliefs affect maternal levels of warmth, control and reassurance giving towards her child?

This is the first study to investigate the effects of maternal responsibility beliefs on maternal levels of control and warmth using an experimental design. In this study, mothers in a condition of inflated responsibility demonstrated significantly less warmth when reading sorting instructions to their child and significantly more control during the sorting task than mothers in a condition of no responsibility. Although no significant difference was found in maternal reassurance giving, the means were in the expected direction. In Reynolds et al. (Study Three, in prep) 'glancing at the child' was included as a behavioural measure of reassurance giving. It was noted by the authors that glancing may not have been indicative of reassurance giving but instead may have indicated that the mothers were taking an interest in their child. Therefore the current study removed glancing as a behavioural indicator of reassurance giving. This difference in measurement, may account for the discrepancy in findings on this particular variable.

Similarly, no significant difference in maternal warmth was found between the two groups during the sorting task itself, however, mothers in the condition of inflated responsibility scored higher (i.e. less warm) on all four warmth scales during this phase. Children in this study were all in a condition of high responsibility, therefore it can be concluded that differences in maternal behaviours were due to maternal beliefs rather than being in response to anxiety in the child, supporting a top down model of anxiety transmission, whereby control and warmth

are related to parental anxiety levels as opposed to a child's actual or perceived anxiety levels (Challacombe & Salkovskis, 2009; DiBartelo & Helt, 2007; Whaley et al., 1999).

4.2.3 Research Question 2: Do children exhibit more OCD type behaviours as a result of maternal responsibility beliefs?

No significant differences were observed between the groups in the children's behaviour during the sorting task. Reynolds et al. (Study Three, in prep) found that children in a condition of high maternal responsibility group sought significantly more reassurance and hesitated more than children in the low maternal responsibility group. However in their study, the groups did not differ with respect to the number of checks and time taken to complete the task. Reynolds et al. suggested that reassurance seeking assumed a checking 'by proxy' role in their study which was one explanation given as to why no differences were found between the groups of children in checking behaviours. The current findings are also in contrast to previous studies employing cross sectional designs that have demonstrated a relationship between parenting characterised by affectionless control and OCD symptomatology in non-clinical samples (Aycicegi et al., 2002; Ehiobouche, 1988).

Importantly however, whilst group differences were found for parenting behaviours, the actual differences were small and the mean scores fell under the midpoint for both groups (representing behaviour considered to be neither over-controlling nor overly negative). These differences may have been insufficient to elicit differences in child behaviours. The results reflect the findings of Creswell et al. (2008) whereby the manipulation of negative expectations was strong enough to elicit changes in parental involvement during a task; however, differences in

parental involvement were not sufficient enough to bring about significant changes in children's behaviours.

4.2.4 Research Question 3: Do responsibility beliefs affect state levels of anxiety in children?

Overall, state anxiety in children reduced following the sweet sorting task. At first glance this is surprising, given the results of a recent meta-analysis by McLeod et al. (2007), in which lower levels of autonomy granting and excessive over-involvement of parents were strongly associated with child anxiety. Possibly the uncertainty and apprehension regarding the task heightened state anxiety pre task and the relatively easy nature of the sorting task resulted in a sense of relief and a reduction in state feelings of anxiety following completion of the task.

An alternative explanation, in line with principles from operant conditioning, is that checking and reassurance seeking could be expected to reduce anxiety in the short term (Salkovskis, 1985). In the experimental task children were allowed to check, hesitate, seek reassurance and take as much time as they needed, which is likely to have led them to feeling less anxious than if they had not been allowed to carry out these behaviours. However, this hypothesis assumes that responsibility beliefs had been successfully manipulated in the children; therefore it is unlikely that the reduction in state anxiety is due to children's employment of safety behaviours during the task.

It is of note that children in the control condition experienced a significant reduction in anxiety whereas children in the experimental condition did not follow the same pattern. In the experimental condition, the children's level of anxiety was sustained indicating that only children in the control condition felt able to relax during the sorting task. This is in line with what one may expect, if indeed the

manipulation had been successful and mothers in the experimental group experienced elevated levels of responsibility. However, there were no group differences in post-task state anxiety. Given that the manipulation was unsuccessful and no differences in children's behaviours during the task were observed it is not surprising that self report levels of anxiety did not significantly differ between groups post task. It is also conceivable that although mothers differed on their levels of control and warmth, the differences were not enough to elicit a change in their children's state levels of anxiety.

4.2.5 Research Question 4: Do responsibility beliefs affect state levels of anxiety in mothers?

State anxiety in mothers reduced significantly from baseline to post task in both groups, in addition, there was no significant difference between the groups on state anxiety following the task. A similar explanation to that offered above regarding the reduction in children's anxiety could be considered. Mothers may have felt anxious or apprehensive regarding the nature of the task, prior to being given the instructions. This is particularly understandable if one considers how the mothers may have felt about being videoed during the task. Once the task was completed, and given the relatively simple nature of the sorting task, the mothers may have felt a sense of relief that the task was over and their role in the research project had come to an end.

4.3 Methodological Critique

4.3.1 Design

A significant strength of the study was the use of a between-groups experimental design, which allowed the causal role of maternal beliefs on maternal

and child behaviours to be investigated. Investigation of causal inference was possible because the study manipulated maternal beliefs and measured the outcome of this manipulation on mothers and their children's behaviours. The experimental design afforded the opportunity to examine aetiological factors in OCD; this is not possible in cross-sectional designs. Due to the experimental design of the present study it can be assumed that differences in maternal behaviours were brought about by maternal beliefs rather than maternal response to real or perceived child anxiety, thereby providing further support to research examining top down processes of anxiety development (DiBartelo & Helt, 2007).

4.3.2 The Experimental Manipulation

There are many potential explanations for the lack of success in the experimental manipulation. This is the first study using this paradigm to assess mother's subjective beliefs pertaining to responsibility as a validity check on the manipulation. Previous research has based success of the manipulation on behavioural dependent variables of the mother and child (Creswell et al., 2008; Study Three; Reynolds et al., in prep). The use of the manipulation check was therefore a strength of the current study as a discrepancy between self report measures of responsibility regarding the task and observed parenting behaviours was found.

As previously mentioned, one hypothesis regarding the lack of success of the manipulation as seen by the manipulation check, is that the non-clinical sample used in this study may have biased against reporting differences on the subjective measure of responsibility. However, a significant drawback to the current study is that no formal measure of maternal psychopathology was administered; therefore

the trait anxiety status of the mothers is unknown, although it is assumed that mothers were from drawn from a non-clinical population.

Reynolds et al. (Study One & Study Two, in prep) found the manipulation to be successful in children in a school setting rather than in the family home. It is possible that the school environment enabled a more anxiety provoking situation for the children, in which they may have been more susceptible to manipulations of responsibility. Indeed, the rationale for conducting the experiment in the home environment was based on previous research that has demonstrated that children are more likely to engage in ritualistic behaviour when in their home environment (King, Ollendick & Montgomery, 1995). However, the responsibility model predicts that children will engage in increased checking behaviour when they feel a sense of increased responsibility towards their environment (Salkovskis, 1985). As the results of the task would have an impact on unknown children within a school setting, not upon the child's home or family members, the context of the task itself may be anticipated to have a lesser effect. Future studies may benefit from considering how the experimental setting impacts the success of the manipulation. Therefore, the biggest advantage of conducting this study in a home environment is to give the study added ecological validity; however it may be that this was at a cost to the success of the manipulation.

In previous studies employing this paradigm it was the researcher, an unknown adult, who gave the children the instructions regarding the nature of the task (Reeves et al., 2010; Reynolds et al., in prep). It is feasible that children are more likely to believe a researcher (unknown to them) in a school setting rather than their mother in their home environment. In the present study mothers sat with their child throughout the task. In this respect responsibility was possibly shared between

them, and perhaps given the non-clinical population, children may have transferred responsibility for the task to their parent (Shafran, 1997). Signing responsibility contracts before the task may have instilled a greater sense of responsibility in both the mothers and their children (Lopatka & Rachman, 1995).

It is also possible that the mothers and children in the study did not believe the manipulation. A believability check was not carried out as a similar task has been utilised in previous studies with mothers and children with apparent success. It would however be interesting to determine to what extent mothers and children believed the task to be genuine. The experimental manipulation was originally designed for use in a child population; therefore, it is possible that this manipulation is not appropriate for use with an adult population. It is conceivable, given the widespread understanding amongst parents and schools alike of the risks associated with nut allergies that some mothers would not believe that the sweets would be distributed without an adult checking the child's work. Therefore mothers may have been left with a feeling of uncertainty or indeed bewilderment rather than personal perceived responsibility. In addition, given that families had volunteered their time to take part in the study and the experimenter was invited into the family home, it was important that a good relationship between experimenter and family was forged. It is possible that this relationship interfered with the extent to which the mother and child believed the manipulation. Therefore, perfectionism or uncertainty may have been manipulated as a result of the experimental manipulation rather than personal responsibility. Given that perfectionism, intolerance of uncertainty in addition to inflated responsibility have been highlighted by the OCCWG (2005) as cognitive biases associated with OCD, it is likely that these cognitive styles are indeed correlated.

The manipulation may have exerted a stronger effect on mothers if they had been given more context as to why the sweets were going to be given to a group of children, and why their child was being asked to sort them. However, these additions to the procedure would raise ethical questions as it would increase the amount of deception involved in the task.

Finally, mothers in the control condition were told that the task was simply an 'experiment', without any further explanation. The lack of clarity as to the purpose of the task may have inadvertently elevated responsibility beliefs in this group. In future research, investigators could reinforce to mothers in the control condition that their child's performance during the task is inconsequential.

4.3.3 The Task

The sweet sorting task used in this study has been used in previous research with non-clinical children (Reeves et al., 2010; Reynolds et al., in prep). The simple, child - friendly and relatively easy nature of the sorting task, allows OCD-type behaviours to be attributed to cognitive beliefs regarding the purpose of the task as opposed to task difficulty. However, the experimental manipulation itself may have lacked ecological validity, in that participants may not have related responsibility to the task at hand in the same way that they might in a real life situation. Thus this task may have instated a reasonable sense of responsibility, rather than an over-valued sense of responsibility emphasised by the literature (Salkovskis et al., 2000). Furthermore, the task was video-taped in order that maternal and child behaviours could be rated at a later stage. It is possible that the presence of the video during the task influenced parental behaviours across both groups, which also raises questions regarding the ecological validity of maternal behaviours during this short sorting task. Furthermore the experimental manipulation brought about a context driven and

short term change in maternal behaviour and thus the findings of this study may not reflect longer term interactions between mothers and children which may be more powerful. As such it is perhaps not surprising that the children were not rated as displaying substantial changes in behaviour following a single, short interaction. Indeed, Chorpita and Barlow (1998) postulated that early experiences of parenting style may contribute to the development of anxiety over an extended period of time.

Finally, mothers were asked to complete the brief background questionnaires whilst their child was carrying out the sorting task. It is quite possible that completing the questionnaires during the sorting task interfered with how the mothers could interact with their child. Moreover, some mothers were observed to spend some time completing the questionnaires whilst other mothers ignored the questionnaires completely and focussed on their child instead. How mothers respond to the questionnaires is likely to have an impact on interaction quality. Future research would benefit from either formally monitoring how distracted mothers were by the questionnaires or asking mothers to complete the questionnaires either before or after the sorting task has been completed.

4.3.4 Observational Measurement of Control and Warmth

An established coding system for maternal behaviour was used. This was developed by Hudson and Rapee (2001) to rate maternal warmth and control, the over arching constructs that feature prominently in the aetiology of childhood anxiety (DiBartelo & Helt, 2007; Wood et al., 2003). It has been used in previous research examining the effect of parenting behaviours in childhood anxiety (De Wilde & Rapee, 2008; Hudson & Rapee, 2001; Creswell, et al., 2008) and demonstrated good internal consistency and inter-rater reliability in the current study.

4.3.5 Participants, Power and Recruitment

The inclusion of younger children (9–12 year olds) in research investigating the aetiology of OCD in children is important in developing developmentally sensitive theory and treatment of OCD. This study used a non-clinical population, which was appropriate as the study was looking at causal mechanisms for which only a non-clinical sample is appropriate. There are many advantages of using a non-clinical sample. The first advantage is the relative ease with which these samples can be recruited, allowing studies to have adequate power to test relationships between variables. The use of a non-clinical sample also means that ethical and practical constraints can be avoided (Gibbs, 1996).

However, the lack of difference between the groups of children may reflect the non-clinical nature of the sample and stronger effects may be found in children high in trait anxiety. Thirlwall and Creswell (2010) found that children's responses after a brief single interaction with their parent were heightened among children who were prone to increased trait anxiety compared to children low in trait anxiety. This supports the hypothesis that controlling behaviours may have a particularly influential role on children with pre-existing vulnerability to anxiety (Murray, Creswell & Cooper, 2009) as opposed to children low in trait anxiety.

The size of the sample was based on a power calculation which used a medium effect size (Study Three; Reynolds et al., in prep). It is possible that the present study was not powerful enough to detect between-group differences in, for example, the variables of warmth (during the task) and reassurance giving. Recruiting a larger sample size might have increased the power, but the bigger the sample, the greater the likelihood that very small effects may have been recognised as significant, making a Type I error (Field, 2000).

A further limitation of the study was the low response rate (10.3% of all those invited to take part), suggesting that the results are unlikely to be representative of the population. It is unclear whether those who took part differed systematically from those who did not respond. The response rate might have been increased by offering incentives directly to the children in addition to the incentives offered to the schools, but this would have increased the cost of the study considerably. Information packs were sent to the parents through their children and children were required to remember to give information packs to the parents and then to return the consent forms. Sending information packs directly to the parents and asking them to return consent forms directly to the researcher might have been helpful in improving the response rate. Again, however, this would have increased the cost of the study.

In terms of ethnicity, the majority of the participants were white British. Although this is representative of the geographical area, this does mean that it may be difficult to generalise the findings to a more ethnically diverse population. Further investigations are needed to understand how ethnic differences would impact on the role of inflated responsibility in OCD

4.3.6 Measures

One of the strengths of the manipulation check was that it demonstrated good internal consistency in both children and their mothers, was brief and easily understood by the children who participated. In addition, each of the subscales related theoretically to the experimental task and therefore provided an appropriate assessment of the impact of the experimental manipulation on the experimental task. However, this is the first time the manipulation check has been used with an adult population using this paradigm. The alpha value for the measure was .80,

demonstrating good reliability, however is it possible that social desirability and response bias may have affected the validity of the measure. This could be an explanation for the discrepancy between self reported levels of perceived responsibility and observations of maternal behaviours. Therefore, future research needs to consider not only the validity of the experimental manipulation, but also the validity of the manipulation check.

A range of self-report age appropriate measures with good psychometric properties were used to assess possible confounding variables in children and their mothers, such as OCD symptoms in children, maternal positive and negative affect, maternal and child responsibility beliefs in addition to gathering demographic information such as age and ethnic background. The PANAS has been used with non-clinical populations and is considered more appropriate for use in research with non-clinical samples than clinical measures such as the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) or the Beck Anxiety Inventory (BAI; Beck & Steer, 1993). The PANAS yields two scores relating to negative affect (NA) and positive affect (PA). It has been demonstrated that the NA factor and not the PA factor significantly contribute to predicting anxiety, but both factors have been shown to significantly predict depression (Crawford & Henry, 2004). An alternative measure might have been the Depression Anxiety and Stress Scale (DASS; Lovibond & Lovibond, 1993) which yields specific scores in relation to depression, anxiety and stress and is used as a research tool in non-clinical populations. The use of the DASS in this study may have offered a clearer and more direct indication of maternal mood and anxiety status compared to the PANAS. Furthermore, future research may benefit from measuring OCD symptoms in mothers as well as children.

Children were asked to complete a large number of questionnaires. It could be argued that the length of time that it took to complete these measures may have resulted in the children becoming tired and bored which could in turn have impacted on their performance during the task. In an attempt to overcome this problem, this study used a subscale of the SCAS to measure OCD symptoms, rather than a more extensive and possibly more accurate measure such as the Leyton Obsessional Inventory-Child Version (Berg et al., 1988). However, considering that OCD symptoms were not a main dependent variable in the present study, the subscale of the SCAS was deemed to be sufficient.

4.3.7 Researcher Bias

A significant strength of the study, in comparison to past research employing this paradigm, is that the researcher coding the interactions was blind to experimental condition, thereby eliminating the possibility of researcher bias and increasing the validity of the findings.

However, the researcher administering the task was aware of which experimental group the child had been allocated to and this could have resulted in systematic bias (Tilly, 1996). Ideally the researcher should be blind to this information but this was not possible. Pre-recorded instructions to parents would have eliminated such a bias.

4.3.8 Statistical Analysis

A multivariate approach was used to analyse the effect of the responsibility manipulation on the parenting constructs of warmth, control and reassurance giving. However, post-hoc univariate analyses were interpreted without multiple testing corrections. If Bonferroni corrections had been administered, the dependent variable of warmth (instructions) would have in fact been non-significant if using an

alpha level of .12; however, the variable of control would have remained significant at this alpha level. With this in mind, caution ought to be exercised when interpreting the results of the warmth (instructions phase) variable.

4.4 Interim Summary

The aim of this research was to assess whether parenting behaviours mediate the relationship between maternal responsibility beliefs and OCD symptoms in their child. Crucially, it was found that responsibility beliefs were not successfully manipulated in either mothers or children. In light of this, the findings ought to be interpreted with caution. The results of this study suggest that in a sample of mothers and their non-clinical children, maternal beliefs were causally related to maternal parenting behaviours of control and warmth whilst giving instructions, but not reassurance giving or warmth during the sorting task. Brief exposure to such parenting did not influence children's OCD-like behaviours. The finding that parenting behaviours did not affect children's behaviour in the current study is in contrast to previous research that has found a relationship between parenting behaviours and OCD symptomatology (e.g. Aycicegi, Harris & Dinn (2002); Barrett & Healy, 2003; Challacombe & Salvokskis, 2009; Ehiobuche, 1988; Study Three; Reynolds et al., in press; Valleni-Basile et al., 1995; Wilcox et al., 2008). This is the first study that has experimentally manipulated maternal beliefs in order to examine the mediating effect of parenting behaviours on OCD-like behaviours in children. It is possible that methodological flaws, as described above, go some way to explain the null findings regarding the crossover effect of maternal beliefs on child behaviours during the sorting task. Therefore the theoretical and clinical

implications will be discussed in light of the possibility that methodological issues are accountable for these null findings.

4.5 Implications of the Study

4.5.1 Theoretical Implications

Given the considerable evidence linking inflated responsibility with OCD, it is surprising that there is little research about how responsibility beliefs develop in children and the role that parenting beliefs and behaviours play in this development. Research has examined specific and direct relationships between an individual's recall of parenting and their current OCD symptoms. The current study was based on the assumption that early experiences of parenting style influence cognitive vulnerability to inflated responsibility which in turn influences the risk of developing OCD (Taylor 2002).

On the basis of Salkovskis et al.'s (1999) proposed 'pathways' to inflated responsibility and on research on parenting styles in OCD, it was hypothesised that a parenting style high in control and low in warmth would mediate the relationship between maternal responsibility beliefs and OCD beliefs and symptoms in childhood. The results of this study tentatively suggest that parenting beliefs are causally related to parenting behaviours and support the theory that maternal cognitive style influences parenting behaviours which are associated with the maintenance of OCD in children (Barrett et al., 2003; Challacombe & Salkovskis, 2009; Salkovskis, 1999). In terms of the mechanism whereby responsibility beliefs affect parenting, it could be hypothesised that anxiety brought about by perceived personal responsibility is internalised by mothers in the experimental group and then consequently externalised by way of an increase in controlling and negative

parenting behaviours. It can be cautiously inferred that the emerging pattern of parenting style in this study is consistent with the affectionless control model of anxiety development. This finding adds some strength to the theory that parental behaviour low in warmth and high in control is typical of families with an anxious parent (DiBartelo & Helt, 2007), and that these behaviours are in response to anxiety in the parent, rather than anxiety in the child (Challacombe & Salkovskis, 2009; Whaley et al., 1999).

However, it is unknown if responsibility was successfully manipulated in the current study. Therefore, theoretical implications are tentative. Regarding hypothesis one, it is possible that more general, threat-oriented beliefs were activated by the manipulation, rather than beliefs pertaining to personal perceived responsibility. Increases in control and negativity could be hypothesised to serve the same function in beliefs relating to inflated responsibility, perfectionism, intolerance of uncertainty or expectations of negative consequences; that is to shield the child from potential danger or harm (Creswell, et al., 2008). It would be important for future research to consider in more detail the mechanisms of effect of maternal beliefs on parenting styles and whether indeed different belief domains have a differential impact on parenting behaviours.

The hypothesis that maternal behaviours are causally related to child OCD-type behaviours was not supported. Potential explanations for this null finding have been discussed previously. However, the results of the current study do raise a number of theoretical implications regarding the use of non-clinical populations in examining the effect of maternal beliefs on child rearing behaviours and the crossover effect of these parenting styles on child behaviours. It is possible that the role of control and warmth in clinical versus non clinical populations differ and

these constructs serve a different function depending on the anxiety status of both members of the dyad. The function of the parent's behaviour will be an important factor in the resulting impact on the child. For example, there may be context in which behaviour considered controlling towards a non-anxious child experiencing situational anxiety is functional and indeed anxiety reducing as opposed to anxiety provoking (Rubin & Mills, 1991). Similarly, parents who are continually warm and affectionate towards an anxious child could exacerbate their child's anxiety if they provide affection even when their child displays avoidance (DiBartelo & Helt, 2007). Interestingly, Hudson and Rapee (2001) classified reassurance giving under the construct of emotional warmth in their coding manual. Salkovskis and Warwick (1986) propose that provision of unsolicited reassurance may become anxiety-provoking, as it creates doubt and uncertainty. Anxious parents may provide unsolicited reassurance to their children in order to reduce their own anxiety, but by doing so they may be inadvertently increasing their child's anxiety levels and creating the need for neutralising behaviours.

Continuing in this vein, most authors would argue for a reciprocal relationship between parental behaviours and child anxiety. Research has focussed more recently on the bi-directional nature of interactions in clinical populations; however much like the current study, these studies have examined differences by analysing the means and frequencies of parenting behaviour dimensions across the entire parent-child interaction (Hudson & Rapee, 2001; Moore, et al.,, 2004; Rapee, 2001; Siqueland, Kendall, & Steinberg, 1996; Turner, Beidel & Nay Tervo, 2003). The use of frequency counts and mean levels of behaviours could obscure critical behavioural contingency patterns within interactions in anxious and non-anxious dyads. An analysis of the dyadic behaviour patterns through the use of sequential

techniques may help to clarify the role and function of certain parenting behaviours, in particular reassurance giving/seeking (Schrock & Woodruff-Borden, 2010; Williams, Kertz, Schrock & Woodruff-Borden, 2012). Therefore, the contingent response of the parent to the child's cues and the reciprocal interaction of parent child behaviours in non-clinical, at risk and clinical groups warrants further attention.

4.5.2 Clinical Implications

The results of this study suggest that in a sample of mothers and their non-clinical children, maternal beliefs were causally related to a decrease in maternal warmth whilst reading sorting instructions and an increase in control during a sorting task. Brief exposure to such parenting did not influence children's behaviours. These results may have implications for the assessment, formulation and treatment of young people with OCD. As mentioned previously, methodological flaws may be liable for the null findings in child behaviours, therefore clinical implications are made in view of this.

This study highlights the importance of understanding the role of maternal cognitions and their impact on parenting behaviours. In this study mothers were not responding to their child's anxiety because all children, in both groups, were given the same instructions. Only mothers received differing information and thus their behaviours reflected their beliefs about the sorting task. Targeting parental cognitions may be of particular value in psychological treatment of OCD. For example, it may be beneficial to arrange sessions with parent(s) in the absence of their child in order to help parents reflect on how their thinking styles affect their parenting and their response to their child's OCD. Gaining a comprehensive understanding of parents' own beliefs and their

understanding of and response to their child's OCD behaviours would be of benefit in the assessment, formulation and intervention.

Although the family based CBT programmes described in section 1.4.3 attend to issues regarding accommodation of the rituals by the family and parental anxiety around taking a therapeutic role, family based CBT protocols do not always attend to the parents' beliefs and behaviours that in turn may contribute to the onset and/or maintenance of OCD. Although it is possible that indirectly parental control and negativity, and a mother's personal sense of inflated responsibility attitudes and beliefs are modified as a result of their inclusion in treatment, directly addressing these issues in the normal course of treatment may contribute to treatment efficacy.

However, involving parents in therapy is not without problems. Parents may feel blamed as a upshot of their cognitive and parenting style being addressed in therapy; therefore the therapist would need to be sensitive in raising such themes. Actively pursuing an alliance with the parent in addition to the child would be paramount and would allow for these more sensitive issues to be reflected on and discussed as part of the therapeutic process. Parent sessions could be used to encourage reflection on how their own individual experience of being parented has influenced their cognitive and parenting style. This may serve to reduce feelings of personal responsibility, guilt or blame. Furthermore, attitudes and beliefs held by parents that could undermine the course of treatment need to be identified and attended to with sensitivity so as not to undermine the therapeutic role that parents are expected to adopt in family based CBT protocols for OCD. In addition, the involvement of reluctant parents in the therapeutic process may result in greater family disharmony, negative interaction and conflict. These factors have been found to contribute to poor treatment outcome

(Barrett et al., 2005; Chambless & Steketee, 1999). Moreover, Kingery et al. (2006) argues that developmental issues should be considered when deciding to include parents in the treatment for anxiety disorders in children. The inclusion of parents is likely to be useful for young children who regularly view their parents as models in everyday life. However, the nature of OCD in adolescence can involve intrusive thoughts of a sexual, religious or forbidden nature, therefore CBT that does include parental involvement would need to be sensitive of such developmental issues.

Finally, it may also be beneficial for services to consider preventative early interventions to improve parental sensitivity in populations at high risk of OCD, for example infants and younger children with high temperamental vulnerability or children of parents with an anxiety disorder. Rapee, Kennedy, Ingram, Edwards and Sweeney (2005) found that support for parents of preschoolers at risk of anxiety (demonstrated by behavioural inhibition and social withdrawal) showed a significantly greater decrease in anxiety symptoms at a 12 month follow up.

4.6 Future research

The implications of this study for future research have been briefly considered throughout this chapter. The following section will offer a summary of these ideas, and make some proposals for addressing the limitations of the current study.

As already discussed, future studies ought to consider the strength of the manipulation for both mothers and children. It is of interest that the manipulation has been successful in a school setting, without mothers present. Therefore, the task could be completed in a more formal setting, such as a university or clinic. This would help ensure that participants completed the task in the same standardised

environment and the more formal setting may also facilitate a greater belief in the experimental manipulation for both mothers and their children. In addition, the use of responsibility contracts could instil a greater sense of responsibility in both mothers and children. Furthermore, the study could be repeated with the researcher reading the instructions to the child and maternal behaviours being coded during the task phase only, which may instil a greater sense of responsibility in the child.

It is possible that some mothers in the study did not believe the experimental manipulation which may indicate that this paradigm in not suitable for use with an adult population. The manipulation may have exerted a stronger effect on mothers if they had been given more context as to why the sweets were going to be given to a group of children, and why their child in particular was being asked to sort them.

It is also possible that if mothers had not believed the experimental manipulation, they may have felt uncertain rather than responsible in this task. A post-task questionnaire could be administered to mothers asking them to rate their beliefs across a number of domains, in order that the effect of the manipulation is better understood. In addition, the explanation and instructions regarding the task could have been pre-recorded, which would have reduced any researcher bias that could have been introduced. Finally, the post task state anxiety measure and the manipulation check could be administered following the instructions, but before the actual sorting task in order to ascertain the immediate effect of the manipulation on anxiety and responsibility beliefs. As mentioned previously, the easy nature of task in addition to the fact that children were allowed to take as long as they liked on the task may have reduced post task anxiety and responsibility beliefs.

The use of a non-clinical population was an intentional aspect of the experimental design. However, it is possible that the null findings regarding

children's OCD type behaviours were due to the non-clinical sample employed. It is feasible that children with OCD or children at risk of developing OCD may be more sensitive to parental style (Thirlwall & Cresswell, 2010); therefore, extension of this paradigm to a broader population would be valuable. For example, a wealth of research has repeatedly shown that behavioural inhibition is a risk factor for OCD (Coles, Schofield & Pietrefesa, 2006; Muris, Meesters, & Spinder, 2003).

The findings in the present study that mean scores of maternal control and warmth across both conditions fell under the neutral midpoint, indicating an overall autonomy granting and warm parenting style are important in considering the null findings in child behaviours. Two recent experimental studies have employed non-clinical samples to explore the causal relationship between parenting style and anxiety. Non-anxious mothers were successfully trained in both studies to act in either a controlling or autonomy granting manner (De Wilde & Rapee, 2008; Thirlwall & Creswell, 2011). De Wilde and Rapee (2008) found that children who received high levels of maternal control during a speech task, demonstrated greater anxiety in a later task than children who received minimal maternal control in the preparation phase. The demonstration that it is possible to successfully manipulate parent behaviours through training and that non-anxious children can become more anxious following brief single controlling interactions with their parent is of importance. It would be interesting to apply this method to the current paradigm in order to assess whether parents who are trained to act in an affectionless controlling manner (low warmth/high control), an affectionate controlling manner (high warmth/high control), affectionless autonomy granting manner (low warmth/low control) or an affectionate autonomy granting (high warmth/low control) elicit different behaviours in their non-anxious children.

The paradigm could also be used with different adult populations. For example, mothers with OCD may respond differently to an experimental manipulation of responsibility than mothers with another anxiety disorder and mothers without an anxiety disorder. Furthermore, the manipulation of different belief domains in parents, such as perfectionism, intolerance of uncertainty and thought action fusion would further our understanding of the differential effects of other cognitive constructs associated with OCD on parenting behaviours.

Longitudinal designs may help further our understanding of the relationship between child temperament, parenting style and OCD development in childhood. For example, Rubin, Burgess and Hastings (2002) employed a longitudinal design in order to ascertain whether inhibited temperament and parenting style in toddlerhood would be predictive of children's subsequent social and behavioural problems at age four. The study revealed that if mothers demonstrated relatively high frequencies of intrusive control and/or critical comments, then the association between their toddlers' peer inhibition and social reticence at four years was significant and positive; whereas if mothers were neither intrusive nor critical, then toddlers' peer inhibition and later reticence were not significantly associated. Thus, they found that maternal behaviours moderated the relationship between toddlers' peer inhibition and preschoolers' social reticence. Given the results of cross sectional designs demonstrating a relationship between behavioural inhibition, parenting style and OCD (for e.g. Coles, Schofield & Pietrefesa, 2006), the relationship between child temperament in toddlerhood, parenting style and OCD symtomatology in later childhood is worthy of future research.

It would be important that future research also explores the differential impact of parenting behaviours in non-anxious, anxious and at risk groups of

children in order to untangle the specificity of effect of these parenting constructs. It is necessary that future research also aims to clarify the conceptual structure of these parenting dimensions in order to tease apart the contexts in which these behaviours are potentially protective rather than harmful. A complex task given that potential protective parenting behaviours are individual and temperament specific. For example, understanding whether a particular mother responds to her child with less warmth and more control overall, or whether she is more likely to respond to specific child behaviours (or indeed a specific child) with control, will offer important insight into the impacts of these behaviours on the child and vice versa. Sequential analysis techniques may help to clarify the role of specific parenting behaviours and their impact on children (Schrock & Woodruff-Borden, 2010). Research of this nature would be particularly important in furthering understanding of family accommodation in OCD and the potential maintaining role of reassurance giving, a behaviour seen as indicative of warm parenting (Hudson & Rapee, 2001) in the anxiety literature. A more fine grained analysis of the antecedents to behaviours such as reassurance giving, will aid in our understanding of when these behaviours serve to reduce child anxiety or maintain a child's anxiety.

It was beyond the scope of the current study to assess mother-child attachment or other potentially relevant variables such as paternal and sibling psychopathology, dyadic adjustment, and other sources of stress and support for the child. In addition, future research would benefit from exploring other constructs over warmth and control that influence the intergenerational transmission of anxiety, such as vicarious learning and information transfer (Creswell, Murray, Stacey & Cooper, 2011).There is a need for future research to measure and examine the array of risk and protective factors that may potentially determine the quality of

interaction between mother and child and by extension, the risk of developing OCD. A specific risk factor such as parenting style cannot account entirely for the development of the OCD. Therefore, future research needs to consider the specificity and consistency of the role of parenting behaviours that are associated with OCD (Wood et al., 2003). For example, parental affectionless control can lead to more than one psychological problem (DiBaretlo & Helt, 2007), but it is its presence and interaction with other risk factors that perhaps determine whether a child is at risk of developing OCD. Longitudinal cohort studies will help identify the multiple risk factors involved in the development of OCD, and it is only through combining the results of experimental studies, such as the current one and longitudinal studies that firmer conclusions about the development of OCD in children can begin to be drawn.

Finally, children are often active architects of their environments; as such theories that focus wholly on the impact of parenting on anxiety in children are incomplete. Ultimately, future research in this area would benefit from the integration of top down and bottom up methodologies, in addition to a more fine grained analysis of sequential dyadic interactions in order for clinicians and researchers to better understand the complex array of family factors that serve to transmit anxiety disorders such as OCD across the generations.

4.6 Overall Summary and Conclusions

Childhood OCD is associated with disruption in social and academic functioning, co-morbid emotional and behavioural problems and family dysfunction (Piacentini et al., 2003). Inflated responsibility (Salkovskis, 1985) is proposed as a central concept in understanding the development and maintenance

of the disorder. Correlational and experimental findings suggest that beliefs and appraisals play a role in causing and maintaining OCD symptoms. Salkovskis et al. (1999) hypothesised that an inflated sense of responsibility may be learned by children through parents' explicit or implicit modelling. However, research examining the relationship between parental beliefs and behaviours and the development of OCD in children is limited. The aim of the current study was to test the impact of parenting beliefs on children's OCD-like behaviours. It was hypothesised that mothers who believed their child to have high responsibility would exhibit a more controlling and less warm parenting style than parents in a condition of no responsibility, and as a result children would display more OCD type behaviours.

The results provide mixed support for a causal link between mother's beliefs and their behaviours. Mothers in a condition of inflated responsibility displayed significantly less warmth whilst reading sorting instructions to their child and more control during a sorting task compared to mothers in a condition of no responsibility. However, no causal relationship was found between maternal beliefs and both reassurance giving and warmth during the sorting task. In addition, no causal relationship was found between parental behaviours and children's OCD type behaviours. Explanations for these null findings have been considered. Significantly, the manipulation check demonstrated that the manipulation had been unsuccessful, despite between group differences in some parenting behaviours.

This is the first study employing an experimental design that has attempted to explore the causal relationship between maternal responsibility, parenting behaviours and OCD-type behaviours in children. Therefore the

present findings must be interpreted cautiously. Nonetheless, these results have important theoretical implications regarding the causal relationship between parental beliefs and parenting behaviours that are believed to be linked to OCD development. Further experimental designs that address the limitations of the current study in addition to longitudinal research would extend understanding of the function of particular parenting behaviours in the development of OCD. This will subsequently help to develop more effective interventions for OCD in childhood.

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Appendix A: *Script for Mothers*

University of East Anglia

Do you know what a nut allergy is? (child gives answer) I have some information for you about nut allergies:

At least 1 in 50 children are allergic to nuts. If a child has a nut allergy and they eat a nut or even touch one, they will have an allergic reaction. This means that they will have a reaction such as sickness, swelling of the mouth, difficulties in swallowing, or they might collapse. It is very important that children with nut allergies do not eat or come into contact with nuts

Do you know anyone who has a nut allergy? Have you ever seen anyone having an allergic reaction to either nuts or anything else? (child gives answer)

Please listen carefully to the following instructions. It is not a test and you can ask me for help if you need to. In front of you there are 120 sweets that have all got mixed up. The blue and green sweets contain nuts. The orange and gold sweets might contain nuts. The orange and gold sweets might contain nuts, because they were made in a factory where there are nuts. The brown and white sweets do not contain any nuts. Later on, the lady will be giving the sweets to some children where one child has a nut allergy. This is why she would like you to sort the sweets based on whether they have nuts in them or not.

I would like you to sort the sweets by putting them into these containers. Put all the sweets with nuts (blue and green) into this container. The sweets that might contain nuts (orange and gold sweets) into this container. The sweets without nuts (brown and white sweets) into this container. This has been written out on a piece of paper to remind you. Take one sweet at a time without looking in the box. Work as quickly and as carefully as you can. If you are not sure, you can check the containers and change the sweets as many times as you want. After you have finished the lady will not be checking how you have sorted the sweets before she gives them to the children. Therefore it is important that you sort the sweets as carefully as possible. "

Are you clear what you need to do? Can you explain to me what you need to do, so that I can check I have been clear and that you understand? Do you have any questions? Tell me when you have finished the task (child gives answers).

Appendix B: *Letter to Head Teacher*

Name
Address

Rosie Burton
Trainee Clinical Psychologist

Norwich Medical School
Faculty of Health
University of East Anglia
Norwich NR4 7TJ
United Kingdom

Email:r.burton@uea.ac.uk
Tel: +44 (0)1603 593 312
Fax: +44 (0)1603 591132

Date

Dear (*Head Teacher*),

My name is Rosie Burton and I am a trainee clinical psychologist studying at the University of East Anglia. As part of my training, I am carrying out research with children and their mothers in East Anglia. The aim of the research is to find out more about the development of obsessive compulsive disorder (OCD) in children. In order to understand more about the development of OCD in children, it is useful to examine children who do not have mental health difficulties. Exploring psychological process in children without mental health difficulties is a good way of investigating theories about clinical problems. The research will contribute towards our understanding of the role of the family in the development of OCD and help us identify effective treatments as a result.

To do this, I am aiming to recruit children aged between 9 and 12 along with their mothers to take part in an experiment. As such, I am contacting schools to see if they would like to help me recruit children within this age range.

If mothers consent for themselves and their child to take part I would meet with the family in their own home and the experiment would take place there. Attached is an information sheet with further details. In brief, the experiment involves a sorting task in which children are asked to sort sweets depending on whether they contain nuts. Mothers are asked to read the sorting instructions to their child. This study has been approved by the UEA Faculty of Health Research Ethics Committee.

If you agree to take part, I would like to send parents information about the study and ask for their consent for their child to participate. Participation is entirely voluntary and I am experienced in working with children and have an enhanced CRB check.

If you are interested in taking part, I would like to come and see you at your school to answer any questions you might have. This is a great opportunity for schools and

children to become involved in research. In addition to this a £2 book voucher will be offered to your school for every child that participates.

Please contact me at r.burton@uea.ac.uk to confirm that you are interested in helping out with my study. We can then arrange a convenient time for me to come to the school to meet.

Thank you for taking the time to read this letter. I hope this study is of interest to you and I look forward to hearing from you.

Yours sincerely,

Rosie Burton
Trainee Clinical Psychologist
Doctoral Programme in Clinical Psychology

Supervised by:
Professor Shirley Reynolds
Clinical Psychologist

Dr Sarah Clark
Clinical Psychologist

Appendix C: *Information Sheet for Head Teachers*

University of East Anglia

Information for Head Teachers

Title of project: How does information given about a task affect children's responses in a sorting task?

Name of Researcher: Rosie Burton, Trainee Clinical Psychologist

What is this project about?

Obsessive compulsive disorder (OCD) is a very common psychological problem. It often affects children and adolescents, and can have a distressing impact on both sufferers and their families. People with OCD feel anxious much of the time. It is believed that thoughts of being responsible for causing harm to others may be a driving force behind their feelings of anxiety. Additionally, it is thought that the beliefs that parents hold could influence the way that children think, feel and behave. This project aims to examine what factors affect children's feelings of responsibility and their thoughts, feelings and behaviours when carrying out a task in which they feel responsible for any potential negative outcomes. More specifically, this research project is examining the impact of mother's responsibility beliefs and whether these beliefs can affect the behaviour, thoughts and feelings of their children.

What will the experiment involve?

Children will be given a bag of 120 sweets of six different colours (blue, green, orange, gold, brown and white). Children will be told by their mothers that the blue and green sweets contain nuts, the orange and gold sweets might contain nuts and the brown and white sweets do not contain nuts. They will be told that their task is to sort the sweets into three bowls. Children will be told that the sweets will be given to a class of children, one of whom has a nut allergy. They will be told that the researcher will not be checking the sweets before they are given to the children so they need to sort the sweets as carefully as possible.

If parents decide that they would like to take part with their child this is what will happen:

1. They will fill in a consent form
2. If their child also agrees to take part, they will need to send both the consent and assent forms back to the school. I will then collect the forms from you in person.
3. I will then call the parents at a convenient time to meet with them and their child at their home. During this telephone call I will ask them information about their child such as whether they have a nut allergy and whether they are colour blind. This is because the task involves dealing with sweets that

have nuts and sorting sweets depending on their colour. I will also ask the parents whether their child is under the care of child and adolescent mental health services (CAMHS) as I will not be recruiting children who have known mental health difficulties.

4. During the home visit, I will ask both mothers and their child to answer some questions on how they are feeling. This should take about 15 minutes.
5. I will then explain to the mothers what the sorting task involves.
6. Following this, mothers will read the sorting task instructions to their child.
7. Mothers and their children will be video-taped carrying out the task. This is to allow for another person to check the reliability of the data recording. The other person who will watch the videos will be another post-graduate research psychologist. After we have used the data the tapes will be destroyed.
8. Following the task I will discuss the purpose of the research in more depth with the mother and her child. Mothers and their children will be given the opportunity to ask any questions. Children will be given a certificate to thank them for taking part and they may take some sweets if their parent allows.

What will parents and children be told about the study?

Half of the mothers will be in the 'experimental' condition and the other half will be in the control condition. This means that half of the mothers will be aware that this is simply an experiment (the control condition) and the nuts will not be distributed to other children and the other half of mothers will not be told that this is an experiment. This will be done because we want to increase the mothers' feelings of responsibility for a potentially negative outcome. I am interested in whether the mothers in the 'experimental group' will behave differently when giving their child the instructions on the 'sorting task' to mothers who know all along that it is just an experiment. The research is also interested to see whether the children whose mothers are in the 'experimental group' behave differently during the sorting task to the children whose mothers know it is an experiment all along.

Therefore is it important that the true objective of the experiment is not revealed to parents before they have taken part in the experiment.

Following the experiment, mothers in the 'experimental' condition along with their children will be fully debriefed and the objectives of the study will be explained.

What are the potential benefits of taking part?

This is an opportunity for your school to get involved in research with the UEA that could contribute to our understanding of the role of the family in the development of OCD and help us identify effective treatments as a result.

For every child that takes part, a £2 book voucher will be given to your school. The children will receive a certificate as a thank you for taking part.

Are there any risks?

Most children enjoy taking part in the research. If any child became upset I would stop the study task immediately, remove them from the study and make sure they were OK.

Can parents and children change their mind?

Parents and children are free to withdraw consent at any point in the research.

What will happen with the results?
The results will be written up in a doctoral thesis and possibly published. No personal information will be included. Data management will follow the Data Protection Act. All children and their mothers will be identified by unique identity numbers. I will not keep any information that could identify individual parents or children to someone else. Written records will be kept in a locked cupboard at the University of East Anglia. Only my research supervisor and I will have access to the data.

Who has reviewed the study?
The University of East Anglia, Faculty of Health Ethics Committee has reviewed and approved this research. In addition I have an up to date Enhanced CRB Check (August 2011).

Who do I speak to if I have questions or if any problems arise?
If you have any questions or would like more information please contact either Rosie Burton (Trainee Clinical Psychologist) or Professor Shirley Reynolds (Clinical Psychologist):

Norwich Medical School
University of East Anglia
Norwich. NR4 7TJ
Tel: 01603 593 312
Email: r.burton@uea.ac.uk

Appendix D: *Invitation Letter to Parents*

Rosie Burton
Trainee Clinical Psychologist

Norwich Medical School
Faculty of Health
University of East Anglia
Norwich NR4 7TJ
United Kingdom

Email:r.burton@uea.ac.uk
Tel: +44 (0)1603 593 312
Fax: +44 (0)1603 591132

Dear Parent/Guardian

I am a Trainee Clinical Psychologist at the University of East Anglia. Clinical psychologists work with children and adults with a range of mental health problems. Part of their work involves conducting research in order to gain a better understanding of mental health problems and to develop better treatments.

I am writing to invite you and your child to take part in a research project. The project is looking at how mothers and their children respond to different tasks. I hope that the research will contribute to our understanding of psychological difficulties in children and help us develop effective treatments. I am interested in children who **do not** have a diagnosis of anxiety or mood disorder, and also who **are not** attending child and adolescent mental health services (CAMHS). Exploring psychological process in children without mental health difficulties is a good way of investigating theories about clinical problems.

Enclosed with this letter is some information about the research project. I would be grateful if you would take the time to read this and think about taking part. You are welcome to telephone me at any point to discuss the research or ask any questions you might have.

If you would like to take part with your child, please sign the consent form and ask your child to complete the assent form enclosed. For every child who participates in the research a £2 book voucher will be donated to the school.

Thank you for your time.

Yours faithfully,

Rosie Burton
Trainee Clinical Psychologist

Supervised by

Professor Shirley Reynolds	Dr Sarah Clarke
Clinical Psychologist	Clinical Psychologist

Appendix E: *Parent Information Sheet*

Parent/Guardian Information Sheet

I would like to invite yourself and your child to take part in a research project. Before you decide you need to know why I am doing this research and what it will involve. Please take time to read this information carefully to help you decide whether or not you would like to take part with your child. Please ask if there is anything that is not clear, or if you would like more information. Thank you for reading this.

Who am I?
I am a trainee clinical psychologist at the University of East Anglia. Clinical psychologists work with children and adults with a range of mental health problems. Part of their work involves conducting research in order to gain a better understanding of mental health problems and to develop better treatments.

Who am I looking for?
I am looking for young people aged between 9 and 12 years and their mothers. I am interested in children who **do not** have a diagnosis of anxiety or mood disorder, and also who are not attending child and adolescent mental health services (CAMHS). This is why your child has been invited to take part. Exploring psychological process in children without mental health difficulties is a good way of investigating theories about clinical problems.

What is this project about?
I am hoping to examine how mothers and their children respond to instructions regarding a sorting task. I hope that the research will contribute towards our understanding of the development of psychological difficulties in children and help us identify effective treatment.

How will my child and I be involved?
If you decide that you would like to take part with your child this is what will happen:

1. You will fill in the enclosed consent form.
2. You will need to give the enclosed information sheet and assent form to your child.
3. If your child also agrees to take part, you will need to take the completed consent and assent forms back to the school; I will then pick up your forms from the school.

4. I will then call you to arrange a convenient time to meet with you and your child at your home. During this telephone call I will ask you some information about your child such as whether they have a nut allergy and whether they are colour blind. This is because the task involves dealing with sweets that have nuts and sorting sweets depending on their colour. I also hope that this telephone conversation will be a good opportunity for you to ask me any questions about the research.
5. When I visit you at your home, I will ask you and your child to answer some questions on how you are feeling. Mothers will be required to fill out four questionnaires (a total of 86 questions) during the visit. Three of these will be completed before the task and one will be completed after the task. This should take about 15 minutes in total. Children will be required to fill out six questionnaires (a total of 84 questions). Four will be completed before the task and two will be completed after the task. This should take between 15-25 minutes.
6. I will then explain to you what the sorting task involves.
7. Following this I will ask you to read the sorting task instructions to your child. The task involves sorting sweets into containers based on whether they contain nuts or not. This task will take approximately 10 minutes to complete. Whilst your child is doing the sorting task I will also ask you to complete a short demographic information sheet and questionnaire.
8. You and your child will be video-taped carrying out the task. This is to allow for another person to check the reliability of the data recording. The other person who will watch the videos will be another post-graduate research psychologist. After we have used the data the tapes will be destroyed.
9. Following the task, your child will be asked to complete two questionnaires about their mood and I will ask you to complete one questionnaire about your mood.
10. I will then discuss the purpose of the research in more depth with you and your child. You and your child will be given the opportunity to ask any questions you may have.

Do I have to take part?
It is up to you to decide. If you decide not to take part this will not affect your child's care or education in any way.

Can I or my child change our minds?
You and your child are free to withdraw from the research at any time without having to give a reason. As already mentioned, your decision about this will not affect any aspect of your child's care or education.

Are there any risks to my child?
It is very unlikely that the task will cause your child any upset. However, if your child did become upset in any way, the task would be stopped immediately. Your child would be comforted and the reason for their distress would be discussed. If

you or your child's answers about their mood suggest that you or your child might be experiencing psychological difficulties, I would contact you and recommend that you contact your GP.

What are the potential benefits?
This is an opportunity for you and your child to contribute to improving our understanding of psychological difficulties in young people. Your child's school will receive a £2 book token for every child that takes part.

Will my taking part in the study be kept confidential?
Yes, all information about you and your child will be kept strictly confidential. The results will be analysed confidentially, and I will not use names on the computer or in the research reports. In accordance with the Data Protection Act (1998), all results will be stored securely in a locked cupboard at the University of East Anglia for five years from the date of collection.

Who has approved the study?
The study has been reviewed and approved by the Faculty of Health Research Ethics Committee at the University of East Anglia.

What is there is a problem?
If you have a concern about any aspect of this study, or you wish to discuss this study further please contact:
Rosie Burton
Norwich Medical School
University of East Anglia
Norwich. NR4 7TJ
Tel: 01603 593 312
Email: r.burton@uea.ac.uk
If you would like to speak to someone else, you can contact Professor Shirley Reynolds (Tel: 01603 593312) at the same address.

What do I need to do if I would like to take part?
You need to sign the consent form for parents. You need to give the information sheet entitled 'Information Sheet for Young People' and assent form to your child.

If you both agree to participate, please return the signed consent and assent form to your school.

Appendix F: *Consent Form*

University of East Anglia

PARENT/GUARDIAN CONSENT FORM

Title of project: How does information given about a task affect children's responses in a sorting task?

Name of Researcher: Rosie Burton, Trainee Clinical Psychologist

Please initial box

1. I confirm that I have read and understood the information sheet for the above study. ☐
2. I give permission for the researcher to telephone me to arrange a home visit ☐
3. I understand that my child's participation is voluntary and that I am free to withdraw my child at any time without giving any reason and without my child's medical care or legal rights being affected. ☐
4. I understand that the research meeting with my child will be recorded on video tape and that my child's name will not be identified on the tape. Tapes will be destroyed at the end of the project. ☐
5. I agree that my child may take part in the above study. ☐

Please complete the following:

_____	_____	_____
Name of Child	Date of Birth	Name of School
_____	_____	_____
Name of Parent/Guardian	Date	Signature
_____	_____	_____
Home Telephone Number	Mobile Number	Work Telephone Number

Appendix G: *Young Person's Information Sheet*

Information for Young People

I am doing a research project and I would like you to invite you to take part. Before you decide I would like you to read the following information. You can ask me as many questions as you like before you decide to take part.

What is research? Why is this project being done?

Research tries to find out the answers to questions. This project is to see how information given about a task can affect how children feel and act.

Why have I been asked to take part?

This project is interested in children aged between 9 and 12 years old, which is why you have been asked to take part.

What would I have to do?

If you and your mum decide that you would like to take part, this is what will happen:

- I will come and see you at home
- I will ask you some questions about your feelings
- You will complete a task, which involves sorting sweets, which is not difficult. The task will take about 10 minutes for you to finish.
- During the task you will be video-recorded. This is to check that I am recording things properly. The video tapes will be destroyed after I have finished with them.
- I will ask you some more questions about your feelings after the task.

Do I have to take part?

You do not have to take part and you can change your mind at any time, without giving a reason.

Who will know what I said?

Only the people involved in this project will know what you say. If you tell me something that is worrying you then I might share it with your parents or guardians.

Appendix H: *Assent Form*

University of East Anglia

ASSENT FORM FOR CHILDREN

Title of project: How does information given about a task affect children's responses in a sorting task?

Name of Researcher: Rosie Burton, Trainee Clinical Psychologist

Please circle 'Yes' if you agree with the statements:

Have you read (or had read to you) any information about this project?	Yes/No
Do you understand what this project is about?	Yes/No
Have you asked all the questions you want?	Yes/No
Have you had all your questions answered in a way you understand?	Yes/No
Do you understand that it is OK to stop taking part at any time?	Yes/No
Do you understand that the task will be video-taped?	Yes/No
Are you happy to take part?	Yes/No

If you want to take part, please write your name and today's date

Name of child _____

Date _____

Parent Name _____

Signature _____

Date _____

Researcher Name _____

Signature _____

Date _____

Appendix I: *Ethical Approval Letter*

Rosalind Burton
Postgraduate Research Office, room 2.30
Elizabeth Fry Building
Norwich Medical School
University of East Anglia
NR4 7TJ

Faculty of Medicine and Health Sciences
Elizabeth Fry Building, Room 2.30
University of East Anglia
Norwich NR4 7TJ

Email: margaret.rhodes@uea.ac.uk
Direct Dial: +44 (0) 1603 59 7190
Research: +44 (0) 1603 59 1720
Fax: +44 (0) 1603 59 1132

Web: http://www.uea.ac.uk

11th July 2011

Dear Rosalind

An Experimental Study to Examine the Impact of Mothers' Beliefs about Responsibility on their Children's OCD like Behaviours. Reference 2010/2011-44

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 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

Maggie Rhodes
Research Administrator

Cc Shirley Reynolds

Appendix J: *Debrief Sheet*

University of East Anglia

Debrief Sheet

Thank you very much for taking part in this study. You were told initially that the sweets that your child has been sorting will be distributed to a class of children, and that one of those children has a nut allergy. However, you have just taken part in an experiment; the sweets your child has been sorting will ***not*** be distributed to any children.

What was this study about?

Obsessive compulsive disorder (OCD) is a very common psychological problem. It often affects children and adolescents, and can have a distressing impact on both sufferers and their families. People with OCD feel anxious much of the time. It is believed that thoughts of being responsible for causing harm to others may be a driving force behind their feelings of anxiety. Additionally, it is thought that the beliefs that parents hold could influence the way that children think, feel and behave. This project aims to examine what factors affect children's feelings of responsibility and their thoughts, feelings and behaviours when carrying out a task in which they feel responsible for any potential negative outcomes. More specifically, this research project is examining the impact of mother's responsibility beliefs and whether these beliefs can affect the behaviour, thoughts and feelings of their children.

How was I involved?

You were randomly allocated to the 'experimental group' in this study. This means that you were told that the sweets your child sorted would be passed onto a classroom of children in which one child has a nut allergy. We did this because we wanted to increase your feelings of responsibility for a potentially negative outcome. Half of the mothers in this study were allocated to the 'control group' and were told by the experimenter that this was just an experiment and that the sweets would not be passed onto any other children. I was interested in whether the mothers in the 'experimental group' behaved differently when giving their child the instructions on the 'sorting task' to mothers who knew all along that it was just an experiment. The research is also interested to see whether the children whose mothers were in the 'experimental group' behaved differently during the sorting task to the children whose mothers knew it was an experiment all along.

The research you have taken part in today will contribute towards our understanding of the role of the family in the development of OCD and help us identify effective treatments as a result.

Many thanks again for taking part, if you do have any questions or want to talk anything through then please contact me on:

Rosie Burton
Norwich Medical School
University of East Anglia
Norwich. NR4 7TJ
Tel: 01603 593312
Email: r.burton@uea.ac.uk

If you would like to speak to someone else, you can contact Professor Shirley Reynolds (Tel: 01603 593312) at the same address.

Address

Rosie Burton
Trainee Clinical Psychologist

Norwich Medical School
Faculty of Health
University of East Anglia
Norwich NR4 7TJ
United Kingdom

Email:r.burton@uea.ac.uk
Tel: +44 (0)1603 593 312
Fax: +44 (0)1603 591132

Date

Dear Mr/Mrs

Re: Research examining how information given about a task affects children's responses in a sorting task

Thank you once again for agreeing to take part in my study. As you know when I met with (name of child) he/she completed some questionnaires. One of those asked about his/her fears and worries. (Name of the child) reported that he/she was worried about more things than most children of his/her age. Sometimes the questions are not very accurate for a particular child or the fears they report might be short lived. However, if you are concerned about (name of child) you may find it useful to talk to your GP or his/her teacher.

Thank you for your help and please get in touch with me if you have any questions about this letter or the study.

Yours sincerely,

Rosie Burton
Trainee Clinical Psychologist

Supervised by:
Professor Shirley Reynolds
Clinical Psychologist

Dr Sarah Clarke
Clinical Psychologist

Appendix L: *Demographic Questionnaire*

University of East Anglia

BACKGROUND QUESTIONNAIRE

Please complete the following information about yourself circling the correct response.

1. How old are you? _____ years

2. How would you describe your ethnic group? (please circle)

White	**Mixed**	**Asian or Asian British**	**Black or Black British**	**Chinese of other ethnic group**
British	White & Black Caribbean	Indian	Caribbean	Chinese
Irish	White & Black African	Pakistani	African	Other Ethnic Group
Other White	White & Asian	Bangladeshi	Other Black	
		Other Asian		

Thank you for your help

Appendix M: *Demographic Questionnaire*

University of East Anglia

BACKGROUND QUESTIONNAIRE

Please complete the following information about your child by circling the correct response.

3. Is your child a boy or a girl Boy/Girl

4. How old is your child?

_____ years

5. How would you describe your child's ethnic group? (please circle)

White	**Mixed**	**Asian or Asian British**	**Black or Black British**	**Chinese of other ethnic group**
British	White & Black Caribbean	Indian	Caribbean	Chinese
Irish	White & Black African	Pakistani	African	Other Ethnic Group
Other White	White & Asian	Bangladeshi	Other Black	
		Other Asian		

6. Is your child colour blind? Yes/No
(We ask this as the task involves sorting things based on their colour)

7. Does your child have any allergies? Yes/No
(We are interested in whether this will impact the sorting task)

If yes, what are they allergic to?

8. Does anyone in your family have an allergy? Yes/No

If yes, what are they allergic to?

Appendix N: *PANAS Questionnaire*

This scale consists of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word. **Indicate to what extent you feel this way right now, that is, at the present moment.**

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

Interested	_____	Irritable	_____
Distressed	_____	Alert	_____
Excited	_____	Ashamed	_____
Upset	_____	Inspired	_____
Strong	_____	Nervous	_____
Guilty	_____	Determined	_____
Scared	_____	Attentive	_____
Hostile	_____	Jittery	_____
Enthusiastic	_____	Active	_____
Proud	_____	Afraid	_____

Appendix O: *Responsibility Attitudes Scale*

Responsibility Attitudes Scale (RAS)

This questionnaire lists different attitudes or beliefs which people sometimes hold. Read each statement carefully and decide how much you agree or disagree with it. For each of the attitudes, show your answer by putting a circle round the words which BEST DESCRIBE HOW YOU THINK. Be sure to choose only one answer for each attitude. Because people are different, there is no right or wrong to these statements.

To decide whether a given attitude is typical of your way of looking at things, simply keep in mind what you are like MOST OF THE TIME.

1. I often feel responsible for things which go wrong.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

2. If I don't act when I can foresee danger, then I am to blame for any consequences if it happens.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

3. I am too sensitive to feeling responsible for things going wrong.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

4. If I think bad things, this is as bad as *doing* bad things.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

5. I worry a great deal about the effects of things which I do or don't do.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

6. To me, not acting to prevent danger is as bad as causing a disaster.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

7. If I know that harm is possible, I should always try to prevent it; however unlikely it seems.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

8. I must always think through the consequences of even the smallest actions.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

9. I often take responsibility for things which other people don't think are my fault.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

10. Everything I do can cause serious problems.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

11. I am often close to causing harm.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

12. I must protect others from harm.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

13. I should never cause even the slightest harm to others.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

14. I will be condemned for my actions

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

15. If I can have even a slight influence on things going wrong, then I must act to prevent it.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

16. To me, not acting where disaster is a slight possibility, is as bad as making that disaster happen.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

17. For me, even slight carelessness is inexcusable when it might affect other people.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

18. In all kinds of daily situations, my inactivity can cause as much harm as deliberately bad intentions.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

19. Even if harm is a very unlikely possibility, I should always try to prevent it at any cost.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

20. Once I think it is possible I have caused harm , I can't forgive myself.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

21. Many of my past actions have been intended to prevent harm to others.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

22. I have to make sure other people are protected from all the consequences of my actions.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

23. Other people should not rely on my judgement.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

24. If I cannot be *certain* I am blameless, I feel that I am to blame.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

25. If I take sufficient care then I can prevent harmful accidents.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

26. I often think that bad things will happen if I am not careful enough.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

Appendix P: *The Spence Children's Anxiety Scale*

PLEASE PUT A CIRCLE AROUND THE WORD THAT SHOWS HOW OFTEN EACH OF THESE THINGS HAPPEN TO YOU. THERE ARE NO RIGHT OR WRONG ANSWERS.

1. I worry about things.....…….Never Sometimes Often Always
2. I am scared of the dark.....…….....Never Sometimes Often Always
3. When I have a problem, I get a funny feeling in my stomach……...Never Sometimes Often Always
4. I feel afraid.....……..… Never Sometimes Often Always
5. I would feel afraid of being on my own at home.....…….....Never Sometimes Often Always
6. I feel scared when I have to take a test.....…….....Never Sometimes Often Always
7. I feel afraid if I have to use public toilets or bathrooms.....….....Never Sometimes Often Always
8. I worry about being away from my parents.....…….....Never Sometimes Often Always
9. I feel afraid that I will make a fool of myself in front of people.....Never Sometimes Often Always
10. I worry that I will do badly at my school work.....…….....Never Sometimes Often Always
11. I am popular amongst other kids my own age.....…….....Never Sometimes Often Always
12. I worry that something awful will happen to someone in my family.....Never Sometimes Often Always
13. I suddenly feel as if I can't breathe when there is no reason for this..... Never Sometimes Often Always
14. I have to keep checking that I have done things right (like the switch is off, or the door is locked).....…… ....Never Sometimes Often Always
15. I feel scared if I have to sleep on my own.....……...Never Sometimes Often Always
16. I have trouble going to school in the mornings because I feel nervous or afraid.....……....Never Sometimes Often Always
17. I am good at sports.....…….....Never Sometimes Often Always
18. I am scared of dogs.....……..Never Sometimes Often Always
19. I can't seem to get bad or silly thoughts out of my head...…….....Never Sometimes Often Always
20. When I have a problem, my heart beats really fast....…….....Never Sometimes Often Always
21. I suddenly start to tremble or shake when there is no reason for this... .....Never Sometimes Often Always
22. I worry that something bad will happen to me...….....…….Never Sometimes Often Always
23. I am scared of going to the doctors or dentists.....……...Never Sometimes Often Always
24. When I have a problem, I feel shaky.....…….....Never Sometimes Often Always
25. I am scared of being in high places or lifts (elevators)……....Never Sometimes Often Always
26. I am a good person.....……..... Never Sometimes Often Always

27. I have to think of special thoughts to stop bad things
from happening (like numbers or words).....……Never Sometimes Often Always
28 I feel scared if I have to travel in the car, or on a
bus or a train.....Never Sometimes Often Always
29. I worry what other people think of me.....…….....Never Sometimes Often Always
30. I am afraid of being in crowded places (like shopping centres, the
movies, buses, busy playgrounds).....……..Never Sometimes Often Always
31. I feel happy.....……..Never Sometimes Often Always
32. All of a sudden I feel really scared for no reason at all……..Never Sometimes Often Always
33. I am scared of insects or spiders.....…….....Never Sometimes Often Always
34. I suddenly become dizzy or faint when there is no reason for this.....Never Sometimes Often Always
35. I feel afraid if I have to talk in front of my class....……Never Sometimes Often Always
36. My heart suddenly starts to beat too quickly for
no reason…….....Never Sometimes Often Always
37. I worry that I will suddenly get a scared feeling when there is nothing
to be afraid of.....…….....Never Sometimes Often Always
38. I like myself.....…… Never Sometimes Often Always
39. I am afraid of being in small closed places, like tunnels or
small rooms..... Never Sometimes Often Always
40. I have to do some things over and over again (like washing my hands,
cleaning or putting things in a certain order)...…… Never Sometimes Often Always
41. I get bothered by bad or silly thoughts or pictures in my mind….. Never Sometimes Often Always
42. I have to do some things in just the right way to stop bad things
happening.....……..Never Sometimes Often Always
43. I am proud of my school work.....…….....Never Sometimes Often Always
44. I would feel scared if I had to stay away from home overnight… Never Sometimes Often Always
45. Is there something else that you are really afraid of?.....…….....YES NO
Please write down what it is

How often are you afraid of this thing?.....…… Never Sometimes Often Always

Child Responsibility Attitude Scale (CRAS)

This questionnaire lists beliefs which people sometimes have. Read each statement carefully and decide how much you agree or disagree with it. For each of the beliefs, put a circle round the words which **BEST DESCRIBE HOW YOU THINK**. Choose only one answer for each attitude. Because people are different, there are no right or wrong answers. To decide whether a given attitude is like your way of looking at things, simply keep in mind what you are like **MOST OF THE TIME**.

1. I often feel responsible for things that go wrong.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

2. If I think bad things, this is as bad as doing bad things.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

3. I worry a lot about what might happen because of things that I do or don't do

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

4. Not stopping bad things happening is as bad as making them happen.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

5. I should always try to stop harm happening, when I have thought it might.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

6. I must always think through what might happen as a result of even the smallest things I do

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

7. I often take responsibility for things which other people don't think are my fault

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

8. Everything I do can cause serious problems.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

9. I often nearly cause harm

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

20. I often think that bad things will happen if I am not careful enough.

TOTALLY AGREE	AGREE VERY MUCH	AGREE SLIGHTLY	NEUTRAL	DISAGREE SLIGHTLY	DISAGREE VERY MUCH	TOTALLY DISAGREE

Appendix R: *Children's Manipulation Check (Pre-Task)*

I am interested in how you feel and what you think about the task you are about to do. Please read the following statements carefully and circle the number that shows how much you agree or disagree with the statements.

0 Completely disagree

1 Mostly disagree

2 Neither agree or disagree

3 Mostly agree

4 Completely agree

	Completely disagree	**Mostly disagree**	**Neither agree or disagree**	**Mostly agree**	**Completely agree**
It's likely that something bad will happen	0	1	2	3	4
Something really bad will happen now	0	1	2	3	4
It will be my fault if bad things happen	0	1	2	3	4
Other people are likely to be harmed in some way	0	1	2	3	4
Something really bad will happen to other people	0	1	2	3	4
I could cause something bad to happen to others	0	1	2	3	4

Apppendix S: *Children's Manipulation Check (Post Task)*

I am interested in how you feel and what you think about the task you have just done. Please read the following statements carefully and circle the number that shows how much you agree or disagree with the statements.

5 Completely disagree

6 Mostly disagree

7 Neither agree or disagree

8 Mostly agree

9 Completely agree

	Completely disagree	**Mostly disagree**	**Neither agree or disagree**	**Mostly agree**	**Completely agree**
It's likely that something bad will happen	0	1	2	3	4
Something really bad is going to happen	0	1	2	3	4
It will be my fault if bad things happen	0	1	2	3	4
Other people are likely to be harmed in some way	0	1	2	3	4
Something really bad will happen to other people	0	1	2	3	4
I could cause something bad to happen to others	0	1	2	3	4

Appendix T: *Maternal Manipulation Check*

University of East Anglia

I am interested in what you think about the task your child has just done. Please read the following statements carefully and circle the number that shows how much you agree or disagree with the statements.

10 Completely disagree

11 Mostly disagree

12 Neither agree or disagree

13 Mostly agree

14 Completely agree

	Completely disagree	**Mostly disagree**	**Neither agree or disagree**	**Mostly agree**	**Completely agree**
It's likely that something bad will happen	0	1	2	3	4
Something really bad is going to happen	0	1	2	3	4
I will be to blame if something bad were to happen	0	1	2	3	4
Other people are likely to be harmed in some way	0	1	2	3	4
Something really bad will happen to other people	0	1	2	3	4
I will be responsible if something bad were to happen to others	0	1	2	3	4

Appendix U: *Coding Manual*

Overview

Each parent-child interaction is rated on nine global scales. The nine scales load clearly on two factors, **Control** and **Warmth**.

The control factor consists of the following scales:

(i) the general degree of parental involvement;

(ii) the degree of unsolicited help;

(iii) the degree to which the parent physically touches the sweets, containers and key;

(iv) the parent's posture;

(v) the parent's focus during the interaction.

The control factor represents an overall measure of the degree of help the parent gave during the task. High scores indicate excessive involvement. To determine the degree of parental control, calculate the parent's average score across the five scales.

Scores on the Warmth factor were calculated from the following global scales:

i) general mood/atmosphere of the interaction;

ii) parent's degree of positive affect;

iii) parent's tension;

iv) parent's degree of verbal and non-verbal encouragement/ criticism.

High scores on this factor indicate that the interaction lacked warmth. To determine the degree of parental warmth, calculate the parent's average score across the four scales.

General notes for coding

The coder must watch the interaction in its entirety before making the ratings on each scale. It is helpful first to decide which half of the scale the interaction belongs and then decide exactly which rating is appropriate. Broadly speaking, ratings of zero to three are used to code the more positive interactions, while ratings of 5 to 8 are used to code negative interactions. The 'four 'on the scale represents a neutral category and is used when neither a 3 nor a 5 are appropriate.

Parent/Child Interaction Coding Sheet

Subject No: Parent

WARMTH

General Mood

0	2	4	6	8
very positive/ comfortable	moderately positive	neutral	moderately negative	very negative/ tense

Parent's affect

0	2	4	6	8
very positive	moderately positive	neutral	moderately negative	very negative

Parent's Tension

0	2	4	6	8
very relaxed	moderately relaxed	neutral	moderately tense	very tense

Response to Child

0	2	4	6	8
very encouraging	moderately encouraging	neutral	moderately critical	very critical

Control

General Degree of Involvement

0	2	4	6	8
very uninvolved	moderately uninvolved	neutral	moderately overinvolved	very overinvolved

Unsolicited Help

0	2	4	6	8
No help at all	A little help (perhaps solicited)	neutral	overintrusive	very overintrusive

Touching of Sweets, Containers and Key

0	2	4	6	8
No touching at all	a little touching (once-not intrusive)	neutral	moderate touching and moving	A lot of touching and moving

Position/Posture

0	2	4	6	8
sitting right back	sitting back	neutral	leaning on table	leaning on table/ almost over child

Parent's focus

0	2	4	6	8
very child focused	child focused and mildly task focused	neutral	task focused and mildly child focused	very task focused

Warmth Scales

General Mood

0———————2———————4———————6———————8

very positive/ comfortable	moderately positive	neutral	moderately negative	very negative/ tense

This scale measures the general mood or the atmosphere between parent and child. Generally, rate above four if there is hostility, frustration, sadness or anger during the interaction and below four if the mood is comfortable and positive.

Zero The interaction is very positive. The parent is focused on the child and not concerned about the completion of task. The interaction is characterised by a lot of laughter or smiles. There is no evidence of stress. The parent appears confident in the child. There may be a lot of eye contact or positive communication between the dyad.

One The dyad is enjoying the task. They may laugh or smile together. The communication is free and positive. The interaction is warm and positive. No tension is evident.

Two Some smiles are visible. Some tension may be evident but the parent is supportive of the child. The child is comfortable with the parent.

Three The dyad is comfortable with each other. Some tension is present but no frustration or hostility. There may be minimal communication between the dyad (aside from the parent giving help).

Four There are no obvious expressions of happiness or sadness. The interaction is at times uncomfortable but there are no obvious expressions of anger or tension.

Five The interaction is not comfortable. There may be an incident in which the parent is critical or frustrated with the child or the child responds sharply towards the parent or is unresponsive or irritable with the parent. The parent

is discouraging or responds with a critical remark. The parent is also likely to be tense. Consider tone: short and direct.

Six The parent or child shows a few signs of negativity or hostility. The child may ignore the parent. There are a couple of incidents of criticism, irritability, frustration or impatience with the child.

Seven There are several incidents of criticism from either the parent or the child. The criticism may be more intense and more continual. The parent or the child may raise their voice.

Eight The parent yells at the child or may humiliate the child. The child may be aggressive or become tearful. The interaction is extremely uncomfortable.

Parent's Affect

0———————2———————4———————6———————8

very positive	moderately positive	neutral	moderately negative	very negative

This scale is designed to measure the parent's affect over the whole interaction. The coder should observe the parent's facial expressions, the tone of the parent's voice and body language. Generally, rate above four if the parent is angry or hostile and below four if the parent appears positive and happy.

Zero The parent is very happy and very relaxed. There is no evidence of tension. The parent laughs or smiles frequently with the child.

One The parent is happy and relaxed. The parent is laughing or smiling and having fun with the child.

Two The parent may smile a couple of times.

Three The parent is somewhat happy. The parent's facial expression rather than smiling may be one of concentration or seriousness.

Four The parent does not show obvious expressions of positive or negative affect. The parent is uncomfortable and tense but no obvious signs of anger or hostility. However, the parent is not happy.

Five The parent may appear sad, withdrawn or indifferent. However, there are no obvious outbreaks of hostility or negativity from parent. The parent is neither happy nor comfortable.

Six The parent may express negativity toward the child, through a critical comment or an expression of frustration with the child. Note tone: may be impatient or snappy.

Seven The parent may be angry with the child may correct the child in a negative way. The parent may be very impatient with the task and with the child. Some aggression may be apparent.

Eight The parent is very aggressive and angry towards the child. The parent is very critical and may raise his/her voice or frighten the child.

Tension

0————————2————————4————————6————————8

very relaxed	moderately relaxed	neutral	moderately tense	very tense

This scale measures the degree of tension displayed by the parent. The coder should observe the parent's facial expressions, the tone and pace of the parent's voice, body language and behaviours such as watching the clock, reference to key. Generally, rate above four when tension is detected and below four if the parent is calm and relaxed.

Zero There is no tension apparent at all. The parent is very relaxed and has complete confidence in the child. The parent is not at all concerned about the task.

One The parent is relaxed and is not pressured by the time. The parent has a relaxed posture and makes eye contact with the child.

Two The parent is relaxed and is focused on the task but not stressed by the task.

Three The parent is focused on the task but does not appear tense and is reasonably relaxed.

Four The parent is not obviously tense or relaxed.

Five The parent does not seem relaxed, however, the tension may be a result of the test situation or because of the presence of the video. The tension only slightly interferes with the parent's ability to support the child.

Six The parent is tense and uncomfortable. The parent watches the clock and looks frequently at the answer sheet. The parent is concerned about the accurate completion of the task. The tension interferes with the parent's support for the child.

Seven The parent is obviously tense. The parent is seated rigidly and may be clenching his/her hands. The parent is rushing the child and may provide short, tense responses to the child. The parent does not seem sure of his/her ability to help the child. The parent is very focused on the answer sheet and on the task. The tension interferes with the interaction between the parent and child in an excessive way.

Eight The parent is extremely tense. The parent is incapacitated by his/her tension regarding the task. The child notices the parent's tension. The parent cannot provide help adequately or appropriately because of his/her extreme level of tension.

Response to child

0————————2————————4————————6————————8

very encouraging	moderately encouraging	neutral	moderately critical	very critical

This scale measures the degree to which the parent encourages or is critical towards the child. Both non-verbal and verbal responses are coded. Generally, rate above four if the parent is critical or negative and below 4 if the parent is warm and positive.

Zero The parent almost continually encourages the child and responds positively in both verbal and non-verbal ways. The mood between the parent and child is very warm and positive.

One The parent frequently encourages the child while the child is working on the task and has a positive attitude towards the child and the progress he/she makes. The parent shows genuine happiness when the child finishes the task and pays a lot of compliments to the child.

Two The parent encourages the child once or twice while the child is working on the task and pays a compliment to the child when he/she finishes the task. The mood between the parent and child is warm and positive and the parent seems relatively relaxed.

Three The parent may not verbally respond to the child's progress, but the mood between child and parent is warm and positive. The parent might pay a compliment to the child when he/she finishes a task or may nod a couple of times.

Four The parent's response to the child and the child's progress is rather neutral. The parent neither discourages nor encourages the child.

Five The overall mood between the parent and child is somewhat negative or tense. The parent may not be overtly negative, but the parent's response

may inhibit the child's progress. Body language and tense silences are important indicators. The parent might nod or respond positively when the child finishes a task, but does so with little enthusiasm (short and hurried).

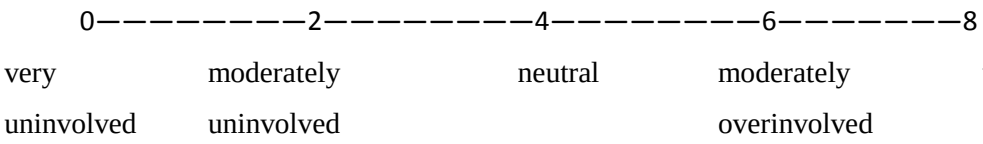
Six The parent makes critical comments on the child's progress. The mood between the parent and child is moderately tense, and there are few positive interactions. The child is visibly aware of the parent's negative attitude towards him/her.

Seven The parent repeatedly criticises the child's progress and visibly discourages the child. The child is intimidated by the parent's negative attitude towards him/her, which negatively influences his/her progress with the task. There is no positive interaction at all.

Eight The parent is continuously critical of the child's progress and intimidates the child. The interaction is very tense and the child is noticeably very upset by the parent's behaviour. The child might withdraw and let the parent take over the task.

Control Scales

General Degree of Involvement



This scale measures the general degree of parental involvement over the whole interaction. This scale includes both solicited and unsolicited help. An important indicator for this scale is whether the parent allows the child to complete the task on his/her own. Behaviours such as touching the sweets and containers weigh heavily on this measure. Generally rate above 4 (overinvolved) if the parent does not allow the child to complete the task or if the parent hovers over the child, wanting and waiting to move the sweets. Rate below four if the child is given the opportunity to complete the task on their own.

Zero No help is given to the child what so ever. The parent gives no verbal instructions and has no physical contact with the sweets or containers.

One The parent gives minimal help to the child such as nodding. The child is able to complete the task on his/her own.

Two The parent gives a small suggestion and provides support for the child (e.g. nodding) but does not assist the child in completing the task.

Three The parent gives one or two verbal suggestions. The parent may align key and containers. The child is able to complete the task on his/her own.

Four The parent provides verbal help or directions but the help is neither uninvolved nor overinvolved.

Five The parent provides assistance before the child has had the opportunity to try out a piece. The parent may touch the containers or sweets or gives verbal instructions.

Six The parent is moderately over-involved in the task and gives the child too much direction. The parent may at times, 'hover' over the task, touch the sweets, containers or key or provide verbal help. The completion of the task is a joint venture, rather than being the child's task.

Seven The parent 'takes over' the task either physically (placing sweets in containers) or verbally (telling the child what containers to put the sweets in). The parent completes parts of the task for the child. The parent is very controlling. Even if the parent does not touch the sweets or containers the parent provides constant intrusive verbal instruction. The child is not completely in control of the task.

Eight The parent completely takes over the task on several occasions: putting sweets in containers etc. The child may actually sit back from the table while the parent completes the task. The child may appear overwhelmed by the parent's intrusiveness.

Unsolicited help

0————————2————————4————————6————————8

No help at all	A little help (perhaps solicited)	neutral	overintrusive	very overintrusive

This scale measures the degree to which the parent helps the child when it is not needed. The parent may help the child but only when he/she is really struggling. This behaviour would not be coded as intrusive. However, sometimes the child might be struggling and the parent then takes over and gives the child far more help than is necessary. This behaviour would be coded as intrusive. Rate above four when the task, or part of the task, is taken over by the parent.

Zero The parent gives no unsolicited help at all.

One The parent might nod or express confirmation in other ways ("mmhh"). The parent might touch the sweets or containers (once) to enable clearer vision.

Two The parent gives the child a little help (once). The child may have requested the help or the child may have been struggling. The parent gives the child help and then sits back. The help is not intrusive.

Three The parent helps the child a couple of times when he/she is struggling. The help is not intrusive. The parent may use more open-ended questions, as opposed to directions. The parent helps the child once or touches the sweets or containers when the child did not really need any help.

Four The parent helps the child a couple of times when the child would have succeeded without the help.

Five The parent offers suggestion/directions too quickly before the child has a chance. The parent might not say or do so much but still seems somewhat overinvolved i.e. by closely monitoring the task, ready to intervene.

Six The parent is quite controlling. The parent offers some direct suggestions. The child is given more help than needed. The parent closely monitors how well the task is going and appears to be ready to interfere at anytime. The parent obviously tries to restrain him/herself from actually intervening, but verbally directs the child by giving hints.

Seven The parent may start intervening at an early stage in the task and may be fairly overintrusive throughout the remainder of the task. The parent does not sit back once the help is given but stays “on top” of the task. The child is given far more help than needed and the parent overrules the child’s input at times. The help given by the parent is very controlling and direct.

Eight The task is almost completely taken over by the parent. The child is not given the opportunity to complete the task on his or her own. The parent completes the task, even though the child may be willing to finish it. The parent is extremely intrusive.

Touching of Sweets or Containers

0————————2————————4————————6————————8

No touching at all	a little touching (once-not intrusive)	neutral	moderate touching and moving	A lot of touching and moving

This scale measures the degree of the parent's touching of the sweets and containers. It is not a quantitative measure but qualitative. The parent may touch a sweet only once but you may sense that the parent has been holding back from touching them. Or, the parent may not touch the sweets during the task but as soon as the child has finished the parent may grab them and pack them away in an intrusive manner. When these behaviours are exhibited then rate above 4.

Zero The parent does not touch the sweets, containers or key at all..

One The parent accidentally touches a container or sweet while pointing something out to the child or picking up a sweet from the floor.

Two The parent touches a sweet (once) to enable clearer vision. The touching is not intrusive.

Three The parent touches sweets two or three times to enable clearer vision.

Four The parent touches the sweets or containers a couple of times in a way that does not directly create an advantage for the child but slightly influences the child's progress in a positive way.

Five The parent moves a container or key in a rather directive way that creates an advantage for the child. The parent does not, however, put sweets into the container. Also, the parent may touch the containers or sweets in a fairly unintrusive way but does this quite frequently whereby exerting some influence.

Six The parent may touch a container, sweet or the key, in a fairly intrusive way (for example by pointing out the correct container), but you may sense that the parent has been holding back from touching the container. The parent may not actually complete parts of the task but the parent appears tempted to do so.

Seven The parent completes part of the task for the child by putting sweets into the correct container. The parent may also appear to be holding back from touching sweets or containers but does not actually manage to do this.

Eight The parent completes most of the task for the child, continually touching sweets and containers, physically putting sweets into containers.

Position

0————————2————————4————————6————————8

sitting right back	sitting back	neutral	leaning on table	leaning on table/ almost over child

This scale measures the position of the parent at the table, i.e. Is the parent seated back from the child, leaning back in his or her chair? OR Is the parent hovering over the child, seated right at the table? Generally, rate above four if the parent is leaning on the table.

Zero The parent is leaning all the way back (sinking back) in the chair, seated back from child, throughout the whole task.

One The parent is seated all the way back from the table, leaning against the back of the chair (slightly sinking back).

Two The parent is seated away from table, sitting fairly straight with his/her back leaning against the chair.

Three The parent is sitting straight in the chair during most of the task, quite closely to the table but without actually leaning on the table.

Four The parent moves back and forward between position 3 (or 2) and 5.

Five The parent is sitting straight in the chair without touching the back of the chair. The parent's hands are leaning on the table (while holding answer sheet).

Six The parent is seated right at the table with his or her arms leaning on the table. The parent is slightly leaning over the table.

Seven The parent is seated right at the table and occasionally hovers over the table. The parent is leaning with his or her arms on the table and is seated quite closely to child.

Eight The parent is seated right at the table and is hovering over the child with his or her upper body.

Parent's Focus

0————————2————————4————————6————————8

very child focused	child focused and mildly task focused	neutral	task focused and mildly child focused	very task focused

This scale measures the focus of the parent's attention. A parent is *'task focused'* when he/she is concerned and worried about the accurate completion of the task. On the other hand, a parent is *'child focused'* when the parent's attention is on the child, the child's progress or how the child is responding to the task. Generally, rate below four if the parent is child focused. The degree to which they are additionally task focused increases as the ratings increase. Code above four when the parent is task focused and below four if the parent is child focused. The degree to which they are additionally child focused decreases as the ratings increase. An important indicator is the parent's eye contact.

Zero The parent only has eyes for the child. There is no time pressure whatsoever. The parent might look at the task objects, but is not concerned at all about how well the task is being completed. The parent comments on how the child is responding to the task and encourages the child when needed. The parent takes time to pay a compliment to the child on the progress being made or on his/ her attempts to finish the task. The parent might also take the time to explain something about the task to the child.

One The parent is focused on the child throughout the interaction. The parent might even forget about the answer sheet and does not seem concerned about finishing the task. The parent does not keep track of time. When the child has finished a task, the parent takes the time to pay a compliment to the child and allows the child to prepare for the next task. The parent might explain something to the child about the task. The parent encourages the child to finish the task him/herself, without putting time pressure on the child.

Two The parent looks at the child regularly, especially at times when the child seems to experience some difficulties. The parent might only look at the key when the child needs help. The parent follows the child's progress to be able to support the child if needed, rather than being focused on completion of the task. The parent looks at the child just before he/she commences the test. The parent does not seem to be concerned about finishing the task. The parent encourages the child to finish the task him/herself, without putting time pressure on the child.

Three The parent looks a couple of times at the child to see how he or she is going and might look at the child just before he/she commences the task. The parent may look at the task frequently but not all the time. The parent does not check the time.

Four There are no obvious signs of being more focused on the child or the sorting task. The parent might look at the child once or twice. The parent is aware of the time, yet holds a slightly remote position throughout the task.

Five The parent gives the child little eye contact. Occasionally the parent may look at the child when they are talking to each other. When a task is finished the parent might make a short positive comment.

Six The parent is quite focused on the task and might only look at the child when being asked a question or when a task is completed. The parent follows the task closely and is likely to intervene quickly when the child hesitates a little.

Seven The parent is very much focused on the task. The parents regularly checks the containers, continually looking at the key. There is very little contact with the child. Any interaction initiated by the parent is focused on the completion of the task. The parent almost seems to forget that it is the child who should complete the task. The parent is so occupied with finishing the task that the child's response to the task is hardly being monitored.

Eight The parent only has eyes for the task. There is no contact with the child in any way. The parent is solely focused on the key, sweets and containers.

Appendix V: *Data Requiring Transformation*

The variables with significant skew and/or kurtosis are flagged in the following tables.

Children's Covariate Measures

Table 11. Skew and kurtosis statistics for the SCAS and CRAS.

	Skew	SE	Kurtosis	SE
			SCAS TOTAL	
Whole Group	1.05*	.38	1.95*	.75
Control	1.32	.52	1.80	1.01
Experimental	-.07	.52	-.37	1.01
			SCAS OCD	
Whole Group	1.18	.38	2.00*	.75
Experimental	.15	.52	.66	1.01
Control	1.03	.52	.67	1.01
			CRAS	
Whole Group	.87	.38	1.28	.75
Control	.69	.52	.31	1.01
Experimental	.76	.52	.66	1.01

**p<.01*

Note. N=38

The distribution of the Total SCAS for the whole group was significantly positively skewed and had significant kurtosis. In addition, the whole group distribution on the OCD subscale had a significant positive kurtosis. However, the data were normally distributed for both groups on the SCAS total and the OCD subscale. Analysis compared the scores by group, therefore transformation was deemed unnecessary. The data were normally distributed for the CRAS.

Maternal Covariate Measures

The skew and kurtosis data for the PANAS and RAS are presented in Table 12. The data for the positive subscale of the PANAS were normally distributed. The data for the negative subscale were significantly positively skewed and had significant kurtosis. Log transformations did not improve the distribution therefore scores were analysed using non-parametric tests. The data for the RAS were normally distributed.

Table 12 . Skew and kurtosis statistics for the PANAS and RAS

	Skew	Kurtosis
		PANAS-P
Whole Group	-.766	.49
Control	-.84	.80
Experimental	-.75	.56
		PANAS-N
Whole Group	1.85*	3.16*
Control	1.80*	2.91*
Experimental	1.87*	3.50*
	RAS	
Whole Group	.43	-.43
Control	.60	-.13
Experimental	.45	-.59

**p<.01*

Note. N=38

Manipulation Checks

The skew and kurtosis data for the child manipulation checks are presented in Table 13. The child distributions were normally distributed. The distribution for the maternal whole group was positively skewed, however as whole group data were not entered into the analysis, transformation was deemed unnecessary.

Table 13. Skew and kurtosis statistics for the manipulation check (total)

	Skew	Kurtosis
		Pre-Task (child)
Whole Group	.64	-.17
Control	.69	-.69
Experimental	.61	.23
		Post-Task (child)
Whole Group	.80	-.47
Control	.57	-.61
Experimental	1.14	.10
		Post-Task (mother)
Whole Group	1.22*	.28*
Control	1.37	.79
Experimental	1.15	.94

*p<.01

Note. N=38

Table 14 presents skew and kurtosis data for the separate constructs within the manipulation check. For the child measures, the whole group distribution and experimental group distribution for the pre-task probability of harm subscale was both significantly positively skewed and had significant positive kurtosis. The distribution for the pre-task severity of harm was significantly positively skewed and had significant positive kurtosis for the experimental group. Performing log transformations improved the distribution of scores. As pre and post scores were entered in the same analysis, the distributions of post task scores on probability and severity were also transformed. The transformed values of skew and kurtosis are presented in Table 15.

The distribution for responsibility for harm, probability of harm and severity of harm was positively skewed across groups for the maternal check. Log transformation did not improve the distribution of data; therefore the data for mothers were analysed using non-parametric tests.

Table 14. Skew and kurtosis statistics for the constructs of perception of responsibility for harm, probability of harm and severity of harm

	Skew	Kurtosis
	Pre-Task Responsibility for Harm (Child)	
Whole Group	.30	-.94
Control	.34	-.78
Experimental	.27	-1.03
	Pre-Task Probability of Harm (Child)	
Whole Group	1.43*	2.93*
Control	.70	-.55
Experimental	1.88*	4.91*
	Pre-Task Severity of Harm (Child)	
Whole Group	1.64*	3.52*
Control	.71	-1.37
Experimental	1.72*	3.40*
	Post-Task Responsibility for Harm (Child)	
Whole Group	.47	-.53
Control	.42	-1.11
Experimental	.33	.32
	Post-Task Probability of Harm (Child)	
Whole Group	1.07	-.14
Control	.94	-.31
Experimental	1.31	.46
	Post-Task Severity of Harm (Child)	
Whole Group	.94	-.14
Control	.88	.06
Experimental	1.22	-.02
	Post-Task Responsibility for Harm (Mother)	
Whole Group	1.52*	1.55
Control	1.49	2.01
Experimental	1.67*	1.00
	Post-Task Probability of Harm (Mother)	
Whole Group	2.54*	6.36*
Control	3.33*	11.19*
Experimental	1.54*	.41
	Post-Task Severity of Harm (Mother)	
Whole Group	1.69*	.92
Control	2.04*	2.41
Experimental	1.54	.41

**p<.01*

Note. N=38

Table 15. Transformed data for pre and post task probability and severity of harm in children

	Skew	Kurtosis
		Pre-Task Probability of Harm (Child)
Whole Group	.23	-.71
Control	-.08	-1.11
Experimental	.43	-.45
		Pre-Task Severity of Harm (Child)
Whole Group	.46	-1.27
Control	.22	-1.37
Experimental	.77	-.94
		Post-Task Probability of Harm (Child)
Whole Group	.92	.43
Control	.55	1.67
Experimental	1.04	.88
		Post-Task Severity of Harm (Child)
Whole Group	.42	-1.47
Control	.03	-1.46
Experimental	.92	-.96

Note. N=38

Dependent Measures for Children

Time taken, number of checks, hesitations and times reassurance sought.

Table 16 displays the skew and kurtosis data for time, checks, hesitations and reassurance seeking. The distribution of hesitations was significantly positively skewed and had positive kurtosis for the control group and the experimental group demonstrated significant positive skewness and kurtosis on the variable of reassurance seeking. Log transformations were performed on these variables which improved the distribution of reassurance seeking but not hesitations. The variable of hesitations therefore was analysed using a non-parametric test. The transformed values of skewness and kurtosis are displayed in Table 17.

Table 16. Skewness and kurtosis statistics for time taken, number of checks, hesitations and times reassurance sought.

	Skew	Kurtosis
		Time
Whole Group	.46	.94
Control	-.58	.86
Experimental	.611	.388
		Checks
Whole Group	1.09	1.51
Control	1.22	-1.03
Experimental	1.22	.64
		Hesitations
Whole Groups	1.02*	1.76
Control	1.37*	3.7*
Experimental	.58	-.85
		Reassurance Sought
Whole Group	1.35*	1.04
Control	1.27	.70
Experimental	1.53*	1.97*

*p<.01

Note. N=38

Table 17. Transformed data for hesitations and reassurance sought

	Skew	Kurtosis
		Hesitations
Whole Groups	-1.22*	1.63
Control	-1.50*	2.36
Experimental	-.81	.65
		Reassurance Sought
Whole Group	-.23	-.61
Control	-.39	-.02
Experimental	.09	-.84

*p<.01

Note. N=38

The Strait Anxiety Inventory for Children – State Form (STAIC-S; Spielberger, Edwards, Lushene, Montouri & Platzek, 1973). The descriptive data for the STAIC-S are presented in Table 18. The data were normally distributed for the STAIC, both pre and post.

Table 18.Skew and kurtosis statistics for the STAIC-S Pre and STAIC-S Post

	Skew	Kurtosis
		STAIC PRE
Whole Group	-.81	-.27
Control	-0.79	-.40
Experimental	-.89	.19
		STAIC-Post
Whole group	.91	-.93
Control	.37	-1.68
Experimental	.03	-.11

Note. N=38

Dependent Measures for Mothers

Reassurance giving, warmth and control. The descriptive statistics are displayed in Table 19 for the variables of reassurance giving, warmth and control. The data were normally distributed for the variables of warmth and control. The distribution of reassurance giving demonstrated significant positive kurtosis in the whole group distribution. As the analysis compared data by group, transformation was deemed unnecessary.

Table 19. Skew and kurtosis statistics for maternal behavioural dependent variables

	Skew	Kurtosis
		Reassurance Giving
Whole Group	1.58	1.99*
Control	1.16	.95
Experimental	1.29	.43
		Warmth (Instructions)
Whole Group	.16	.59
Control	-.47	-1.00
Experimental	-.05	.79
		Warmth (Task)
Whole Group	.50	-.97
Control	.53	.41
Experimental	-.92	-1.2
		Control
Whole Group	.88	1.53
Control	.25	1.29
Experimental	1.23	2.03

*p<.01

Note. N=38

State Trait Anxiety Inventory –State Form (STAI-S; Spielberger, Gorusch & Lushene, 1970). Table 20 presents data for the STAI (pre and post). The data for the STAI post were significantly positively skewed for the whole group and experimental group. As STAI pre and post were entered in the same analysis, log transformations were performed on both variables. Performing log transformations improved the distribution of scores. The transformed values of skew and kurtosis are presented in Table 21. Analyses comparing groups on this variable used the transformed data.

Table 20. Skew and kurtosis statistics for the STAI-S (pre and post)

	Skew	Kurtosis
		STAI-PRE
Whole Group	.88	.66
Control	.89	-.09
Experimental	1.06	1.32
		STAI-POST
Whole Group	1.11*	1.07
Control	.51	-.64
Experimental	1.66*	2.96*

*p<.01
Note. N=38

Table 21. Transformed data for the STAI-S (pre and post)

	Skew	Kurtosis
		STAI-Pre
Whole Group	.39	-.20
Control	.62	-.47
Experimental	.50	.11
		STAI-Post
Whole Group	.65	-.27
Control	.20	-.89
Experimental	1.15	-.86