Do mothers enhance responsibility in children with Obsessive-Compulsive Disorder? a preliminary study of mother-child interactions during a problem solving discussion

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Abstract

Aims: Explored observed behaviours during a mother and child problem solving discussion, as well as examining the novel role of enhancement of responsibility in the context of a problem solving task.

Methods: Children aged 8 to 12 years, including an OCD sample (n=12) and non-clinical (n=16), and their mothers participated in a five-minute problem solving discussion. Discussions were coded across a range of behavioural dimensions including warmth, autonomy, and confidence and responsibility processes.

Results: The groups did not differ on mother or child behavioural dimensions; however, mothers of children with OCD were rated as enhancing their child's responsibility significantly more than their own responsibility, and more than mothers of children with no diagnosis. The solutions generated in the OCD dyads were more likely to implicate the child as being responsible for resolving the situation, compared to the non-clinical group.

Conclusions: Tentative support was found for the promotion and enhancement of child responsibility by mothers of children with OCD. Moreover, in line with past research, the overall quality of the interaction in the OCD group was rated as less positive. This paper provides preliminary, novel findings to support a developmental-familial role for the development of inflated responsibility in children with OCD.

Keywords: OCD, children, family discussion, responsibility

Do mothers enhance responsibility in children with Obsessive-Compulsive Disorder? a preliminary study of mother-child interactions during a problem solving discussion

Obsessive-compulsive disorder (OCD) during childhood has a profoundly negative impact on both the child and their entire family (Farrell & Barrett, 2007; Storch et al., 2007). For children, the effects of OCD are often far reaching, adversely impacting on home life, school and social life, as well as their more general psychosocial development (Piacentini, Bergman, Keller, & McCracken, 2003). In regards to long-term prognosis, in comparison to healthy controls, adults with a history of childhood OCD are less likely to be married/living with a partner, more prone to experience social/peer difficulties, isolation, unemployment, and to endure greater difficulties sustaining a job (Stewart, et al., 2004). Whilst empirically supported treatments for childhood OCD, which include serotonergic medication and/or cognitive-behavioural treatment, involving exposure and response prevention, have been found to be effective, there remains considerable room for improving current response and remission rates (Byrne, Farrell & Rapee, 2011; Eddy, et al., 2004). Given that OCD represents one of the most common psychiatric illnesses of youth (Stewart et al. 2004), is associated with profound impairments, and is not always responsive to our current best-treatments, there is a pressing need to further understand mechanisms that might be associated with childhood onset OCD to inform advancements in treatment approaches.

Cognitive theoretical models of OCD have been favoured in the adult literature in regards to understanding the development and maintenance of OC symptoms (e.g., Taylor, Abramowitz, & McKay, 2006), and moreover, based on these models, there is strong accumulating evidence for the efficacy of cognitive-behavioural treatments (CBT) in both adults (e.g., Rosa-Alcázar, Sánchez-Meca, Gómez-Conesa, & Marín-Martínez, 2008) and children with OCD (e.g., Barrett, Farrell, Pina, Peris, & Piacentini, 2008). Despite the wealth of research into the cognitive underpinnings of OCD in adults (e.g., Frost & Steketee, 2002), there is comparatively limited research into cognitive

processes during childhood. As such, examination of maladaptive beliefs, the development of such beliefs, and familial processes involved in childhood OCD warrants further investigation.

Adult cognitive models of OCD focus on six core domains of cognition, which have been identified by the Obsessive-Compulsive Cognitions Working Group (OCCWG, 1997, 2001) as centrally important to OCD. These cognitions include (1) inflated responsibility (Salkovskis, 1985; 1996), (2) over importance of thoughts (e.g., thought-action fusion, Rachman, 1993), (3) control of thoughts (e.g., thought suppression [Clark & de Silva, 1985], and meta-cognitive beliefs, [Wells & Papageorgiou, 1998]), (4) over-estimation of threat, (5) intolerance of uncertainty and (6) perfectionism (OCCWG, 1997; 2001). Notably, all of these cognitive processes share a central tenet that an individual's *beliefs and appraisals* of OCD symptoms play an integral part in the development of the disorder. Evidence for the importance of these belief domains in the development and maintenance of OCD is clearly demonstrated in adult studies. For example, a prospective study of new mothers and fathers found that scores on a measure of OCD related beliefs (e.g., overestimates of threat and responsibility for harm, importance of control of intrusive thoughts, perfectionism and the need for certainty) predicted the development of OCD symptoms post partum (Abramowitz, Khandker, Nelson, Deacon, & Rygwall, 2006).

Arguably one of the most widely investigated cognitive biases associated with adult OCD is inflated responsibility beliefs (Salkovskis, 1985; 1989). Salkovskis et al. (1999) proposed multiple pathways for the *development* of maladaptive responsibility beliefs. These include (a) certain dysfunctional beliefs that are purposely or implicitly promoted during childhood by significant figures; (b) whereby a child develops rules and standards for thinking and behaviour due to exposure to rigid or extreme codes of conduct or duty; (c) a childhood environment that is void of opportunities to cope with responsibility, within the context of a child being treated as incompetent and/or sensitive; (d) beliefs that stem from an actual incident where one's actions or inactions contributed to serious traumatic events or circumstances; and or (e) beliefs are formed based on

attributions whereby an individual believes that one's thoughts and/or actions or inactions contributed to a serious situation.

Very recently, researchers have attempted to explore these pathways of development for inflated responsibility biases within samples of children and youth. Using a questionnaire developed to measure the five pathways proposed by Salkovskis (1999), Lawrence and Williams (2011) assessed 16 youth with a history of OCD, compared to a sample of 16 adolescents without a history of OCD. Those with a history of OCD reported a higher sense of responsibility for significant incidents with a negative outcome prior to the onset of their OCD, relative to those without a history of OCD (Lawrence & Williams, 2011). Unfortunately, while the researchers reported high test-retest reliability for their measure, the internal consistency for subscales was only partly satisfactory. In a similar vein, Coles and Schofield (2008) have developed and validated the Pathways to Inflated Responsibility Beliefs Scale (PIRBS; Coles & Schofield, 2008) in a sample of undergraduate adults. This measure likewise assesses the five hypothesised developmental contexts that are proposed by Salkovskis and colleagues (1999) to be associated with the development of responsibility biases. Results demonstrated this 23-item scale as having good internal consistency, retest reliability, as well as good convergent and divergent validity.

Other researchers agree with Salkovskis proposed pathways model (1999) that maladaptive beliefs may have their origins within a familial-based developmental context (e.g., Rector et al., 2009). For example, in addition to inflated responsibility biases, specific parenting behaviours, such as criticism, control, and strict codes of conduct, have also been postulated to be associated with the development of maladaptive perfectionism (e.g., Kawamura, Frost & Harmatz, 2002). To date, there have been no studies which have systematically examined the proposed pathways of development of responsibility biases in childhood samples through observational methods. While very little observational research exists using childhood OCD samples, the few studies that have been published have demonstrated that families are generally observed to be higher in criticism and over-

involvement (e.g., Hibbs et al., 1991) and generally less positive in parent-child interactions during discussion tasks (Barrett et al., 2002). For example, Barrett, Shortt and Healy (2002) compared families with children with OCD, other anxiety disorders, externalising disorders and non-clinical children during family discussion of “hot topics” and found parents of children with OCD to be significantly less confident in their child’s abilities, less rewarding of independence and used less positive problem-solving. Furthermore, children in the OCD group also showed less positive problem-solving, less confidence in their ability to solve problems and displayed less warmth during interactions with their parents.

The present study aimed to provide a novel contribution to the literature by exploring mother and child behaviours during a problem solving family discussion and more specifically, whether parents and/or children display inflated responsibility for action during this discussion task. Mothers and children with OCD participated in a discussion task, with the goal of the discussion to make a plan for the child in coping with a *challenging* (i.e., mildly aversive) ambiguous situation, which the child had previously rated as being a difficult situation for them. The mother and child discussed the situation for up to 5 minutes. The recorded discussions and parent-child observations were coded, minute by minute, by independent coders on dimensions of mother and child autonomy/control, warmth/rejection and confidence/doubt. Furthermore, the coders also rated the *overall* discussion on dimensions of responsibility enhancement (i.e., did the child/parent enhance their own/other persons responsibility during the discussion), as well as the overall *quality* of the interaction (i.e., positive/warm/supportive versus negative/harsh/critical), whether there was a solution met, and who (mother or child) was deemed responsible for taking action. A non-clinical control group of mother and child dyads also engaged in the same task to explore whether there were between groups difference.

It was hypothesised that mothers of children with OCD compared to mothers of non-clinical children would display: (a) greater levels of control and intrusiveness, (b) less confidence/certainty in

their or their child's ability to cope with the situation, (c) less warmth during the interaction, and (d) greater enhancement of their child's responsibility. Moreover, it was hypothesised that children with OCD compared to non-clinical children would display: (a) greater levels of control and intrusiveness, (b) less confidence/certainty in their or their mother's ability to cope with the situation, (c) less warmth during the interaction, and (d) might provide greater enhancement of their mother's responsibility – although this was an exploratory hypothesis. Finally, it was hypothesised that the overall quality of the interaction between children with OCD and their mothers during the discussion task would be less positive, compared to non-clinical children and their mothers.

METHOD

Participants

Two groups of children aged 8 to 12 years participated in this study: (1) children with primary OCD, and, (2) children with no clinical diagnoses. The OCD sample comprised 12 dyads (seven male and five female children and their mothers) and 16 non-clinical dyads (10 male and six female children and their mothers). Non-clinical dyads were selected to closely approximate the age and sex of the OCD Group children. The mean age of children in OCD group was 9.75 ($SD = 1.42$) and 9.94 ($SD = 1.39$) for the non-clinical group. The mean age of mothers in OCD group was 41.27 ($SD = 5.16$) and 40.63 ($SD = 5.44$) for the non-clinical group. There was no statistical difference between ages of the groups for children, $t(26) = .35$, $p = .73$, or mothers, $t(25) = .31$, $p = .76$. The determination of whether a participant met criteria for OCD as their primary diagnosis was made in accordance with the clinician severity rating of the ADIS-P interview (Silverman & Albano, 1996). This means that the disorder which was rated to have the highest interference, using the clinician severity rating was classified as the primary diagnosis.

Diagnostic information of Children with OCD. Clinician severity ratings scores on the ADIS-P (Silverman & Albano, 1996) ranged from moderate (4) through to very severe interference (8), with an overall mean clinician severity rating of 5.95 ($SD = 1.17$). These results indicated that this group was experiencing *clinically significant interference* from their OCD symptom at the time of their assessment. Based on the Children's Yale-Brown Obsessive-Compulsive Scale (CY-BOCS) Total Severity Score, the OCD sample was in the *moderate* range ($M = 20.50$; $SD = 7.04$).

Within the OCD sample, all children had a secondary comorbid diagnosis, including generalised anxiety disorder (GAD; 4), followed by specific phobia (3), social anxiety disorder (1), separation anxiety disorder (SAD: 1), pervasive developmental disorders (PDD; 2), and attention deficit hyperactivity disorder (ADHD; 1). Furthermore, 75% of the sample ($n=9$) met criteria for a

third diagnosis, including GAD (3), specific phobia (1), social anxiety disorder (1), SAD (1), dysthymia (1) and ADHD (2).

In the non-clinical group, there were 10 males and 6 females who were recruited from two a local Gold Coast primary. Mothers of the non-clinical children were aged between 29 years and 52 years (M age = 41.23, SD = 5.60). No children in the non-clinical group met criteria for any psychological disorder based on the ADIS-P. The average SCAS-P score was also in the non-clinical range (M = 12.34, SD = 6.14).

Measures

Structured and semi-structured clinician interviews.

Anxiety Disorders Interview Schedule for DSM-IV: Parent version (ADIS-P).

The ADIS for DSM-IV is a semi-structured clinical interview for the diagnosis of childhood anxiety disorders and related disorders and comes in both a parent (ADIS-P) and child (ADIS-C) version. On the bases of participant reports, clinicians rate each diagnosis where DSM-IV criteria is met on a 9-point scale of severity (0 = *no interference* to 8 = *severely disabling*) providing the clinician severity rating (CSR). In this study, the ADIS-P was used to establish the diagnostic status of child participants according to DSM-IV criteria, through completion by parents of children in both groups (Silverman & Albano, 1996). In order to ensure the reliability of the diagnoses, a postgraduate clinical psychology student who was blind to the diagnoses reviewed 25% of the videotaped interviews, with results indicating excellent reliability (primary diagnosis κ = 1.0; secondary diagnosis κ = 0.84; tertiary diagnosis κ = 0.83). The ADIS has established sound psychometric properties, with excellent retest reliability for combined, parent and child ratings of anxiety disorders (Silverman, Saavedra, & Pina, 2001).

Children's Yale-Brown Obsessive-Compulsive Scale (CY-BOCS).

The CY-BOCS (Scahill et al., 1997) is a clinician-rated, semi-structured interview, assessing the severity of OCD symptoms. This interview was administered to children in the OCD Group to

assess overall OCD symptom severity. The CY-BOCS is widely used and provides ratings of severity for obsessions and compulsions across five scales, rated on a 5-point scale with responses: 0 = *none*, 1 = *mild*, 2 = *moderate*, 3 = *severe*, 4 and *extreme*; including (a) frequency (i.e., time occupied by symptoms), (b) interference, (c) distress, (d) resistance, and (e) degree of control over symptoms, and also provides a total severity score. Items are then summed to provide an Obsession Severity Score (range 0-20), a Compulsion Severity Score (range 0-20) and a Total Score (range 0-40). The Total Score provides five ranges for severity of symptoms: *subclinical* (0-7), *mild* (8-15), *moderate* (16-23), *severe* (24-31), and *extreme* (32-40). The CY-BOCS has demonstrated reasonable reliability and validity, with good to excellent inter-rater agreement and high internal consistency for total score of .87 (Scahill et. al., 1997).

Multidimensional Anxiety Scale for Children (MASC). The MASC is a 39-item, 4-point Likert self-report screening instrument for assessing anxiety symptoms in children and adolescents aged 8 to 19 years (March, 1997)..The psychometric properties of the MASC including the factor structure, reliability and validity have been found to be satisfactory (March, Parker, Sullivan, Stallings, & Conners, 1999).

Children's Depression Inventory (CDI). The CDI (Kovacs, 1992), is a 27-item child-report measure assessing depressive symptoms in children and adolescents aged seven to 17 years. Each item of the CDI comprises three statements that are graded in severity and assigned numerical values with 0 (*absence of symptom*), 1 (*mild symptoms*) and 2 (*definite symptom*). The CDI is a widely used measure which possesses good psychometric properties (Kovacs, 1992)..

Depression Anxiety Stress Scales (DASS). The DASS (Lovibond & Lovibond, 1995) is a self-report questionnaire that measures current depression, anxiety and stress in adults. It is available as a 42-item or 21-item scale with the latter version used in this study with mothers. The DASS uses a 4-point Likert scale to rate the extent to which symptoms of depression, anxiety and stress have been experienced over the past week (0 = *did not apply to me at all* to 3 = *applied to me very much*

or most of the time). Each of the three DASS scales contains 7 items, divided into subscales of items with similar content. Scores for depression, anxiety and stress are calculated by summing the scores for the relevant items. In the DASS-21, the three scale raw scores are multiplied by two to obtain the three scaled scores, and scale ranges for symptom severity (Lovibond & Lovibond, 1995). The DASS has demonstrated excellent internal consistency for each of the scales (Depression = .96; Anxiety = .92; Stress = .95) and sensitivity to treatment effects (e.g., Page, Hooke, & Morrison, 2007).

Family discussion task. A family discussion task was developed based on children reviewing six aversive ambiguous situations and rating one as the “most difficult for them to cope with” – this scenario was then used as the focus of a family discussion. Difficulty ratings were made based on the child viewing a feelings thermometer with a five-point likert rating from 0 (*not at all difficult*) to 4 (extremely difficult for me). The situations were developed to be explicitly mildly aversive yet ambiguous and were largely adapted from previous studies, particularly Bögels and Zigterman (2000) and Butler and Mathews (1983). The six scenarios presented to children are below in Table 1.

----insert table 1 here----

Coding of family discussion task. The family discussion task was coded according to a coding schedule developed by the authors adapting the method and behavioural dimensions used in previous studies that have examined the interactions between children and their mothers including Barrett et al. (2002), Siqueland et al. (1996) and Hudson et al. (Hudson, Comer, & Kendall, 2008). Coders were instructed to watch the video three times to complete the coding; such that coders, (1) coded the mother specific items, (2) coded the child specific items, and, (3) coded the remaining general and overall items.

There were three behavioural dimensions that were coded on minute by minute bases using 5-point Likert scales: (1) *Control/intrusiveness* = 0, through to *Autonomy* = 4, (2)

Doubtful/uncertain = 0, through to *Confident/Certain* = 4, (3) *Dismissive/Rejecting* = 0, through to *Warm/encouraging* = 4. A definition of each of these dimensions is provided in Table 2.

At the end of each minute of coding the coder also rated what the type of content the mother was mainly focussing on during this minute from: a) mainly thoughts, b) mainly feelings or c) mainly solutions. Mainly focussing on thoughts was described as focusing mainly on asking / discussing her or her child's thoughts about the situation (e.g., "what would you be thinking if this happened?" "would you be thinking I had left you?" "I'd be thinking you are in the shop nearby."). Mainly feelings focussed was defined as focussing mainly on asking / discussing her or her child's feelings about the situation (e.g., "what would you be feeling if this happened?" "Would you be feeling scared?" "I'd be feeling scared.") Mainly solution focussed was defined as focussing mainly on asking / discussing her or her child's plans to deal with the situation (e.g., "What would you do if this happened?" "Would you speak to the nearest shop keeper?" "I'd want you to stay where you were.")

---insert table 2 here---

After watching the entire discussion the coder then rated on a three-point Likert scale whether there was evidence of both mother and child enhancing: a) their own responsibility for action and/or b) of others (that is, mother or child's) responsibility for action. These were rated from as 0 = *no enhancement*, 1 = *some enhancement* and 2 = *very evident enhancement*. No enhancement was described as where there was no reference to either being responsible for and/or pivotal to the action/outcome. Very high enhancement was where an individual made frequent reference to either the child or parent being responsible for and/or pivotal to the outcome. Enhancement of responsibility anchors were based on descriptions of responsibility appraisals by Salkovskis (1996).

The coder timed the amount of time it took for the dyad to reach a final conclusion or to finish the task. The coder was asked to decide whether it was clear whether a final solution to the situation was established at the end of the discussion. This was rated on a two-point scale as either 0 = *no, unclear* (i.e., vague or unclear solution) or 1 = *yes, clear* (i.e., provided a clear solution).

The coder rated the overall quality of the interaction on a five-point Likert scale (0 = *very low quality* through to 5 = *very high quality*). Very low quality interactions were described as those exhibiting the following behaviours: critical and controlling, dismissive, absence of affection, harsh tone and/or language, ignoring suggestions, showing negative regard for the other, lack of smiling, laughing or touch, lack of mutual expression or recognition of feelings, physically oriented away from the other, poor listening. Very high quality interactions were described as those where the interaction was characterised by the following behaviours: accepting and encouraging, acknowledging, calm voice and manner, encouraging suggestions, showing positive regard for the other, laughing, smiling or touching, demonstration of mutual expression or recognition of feelings, physically oriented towards the other, good listening. Higher scores indicated more positive parent-child interactions.

Lastly, the coder was asked to categorise who seemed to be the person or people responsible for taking action in the final solution (0 = *completely child*, 1 = *mainly child*, 2 = *equal child and mother*, 3 = *mainly mother*, 4 = *completely mother*).

Coding of discussion task and reliability. There were two main coders of the discussion task. They were clinically trained postgraduate psychologists who were blind to the diagnostic status of the children and hypotheses of the study. The coders conducted initial coding of the videos alongside each other. Each coder independently rated eight of the videos (29%). The coders conferred on their coding after the initial four videos to ensure coders were within one data point on those behaviours rated on a Likert scale. The coders then coded a further four videos and again conferred to ensure there was consistency, with all responses within only one point from each other. One coder then completed the rest of the videos without further consultation.

Following the reliability procedures described in Barrett et al (2002) inter-rater agreement on 29% of the videotapes was calculated in two ways. First, bivariate correlations were calculated between both raters on each behavioural dimension that was coded on a minute by minute basis for

both the child and mother. Correlations for the mother's behavioural dimensions ranged from .78 to .93 with all above .70 indicating acceptable inter-rater reliability. Correlations for the children's behavioural dimensions ranged from .62 to 1.0 for the control/intrusiveness to autonomy and doubtful/uncertain to confident/certain dimensions. The children's behavioural dimension of dismissive/rejecting to warm/encouraging indicated correlations of .50 indicated weaker agreement for this dimension, suggesting less reliability. Second, kappas were calculated for the remaining items. The kappas for the majority of items were in the excellent range with kappas of 1.0 for the following items: 1) time to complete the discussion task, 2) the content focus by the mother, 3) mothers enhancement of own responsibility, 4) mothers enhancement of child's responsibility, 5) child enhancement of mother's responsibility, 6) clarity of solution and 7) who was responsible for action in the final solution. Similarly, the kappa for the overall quality of the interaction was .82. Finally, the kappa for the child's enhancement of their own responsibility was .60 indicating good agreement.

Procedure

OCD Group. Ethical approval for this study and a larger OCD treatment trial was obtained by the Griffith University Ethics Committee prior to recruitment. Upon parents contacting the OCD Treatment Program, an explanation about the treatment program including the research studies involved was provided to parents. Those parents interested to participate completed a semi-structured screening interview over the phone to determine whether OCD was a likely diagnosis for the child and addressing the inclusion and exclusionary criteria. Children were excluded from the OCD Treatment Program if they were reported by their parents to have: (1) psychosis / organic mental disorder; (2) IQ suspected below 70. Inclusionary criteria were: (1) OCD diagnosis, (2) at least one parent willing and able to be involved in treatment. Where exclusionary criteria were present and the children appeared to have disorders other than OCD referrals were provided to appropriate sources.

Those families of children who met inclusionary criteria were invited to attend Griffith University for a face to face assessment session. Parents completed the ADIS-P diagnostic interview with the interviewer to confirm the diagnoses. Children completed the CY-BOCS concurrently with a separate clinically trained interviewer. Children completed questionnaire measures with the interviewer, whilst parent completed theirs at home and returned them at their next session. Families of those children with a confirmed diagnosis of OCD were invited to participate in the OCD treatment program being run at Griffith University, and to complete a second assessment session consisting of the family discussion task relevant to this study.

Non-clinical Group. Ethical approval to distribute information about this study by the Griffith University Ethics Committee occurred prior to recruitment. In addition, approval was received from Catholic Education and a local primary school's Principal for recruitment within a school. The school based participants were recruited through the dissemination of Research Information package to all children within Grades 4 to 7. Information included a brief flyer outlining

the study and a research consent form, the SCAS-P and a reply paid envelope. Families who returned all the required information including parental written consent were contacted to participate further.

The 16 children recruited from the school were selected from 22 families who returned participant forms and consent. Four children were excluded due to their diagnostic interview suggesting the presence of clinically significant anxiety and their parents were provided with appropriate referral information. A further two withdrew due to ongoing time commitments which conflicted with the study. The families who participated were provided with \$20.00 to reimburse them for travel costs to participate. A clinically trained interviewer conducted the ADIS-P (Silverman & Albano, 1996) over the telephone with the mothers of all non-clinical children. The diagnostic interview was to confirm that children did not have a diagnosis of OCD, anxiety or any other clinical conditions.

Family discussion task. The 6 ambiguous situations for children were presented verbally in a fixed order to each child. Situations were always presented in a neutral tone by the examiner. The children were instructed to listen to some situations that can happen to children of a similar age to them, and to imagine that the event happening in the situation had happened to them. It was explained that some of these situations they may have experienced before, while others might be something that had never happened to them before. For each scenario the examiner asked the child *“if you were in this situation how difficult would you find it?”* in order to identify the situation the child reported they would find most difficult, as indicated by their highest ratings. This situation was then deemed to be the situation employed in the family discussion task. Where a child rated more than one situation at the same level of difficulty for them, the child was re-read these particular situations and asked which of the situations they would find the most difficult for them.

Following completion of rating the ambiguous situations, the mother and child were reunited and asked to discuss one situation that was most salient for the child for five minutes. Participants were not specifically informed by the examiner that this situation was selected because it was the

most difficult for the child. The pair was instructed to discuss the situation together and that the object was for everyone to participate in the discussion and come up with a final solution. They were requested to work together to decide how they would deal with this situation. They were given five minutes for the discussion but could finish sooner if preferred. This task was videotaped and the examiner was not present during the discussion.

At the end of the five minutes, the examiner returned to the room and thanked the child and parents for their participation. The examiner engaged in a brief summary discussion of how the discussion went and whether the child and parent were able to come up with a solution. The child was praised for their efforts.

RESULTS

Participant Characteristics

The overall mean MASC score for the OCD sample was 58.22 ($SD = 18.58$) and 36.15 ($SD = 12.20$) for the non-clinical children. An independent samples t test revealed a significant difference between the groups, $t(42) = 4.76$, $p < 0.001$. As expected, children with OCD reported significantly higher levels of anxiety symptoms relative to non-clinical children. The overall mean score on the CDI for the children with OCD was 9.74 ($SD = 6.76$) and 3.81 ($SD = 4.38$) for the non-clinical children. An independent samples t test revealed a significant difference between the Groups, $t(43) = 3.57$, $p = .001$, with the OCD sample significantly higher on depression symptoms relative to non-clinical children.

On mother's self-reported DASS depression scale, the mean score for the OCD group was 5.81 ($SD = 6.42$) and 2.92 ($SD = 3.59$) for the non-clinical group, while the anxiety scale was 3.24 ($SD = 5.18$) for the OCD group and 0.92 ($SD = 2.54$) for the non-clinical group. Finally, the mean stress score for the OCD Group was 12.57 ($SD = 8.63$) and 8.08 ($SD = 7.45$) for the non-clinical

group. Three independent samples t tests were conducted to test for differences between the groups. There was no significant difference between the groups on the depression, anxiety or stress scales.

Observation of interactions between children and mothers.

Table 3 displays the means for both mothers and children across both groups on all dimensions observed minute by minute.

---insert table 3 here---

Control/intrusiveness to autonomy. An independent-samples t test was conducted to compare groups on the observed child behaviour of controlling/intrusive through to autonomy. There was not a significant difference in the group scores, $t(26) = 1.05$, $p = .30$. Similarly for mothers, an independent samples t test was conducted to compare groups on observed behaviour on the dimension of controlling/intrusive through to autonomy. There was also no significant group differences, $t(26) = 1.07$, $p = .30$.

Doubtful/uncertain to confident/certain. An independent-samples t test was conducted to compare groups on child observed behaviour on the dimension of Doubtful/uncertain to Confident/certain, as well as on mothers observed behaviours on this dimension. There was no significant difference in the group scores, $t(26) = 0.16$, $p = .88$ for children, or mothers $t(26) = 0.21$, $p = .84$.

Dismissive/rejecting to warm/encouraging. An independent-samples t test was conducted to compare groups on child and mother observed behaviour on the dimension of Dismissive/rejecting to warm/encouraging. There was no significant difference in the group scores, $t(26) = 1.35$, $p = .19$ for children; and while there was a trend toward mothers of children with OCD being less warm/encouraging than non-clinical mothers, this was non-significant $t(26) = 1.79$, $p = .086$, $d = 0.72$.

Enhancement of responsibility. The mean enhancement of own responsibility score for children with OCD was 0.08 (SD = 0.29) and 0.19 (SD = 0.40) for non-clinical children. The mean

enhancement of mother responsibility score for Children with OCD was 0.08 (SD = 0.29) and 0.00 (SD = 0.00) for non-clinical children. A 2 x 2 ANOVA was conducted with Focus of responsibility for children (i.e., own responsibility, mother's responsibility) as the within subjects effect and Group (OCD and non-clinical) as the between subjects variable. Analyses revealed the Focus main effect, $F(1, 26) = 1.41, p = .25$, Group main effect, $F(1, 26) = 0.02, p = .89$, and the Focus $\times$ Group interaction were not significant, $F(1, 46) = 1.41, p = .245$.

A 2 x 2 ANOVA was also conducted based on coding mothers behaviours, with Focus of responsibility (i.e., own responsibility, child's responsibility) as the within groups subjects and Group (OCD and non-clinical) as the between subjects variable. Bonferroni corrections were used for analyses that involved multiple comparisons. Partial eta squared (η^2) was calculated as a measure of effect size. Analyses revealed a significant main effect for Focus, $F(1, 26) = 34.47, p < .001, \eta^2 = .570$. There was no main effect for Group, $F(1, 26) = 0.37, p = .55$. However, the Focus $\times$ Group interaction was significant, $F(1, 26) = 18.83, p < 0.001, \eta^2 = .420$. In exploring the within subjects differences, mothers of children with OCD showed greater enhancement of their child's responsibility compared with the enhancement of their own responsibility ($p < 0.001$). The non-clinical mothers showed no significant differences between their own enhancement of responsibility and enhancing their child's responsibility ($p = .253$). Moreover, mothers' of children with OCD enhanced their child's responsibility significantly more compared with non-clinical mothers ($p = .014$). Furthermore, mothers of children with OCD enhanced their own responsibility significantly less than non-clinical mothers ($p = .007$). See Figure 2 below.

-----Insert Figure 1 Here-----

Focus of discussion- mother. An analysis was conducted in order to assess whether there were any differences between groups in terms of what mothers focussed on during the discussion. Most mothers mainly focussed on solutions during the discussion (OCD Group = 9, non-clinical group = 11). A smaller number of mothers focussed on feelings and/or thoughts in addition to

solutions (OCD Group = 2, non-clinical group = 5). A chi square analysis revealed no significant differences between the groups on the focus of the mothers during the discussion (i.e., on whether they were focused mainly on solutions or solutions plus thoughts and/or feelings), $\chi^2 (1, N = 28) = 0.13, p = .717$.

Quality of the interaction. Ratings for the overall quality of the interaction during the discussion for the OCD Group was 2.58 ($SD = 1.00$) and for the non-clinical group 3.31 ($SD = 0.70$). An independent-samples t test showed there was a significant difference in the group scores, $t(26) = 2.27, p = .032, d = 0.9$. Child-mother interactions in OCD group were rated as less positive compared with child-mother interactions in the non-clinical group.

Responsibility for action. An analysis was conducted in order to assess whether there were any differences between groups on who was responsible for taking action in the situation, based on the solution discussed. Firstly, the categorical data was reviewed which revealed that only 3 of the 5 categories available to the rater were used: 1) completely child, 2) mainly child, and 3) equal mother and child. Hence, the data was re-coded into two category types: 1) mainly child responsibility (OCD Group = 11, non-clinical = 5), 2) equal responsibility of child and mother (OCD Group = 1, non-clinical Group = 11). A chi square analysis revealed significant differences between groups, $\chi^2 (1, N = 28) = 10.22, p = .001$. The OCD group were more likely to discuss the solution as being mainly or completely reliant on the child to implement the solution compared with the non-clinical children.

Completion Time. The mean number of minutes to complete the discussion of the OCD Group was 3.71 ($SD = 0.92$) and 3.56 ($SD = 1.46$) for the non-clinical group. An independent-samples t test was conducted to compare groups on their time to complete the discussion. There was not a significant difference between the groups, $t(26) = 0.30, p = .76$.

Clarity of the solution. The observation of whether overall the discussion lead to a clear solution revealed that most dyads came to a clear solution (OCD Group = 11, non-clinical group = 13). A small number of dyads appeared not to come to a clear solution (OCD Group = 1, non-

clinical group = 3). A chi square analysis revealed no significant differences between the groups, $\chi^2(1, N = 28) = .61, p = .44$.

DISCUSSION

This study aimed to provide a preliminary examination of a problem-solving discussion task methodology in examining parent and child interactions in childhood OCD, and more specially, to examine the degree to which children and/or parents might enhance responsibility for action/outcomes. This study is a novel contribution to examining the ways in which inflated responsibility biases might develop within a sample of children with OCD, thereby offering a clinical examination of a cognitive theoretical issue (i.e., Salkovskis responsibility theory of OCD, 1999) that is proposed to be one of the major underlying mechanisms of OCD in adults.

In our preliminary study to explore the methodology and coding procedures, mothers and children with OCD participated in a problem-solving discussion task, with the goal of the discussion to make a plan for the child in coping with a *challenging* (i.e., mildly aversive) ambiguous situation, that the child had previously rated as being a difficult situation for them. The mother and child discussed the situation for up to 5 minutes. The recorded discussions and parent-child observations were coded, minute by minute, by independent coders on dimensions of mother and child autonomy/control, warmth/rejection and confidence/doubt. Furthermore, the coders also rated the *overall* discussion on dimensions of responsibility enhancement (i.e., did the child/parent enhance their own/other persons responsibility during the discussion), as well as the overall *quality* of the interaction (i.e., positive/warm versus critical/harsh interaction), whether there was a solution met, and who (mother or child) was deemed responsible for taking action. A non-clinical control group of mother and child dyads also engaged in the same task to explore whether there were between groups difference.

In regards to the coded behavioural dimensions during interactions, the results of this preliminary study were somewhat contrary to what was expected. It was hypothesised that compared with non-clinical children, children with OCD would be less confident and certain, as well as less warm during the interaction with their mothers. There were no observed differences in confidence/certainty and children in both groups displayed similar levels of warmth, which contrasts with Barrett et al. (2002) who found children with OCD to be the least confident and warm in their interactions with their families when compared with groups of children with anxiety disorders, externalising disorders and healthy children. Further, there were no significant differences observed between mothers of children with OCD and mothers of non-clinical children in terms of levels of control/intrusiveness, warmth, and confidence/certainty as had been predicted on the basis of past relevant OCD related and childhood anxiety disorder research (e.g., Barrett, et al., 2002; DiBartolo & Helt, 2007; Hibbs, et al., 1991; Siqueland, et al., 1996). There was however a trend towards mothers of children with OCD, compared to mothers of non-clinical children, displaying less warmth and encouragement towards their children, which is indeed consistent with past research (e.g., Barrett et al., 2002). Possible explanations for the discordance between this study and the Barrett et al's (2002) study in terms of the non-significant differences on these behavioural dimensions are twofold. Firstly, the present study employed the use of a two-tailed Likert scale where coders rated behaviours on a continuum from *doubtful/uncertain* through to *confident/certain*, whereas Barrett et al. (2002) coded *doubt* and *confidence* as two separate dimensions. Secondly, this preliminary study was relatively small (n=12 OCD dyads), which decreased the statistical power in the current analyses. Hence, the limited sample size may have restricted the opportunity to detect meaningful group differences. Interestingly, the observation of the "overall quality" of the interaction between dyads did show the expected result, such that the quality of the interaction between OCD children and their mothers was rated a significantly less positive than that of the non-clinical children and their mothers. This finding accords with previous observational research with families of children with

OCD (Barrett, et al., 2002) and suggests that with larger samples, the trend on individual dimensions may have been significant and in line with past research.

What is particularly interesting and novel about the current observational study, where results which demonstrated that mothers of children with OCD could be observed enhancing their child's responsibility, significantly more so than their own responsibility, and significantly more so than mothers of children with no clinical diagnosis. Further, during the discussion OCD dyads were more likely to implicate the child as being entirely or mainly responsible for the action to be taken to resolve the situation, compared to the non-clinical group, which was more likely to propose solutions involving both the mother and child. Together these findings provide tentative support for the notion that during interactions between children with OCD and their mothers, it is possible to observe the promotion of enhanced child responsibility, which has been proposed to be a pathway to the development of dysfunctional inflated responsibility beliefs underlying OCD in adults (Salkovskis et al. 1999). This study provides preliminary evidence consistent with cognitive theory, which proposes that during childhood, individuals with OCD may experience interactions with significant figures that purposely or implicitly promote enhanced responsibility for actions (Salkovskis et al. 1999).

The present findings of possible maternal enhancement of responsibility have implications also for treatment. CBT treatment necessarily requires children with OCD to face their fears through exposure. How both OCD and non-OCD related problems are discussed with children may be more important for clinicians and parents to consider. Recent research has demonstrated that non-clinical children in high responsibility conditions are more likely to be hesitant and recheck their work (Reeves, et al., 2010). Whilst research of this nature is in its infancy, it implies that enhanced responsibility could actually increase uncertainty and checking in children and perhaps influence how children approach tasks and situations. This coupled with theory that repeated incidents whereby responsibility is promoted may lead to enhanced responsibility beliefs over time (Salkovskis et al. 1999), implies that attending to interactions between parents in relation to what

overt and covert messages of responsibility occur may be important. Further clinical and research attention of these issues may ultimately lead to enhanced treatment outcomes and/or reduce the likelihood of relapse.

There are a number of strengths and limitations of this research. A particular strength of the present study is that it included a clinical group of children with primary OCD and a comparison group of non-clinical children. The coding methodology in the present study was based on past published research (Barrett, et al., 2002; Hudson, et al., 2008; Siqueland, et al., 1996), which speaks to the methodological rigour of the design and approaches in this preliminary study. Moreover, the unique component of this study that was not based on prior methodology was coding “enhancement of responsibility” which was based on the descriptions offered by Salkovskis (1996). The obvious shortcoming of this study was the small clinical sample, which has implications in reducing statistical power and generalisability of findings. The strength however of this approach, is that by conducting smaller preliminary studies investigating new approaches, allows for refinement and improvement in developing larger studies with improved rigour, to test the novel outcomes reported here. Another limitation of this study is that on some dimensions within the observational coding system, the inter-rater reliability scores were less than optimal, although they were arguably in line with other published observational research (Barrett, et al., 2002). Whilst observational studies offer important ecological validity within our knowledge base, they leave room for coders to interpret processes differently. The coding scheme could be improved by considering frequencies of behaviours indicating enhancement of responsibility rather than the Likert-type measure used in this study, as this has been suggested by Patterson (cited in Aspland & Gardner, 2003) to reduce observer bias. Whilst it was beyond the scope of this pilot study to transcribe the video-taped discussions, this could provide greater clarity of responsibility enhancement processes occurring within the dyads. Further, examination of responsibility processes with adolescents and the comparison with self-

report measures of responsibility beliefs, such as the Responsibility Attitudes Scale (Salkovskis et al., 2000), in children and mothers would be important in future work.

Replication and extension of this research may contribute to the advancement of developmentally sensitive models which take into account the aetiology and maintenance of childhood OCD. It is of major importance that research into childhood OCD continues to attend to underlying mechanisms and processes which might inform advances in interventions in order to alter and improve projected long-term negative consequences for this often highly impaired group of children.

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Table 1. Mildly Aversive Ambiguous Scenarios Presented to Children

Mildly Aversive Ambiguous Scenarios Presented to Children
1. You don't get your assignment back from the teacher and she asks you to stay behind after class.
2. It is the middle of the night and you wake up due to a loud bang.
3. The doctor has finished examining you and asks to speak to your mother in the next room.
4. You have just started playing a new sport and when you walk into the change room. A group of children turn around and look at you.
5. You are in a crowded shopping centre and stop to look at something, when you look around you can't see your Mum.
6. You walk home from school and arrive 20 minutes later than usual, and no one is home.

Table 2

Behavioural Descriptors for Minute by Minute Coding of Discussion Task

Dimension	Descriptions*
Control/intrusiveness	Individual constrains other's individuality. Examples: Interrupts or responds in a controlling way, criticises, takes over and assumes control, does not tolerate differences of opinion, discourages independent thinking and input. Use coercive forms of control (e.g., guilt induction, love withdrawal & power assertion).
Autonomy	Individual promotes other's individuality Examples: Seeks the other's opinion, not simply a reaffirmation of own beliefs, accepts differences of opinion, acknowledges and demonstrates respect for the other's opinion, encourages independent thinking.
Doubtful/uncertain	Individual appears to doubt / be uncertain of own or other's ability to successfully deal with the situation. Examples: Questions others ability "are you sure you could do that?" questions own ability "I am not sure, what do you think?" Appears confused or tentative, repeatedly checks the solution.
Confident/certain	Individual appears confident/certain about their or other's ability to successfully deal with the situation. Examples: Makes positive statements about others ability such as "I am sure you could do that." Makes positive statement about own ability "I am sure I can deal with it" Appears calm and confident.
Dismissive/rejecting	Individual displays cold, rejecting or dismissive behaviours towards the other. Examples: Does not express affection , shows negative regard for the other, does not smile, laugh or touch, lacks mutual expression or recognition of feelings, is unresponsive and disinterested, physically oriented away from the other.
Warm/encouraging	Individual displays warmth/encouragement towards the other. Examples: Expresses affection, shows positive regard for the other, laughs, smiles or touches, demonstrates mutual expression or recognition of feelings, is responsive and engaged, physically oriented towards the other

*Examples and descriptions based on Barrett, Shortt & Healy 2002 & Siqueland, Kendall & Steinberg 1996 & Hudson, Comer & Kendall 2008.

Table 3.

Means and SDs for Children and Mothers' Behaviours

Behaviour	OCD Group (n = 12)		Non-clinical Group (n = 16)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Control/intrusiveness to autonomy ^a				
Children	2.84	0.78	3.16	0.83
Mothers	3.08	1.07	3.43	0.68
Doubtful/uncertain to confident/certain ^b				
Children	2.93	0.63	2.97	0.72
Mothers	2.97	0.66	3.02	0.69
Dismissive/rejecting to warm/encouraging ^c				
Children	2.86	0.75	3.19	0.53
Mothers	3.11	0.91	3.61	0.55

a = Behaviour was rated on a 5 point Liker scale ranging from 0 (controlling/ intrusive) through to autonomy (4).

b = Behaviour was rated on a 5 point Likert scale ranging from 0 (doubtful/uncertain) through to confident/certain (4).

c = rated on a 5 point Likert scale ranging from 0 (dismissive/rejecting) through warm/encouraging (4).

Figure 1. *Mothers' Enhancement of Responsibility (+SE bars) by Group*