Running Head: Responsibility, intolerance of uncertainty and urge to check

Corresponding Author:

Lara Farrell, Ph.D.

Griffith Institute of Health and Medical Research

School of Applied Psychology

Griffith University

Gold Coast Campus,

Brisbane, Queensland, 4222

AUSTRALIA

Ph: +61 7 55528224

Fax: +61 7 55528291

Email: L.Farrell@griffith.edu.au.

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Responsibility beliefs, memory confidence, intolerance of uncertainty and the urge to check in
childhood obsessive-compulsive disorder: an examination of cognitive theory

Lara J. Farrell, Ph.D.

Griffith Institute of Health and Medical Research, Behavioral Basis of Health,
Griffith University, Gold Coast, Australia

Allison M. Waters, Ph.D.

Griffith Institute of Health and Medical Research, Behavioral Basis of Health,
Griffith University, Mt Gravatt Campus, Australia

Mark J. Boschen, Ph.D.

Griffith Institute of Health and Medical Research, Behavioral Basis of Health,
Griffith University, Gold Coast, Australia

Ella L. Milliner

School of Psychology
Griffith University, Gold Coast, Australia

Correspondence: Dr Lara Farrell, School of Psychology, Gold Coast Campus, Griffith
University, Brisbane, QLD 4222, AUSTRALIA. Email: l.farrell@griffith.edu.au

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Abstract

Objective: This study aimed to extend current research into cognitive models of obsessive-compulsive disorder (OCD) in a pediatric sample by examining the impact of perceived responsibility on memory confidence, intolerance of uncertainty (IU) and checking urge using an experimental design to manipulate perceived responsibility. It was hypothesised that the high responsibility condition would result in higher ratings of responsibility, lower memory confidence and higher IU, which would also result in higher ratings on urge to check.

Moreover, it was hypothesized that adolescents would report significantly higher ratings of responsibility than children. Finally it was hypothesised that the effect of perceived inflated responsibility on the urge to check in a high responsibility condition would be mediated by IU.

Method: Twenty-seven children and adolescents diagnosed with OCD completed an experimental cognitive appraisal task (CAT) in which they heard two standardised vignettes presented in counterbalanced order; one in which participants were responsible and one in which they were not responsible for preventing harm to a friend's pet cat. Memory confidence, IU and checking urge were assessed after each scenario using Likert-scales. **Results:** The manipulation of perceived responsibility was successful with children and adolescents rating increased responsibility in the high compared with the low responsibility scenario. There were no differences across high and low responsibility conditions however in ratings of memory confidence, IU or the urge to check. There were no significant age related differences; however, there was a trend for adolescents to report higher ratings across all variables. Finally, the relationship between perceived inflated responsibility and the urge to check was not mediated by IU. **Conclusions:** Responsibility is not related to ratings of memory confidence, IU or the urge to check in a pediatric sample, suggesting that biases of responsibility may not be central to the formulation of childhood OCD. Results are discussed in terms of implications for cognitive formulations and cognitive approaches to treatment in pediatric OCD.

Responsibility beliefs, memory confidence, intolerance of uncertainty and the urge to check in childhood obsessive-compulsive disorder: an examination of cognitive theory

Childhood obsessive-compulsive disorder (OCD) is a chronic and distressing psychological condition with lifetime prevalence estimates between 1% and 3% (Flament et al., 1989; Reinherz et al., 1993; Shaffer et al., 1996; Valleni-Basile et al., 1994; Zohar, 1999). The clinical presentation of OCD is typically complex and highly comorbid, with 50-60% of patients experiencing two or more comorbid conditions during their lifetime (Karno et al., 1988; Rasmussen & Eisen, 1990; 1992; Rasmussen & Tsuang, 1986) leading to chronic disability. In childhood, OCD is frequently associated with severe disruptions to academic performance, peer relationships, and family functioning (Adams et al., 1994; Cooper, 1996; Leonard et al., 1993; Piacentini, Bergamn, Keller, & McCracken, 2003; Toro et al., 1992).

Despite increasing research into OCD over the past decade (Boschen, 2008), the underlying pathogenesis of this disorder, along with the mechanisms associated with the persistence and maintenance of OCD during childhood remain largely unknown. Furthermore, while cognitive-behavioural therapy (CBT) is widely used and has been designated as *probably efficacious* in treating pediatric samples (Barrett, Farrell, Pina, Peris, & Piacentini, 2008), results from the largest randomised clinical trial conducted to date (POTS, 2004), indicated that up to 60% of children treated did not experience complete remission from symptoms. Thus, research into the underlying processes associated with the development and maintenance of pediatric OCD is warranted, and will guide further treatment advances, ultimately improving outcomes for children with OCD.

The cognitive-behavioural theories of OCD (Frost & Steketee, 2002) are the most widely researched and validated approaches to understanding OCD psychopathology and treatment in adults. Currently, there exist several cognitive models of OCD (e.g., Rachman, 1976; 1993; Salkovskis, 1985; 1996; Wells, 1997; Wells & Matthews, 1994). Notably, all of

these models have been based on research with adults suffering with OCD and share as a central tenet that an individual's beliefs and appraisals of OCD symptoms plays an integral part in the development of the disorder. One of the most extensively researched cognitive models developed by Salkovskis (1985; 1996) emphasises that *inflated responsibility*, defined as "the belief that one has the power which is pivotal to bring about or prevent subjectively crucial negative outcomes" is a critical cognitive feature of OCD (Salkovskis, 1996, p. 111) which increases discomfort and anxiety associated with intrusions and the subsequent urge to ritualize (Salkovskis, 1989).

Numerous studies with adults employing a wide range of idiographic, psychometric and experimental designs have produced moderate to strong support for a responsibility bias underlying adult OCD. Moreover, studies specifically examining Salkovskis' theory (1985; 1989) have found that inflated responsibility is associated with both clinical obsessions and non-clinical intrusive thoughts (i.e., Foa & Steketee, 1983; Freeston et al., 1993; Ladouceur, Freeston, Gagnon, Thibodeau, & Dumont, 1993; Rachman, 1993; Rachman & Hodgson, 1980; Salkovskis & Warwick, 1988), and that responsibility beliefs are linked to obsessive-compulsive symptoms (i.e., Boschen & Vuksanovic, 2007; Clark & Purdon, 1993; Freeston & Ladouceur, 1993; Frost & Steketee, 1991; Lopatka & Rachman, 1995; Rheaume et al., 1994; Rheaume et al., 1995; Shafran, 1997; Steketee & Frost, 1994).

In addition to responsibility beliefs, another line of research supports the role of meta-cognitive beliefs and thought processes (e.g., Wells, 1997; 2000). It has long been accepted that patients with OCD experience elevated *doubt* in regards to their cognitions, memory and compulsive behaviours (e.g., Coles, Radomsky, & Horng, 2006; Dar, 2004; Rasmussen, & Eisen, 1992; Tolin et al., 2001), and have significant difficulty making decisions (de Silva, 2003). Moreover, a growing body of evidence suggests that appraising doubt as negative together with a low tolerance for experiencing doubt may underlie obsessional symptoms (e.g.,

Lind & Boschen, 2009; Kozak, Foa, & McCarthy, 1987; Rasmussen & Eisen, 1992). This experience of doubt and indecision as aversive has generally been referred to as *Intolerance of Uncertainty* (IU; Buhr & Dugas, 2002; Frost & Steketee, 2002; Holaway et al., 2006). IU has previously been defined as "...the way an individual perceives information in uncertain and ambiguous situations and responds to this information with a set of [negative] cognitive, emotional and behavioral reactions" (Dugas, Gagnon, Ladouceur, & Freeston, 1998, p.216).

Memory deficit models have been proposed to explain the pathological doubt associated with OCD; however, to date research findings have been mixed, and have generally failed to find a generalized memory deficit in OCD (Foa et al., 1997; Tolin et al., 2001; Tuna, Tekan, & Topcuoglu, 2005). An alternate hypothesis to understanding the pathological doubt associated with OCD, is that sufferers of OCD may experience low *confidence* in their memories which leads to increased doubt (Tolin et al., 2001). Indeed, findings from neuropsychological studies have demonstrated that patients with OCD have decreased memory confidence (Zitterl et al., 2001) despite rather uncompromised memory accuracy (Moritz et al., 2003). Van den Hout and Kindt (2003a; 2003b; 2004) and Radomsky et al (2006) have completed a number of experimental studies using a stovetop checking paradigm that have demonstrated a link between repeated checking behaviours and a decline in memory confidence. It has been argued that decline in memory confidence may explain the pathological doubt associated with OCD and the persistence of repetitive ritualising behaviours.

Interestingly, recent studies have reported a relationship between responsibility appraisals, and the experience of memory confidence and IU, which have an impact on and predict OCD symptomatology. For example, Radomsky and colleagues (2001) demonstrated that memory confidence deteriorates when a person perceives increased personal responsibility, which was manipulated in this study using a 'responsibility contract' between the participants and the experimenter in a checking task with a clinical sample of OCD participants. Boschen

and Vuksanovic (2007) demonstrated a similar finding using the ‘virtual stovetop’ checking experiment, whereby a group of 15 adults with OCD and 40 non-clinical controls, were asked to repeatedly check a computer generated stovetop, with half the participants also placed under a high responsibility condition. Responsibility was manipulated in this experiment by informing participants that another person (a confederate) would receive a mild, non-harmful electric shock, contingent on their performance during a checking task, using the computer generated stovetop paradigm. Results found that the act of checking lead to significant reductions in memory confidence, memory vividness and detail for both the OCD and the non-clinical sample; however, the OCD sample displayed significantly lower memory confidence across trials than the non-clinic group. These results support the growing research suggesting that individuals with OCD experience poorer memory confidence than controls, despite no additional objective memory deficit. Furthermore, a sense of increased responsibility had a significant impact on memory confidence, whereby participants with OCD in the high responsibility condition experienced substantial deterioration in memory confidence compared to those in the low responsibility condition and the nonclinical individuals.

Most recently, Lind and Boschen (2009) examined a mediation model in which the relationship between responsibility beliefs and compulsive checking was argued to be mediated by IU. In this study, using a mixed sample of individuals with clinical checking compulsions and a nonclinical group, results demonstrated that although both responsibility attitudes and IU were correlated with frequency of compulsive checking, the relationship between responsibility and checking was fully mediated by IU. The findings of this study suggest that the role of independent cognitive appraisals and beliefs is more complex than previously thought. Specific cognitive processes such as responsibility beliefs, memory confidence and IU, are likely associated with OCD through multiple pathways and complex interactions.

While there has been considerable research support implicating the role of dysfunctional cognitive appraisals and meta-cognitive beliefs in understanding the development and maintenance of OCD, this research has almost exclusively been conducted with adults. There has been very limited empirical investigation of cognitive theory of OCD in samples of children. Reynolds and Reeves (2008) recently published a literature review examining cognitive processes associated with OCD in child samples. They identified eleven studies conducted to date and of these, only four examined the applicability of cognitive theory in clinical samples of children with OCD (i.e., Barrett & Healy, 2003; Barrett & Healy-Farrell, 2003; Farrell & Barrett, 2006; Libby, Reynolds, Derisley & Clark, 2004). Nevertheless, Reynolds and Reeves (2008) concluded that there appears to be general support for cognitive models of OCD in children. However, results across the studies reviewed varied greatly, and only one found support for a responsibility bias associated with OCD in child samples (i.e., Libby, et al., 2004). Moreover, one study examining age-related differences in cognitive appraisals in OCD found that children (aged 7-11 years) reported significantly less responsibility bias than adolescents (12-17 years) and adults with OCD (Farrell & Barrett, 2006), suggesting that cognitive biases may develop in adolescence versus during childhood.

Since this systematic review (Reynolds & Reeves, 2008), Reeves, Reynolds and Wilson (2010) have provided another experimental study investigating the role of responsibility in children. In this study, 81 non-clinical children (aged 9 to 12 years) were randomly allocated to three responsibility conditions (high, moderate and low responsibility). All children were asked to sort sweets according to whether or not they contained nuts. Responsibility was induced by telling participants that subsequently the sweets would be given to a group of children, where one child had a nut allergy. In the high responsibility condition, children were told that the sweets would not be checked; in the moderate responsibility condition, children were not given any information regarding who would check the sweets, but that they would be checked; and in

the low responsibility condition, children were told the researcher would check the sweets and it would be the researchers fault if there were mistakes. The experimental manipulation was successful, with significantly higher ratings of perceived responsibility in the higher responsibility conditions, compared to the lower responsibility conditions (i.e., high versus medium versus low). Furthermore, increased perceived responsibility was associated with increased time taken to complete the task, increased checking behaviours and more frequent hesitations. However, there were no between-group differences on state anxiety (Reeves, Reynolds & Wilson, 2010). Collectively, the child studies conducted to date investigating cognitive biases associated with OCD are limited in number and at best provide only marginal support regarding the role of responsibility appraisals and meta-cognitive beliefs in children with OCD.

Given that the OCD expert consensus guidelines (March, Frances, Carpenter, & Kahn, 1997) recommend CBT as the first line treatment of choice for mild to moderate OCD in childhood, it is imperative that research examines the applicability of cognitive theories and cognitive-based therapies of OCD to children. To improve current approaches to treatment for childhood OCD, and to produce developmentally sensitive cognitive approaches to managing obsessions in children with OCD, research is needed examining the role of independent cognitive appraisals and beliefs, and the complex interaction amongst these constructs in children and adolescents with OCD.

This study aims to extend the current research in pediatric OCD, by manipulating responsibility in children and adolescents with OCD, and examining the impact of perceived inflated responsibility on memory confidence, IU and the urge to check. This study employed a cognitive appraisal task (CAT) that used two standardised vignettes which were read to all children in a counterbalanced order. Participants were asked to imagine themselves in the situation described in each vignette that resulted in them being either highly responsible, or not

responsible, for preventing potential harm to their friend's pet cat. Cognitive appraisals of memory confidence, IU and the urge to check were assessed following each CAT scenario using Likert-scale responses. It was hypothesised that the high responsibility condition would result in higher ratings of responsibility, lower memory confidence and higher IU, which would also result in higher ratings on the urge to check measure in children and adolescents with OCD. Moreover, it was hypothesized that adolescents (aged 12 to 17 years) with OCD would report significantly higher ratings of responsibility than children (aged 7 to 11 years). Furthermore, it was hypothesised that the effect of perceived inflated responsibility on the urge to check in a high responsibility condition would be mediated by IU.

METHOD

PARTICIPANTS

Participants consisted of twenty - seven youth, aged 7 to 17 years ($M = 10.85$; $SD = 2.71$), comprised of 18 boys and 9 girls, who were consecutively referred for treatment of OCD to the Griffith University, OCD treatment project, Gold Coast over a period of 18 months.

Participants were selected into this study on the basis of a DSM-IV (American Psychiatric Association, 1994) diagnosis of OCD. Exclusion criteria included; psychosis, intellectual disability, mental retardation, or receiving concurrent psychotherapy. There were no referrals to the project during this time which met exclusion criteria. All children were offered treatment following their assessment.

All participants presented with a diagnosis of OCD, based on clinician severity rating (CSR) of the Anxiety Disorders Interview Schedule for Children – Parent Version (ADIS-P; Silverman & Albano, 1996). Approximately eighty five percent of the sample had a secondary comorbid condition ($n = 23$), and 51.9% had a third diagnosis ($n = 14$). Table 1 presents

principal and comorbid diagnostic information. Participants mean CY-BOCS (Scahill et al., 1997) rating was 21.23 (SD = 6.26) indicating the sample was of overall *moderate* severity.

 Insert table 1 here

MEASURES

Diagnostic and Symptom Severity

The Anxiety Disorders Interview Schedule for Children – Parent version (ADIS-P; Silverman and Albano, 1996). This interview was developed specifically to diagnose anxiety disorders in children (Silverman and Eisen, 1992), and has good inter-rater and retest reliability. The ADIS-C/P has demonstrated good sensitivity to treatment effects in both childhood anxiety (Kendall, 1994; Barrett et al., 1996) and childhood OCD research (Albano et al., 1996; Barrett et al., 2004; Waters et al., 2001). This interview was administered to the child's parent/s in clinic to ascertain an OCD diagnosis.

Children's Yale-Brown Obsessive-Compulsive Scale (CY-BOCS; Scahill et al., 1997). The CY-BOCS is a widely used, clinician-rated, semi-structured interview, assessing severity of OCD symptomatology. The CY-BOCS rates severity of obsessions and compulsions across five scales: (a) time occupied by symptoms, (b) interference, (c) distress, (d) resistance, and (e) degree of control over symptoms, and also provides a total severity score. The CY-BOCS shows reasonable reliability and validity, with good to excellent inter-rater agreement and high internal consistency for total score (Scahill et al., 1997). This interview was administered to assess overall OCD symptom severity.

Cognitive Appraisal Task (CAT)

The cognitive appraisal task for pediatric OCD, or CAT task, was designed for use in this study¹. The CAT task involves reading participants two similar vignettes, developed to form the two high and low responsibility conditions. All participants received both vignettes, presented in a counterbalanced order across participants. The vignette describes a situation the child is asked to imagine themselves in, and then involves asking the child a number of questions relating to their beliefs about the scenario, including how they would feel and what they might do. Table 2 outlines the two scenarios, which reflect the high and low responsibility conditions.

 Insert table 2 here

Following each scenario, children were asked to rate the degree of *responsibility* (e.g., if something bad happened to the cat, how responsible would you feel?); *memory confidence* (e.g., how sure are you that you let the cat outside?); *intolerance of uncertainty* (e.g., how nervous or uncomfortable would you feel if you weren't sure?); and *urge to check* (e.g., how strongly would you feel you needed to go back and check?), using 7-point likert scales (0 = no problem / not at all) to (6 = completely / extremely). Rating scores used in analyses ranged from 0 to 6 for responsibility and urge to check; however ratings for memory confidence and intolerance of uncertainty were measured across a series of five probe questions that asked about different elements in the vignettes, with ratings then totaled across these five questions providing total scores ranging from 0 to 35. The questions asking children to rate responsibility was used to check the manipulation of responsibility in this task.

PROCEDURE

Following referral, participants were screened over the telephone for eligibility into the study via a brief parent interview assessing for obsessive-compulsive symptoms. If eligible, families attended an assessment at the university psychology clinic, conducted by the first author and a postgraduate clinically trained experimenter. On attending this interview, the research aims were explained to all participants and written informed consent was gained from parents. Initial assessment interviews involved ADIS-P interviews with parents and the CY-BOCS interview with children. Consultation between the interviewers' of the parent and the child interviews was carried out on completion of the interviews to improve reliability of clinician ratings on the CY-BOCS. Interviewers' were previously trained in diagnostic interviews and CY-BOCS interviews. All procedures in this study had prior ethics clearance through the university human research ethics committee.

Following diagnostic and symptom severity interviews, children were interviewed alone using the CAT task. The order of responsibility conditions was counterbalanced for all participants, and all children were read and responded to both the high and low responsibility conditions. Prior to the examiner reading the child the vignettes, the children were given the following instructions; *"I am going to read you a little story and I would like for you to pretend that this story is about you and is really happening. After I read the story I am going to ask you a few simple questions about what you might think and feel about this situation. Do you have any questions?"* Upon reading each vignette to the child, the examiner asked a number of questions relating to the vignette, assessing the child's appraisals and feelings associated with the scenarios. Children rated their responses using a series of 7-point Likert scale belief / feeling thermometers, measuring the intensity of their response from 0 (no problem / not at all) to 6 (completely / extremely). After the initial interview and pre-treatment assessment tasks, families were offered either individual or group CBT, depending on whether a group was viable at the time of intake.

RESULTS

Preliminary analyses were conducted to examine age effects on the responsibility manipulation. A multivariate repeated measures mixed between (age group: child 7-12 years, adolescent 13-17 years) and within group (responsibility condition: high, low) analysis of variance (MANOVA) was conducted. Age was sub-divided into two groups, consistent with primary school aged children (7 to 12 years) and high school years (13 to 17 years), and in line with previous investigations (i.e., Barrett & Healy-Farrell, 2003; Farrell & Barrett, 2006; Farrell, Barrett & Piacentini, 2006). There was no age group $\times$ responsibility condition interaction $F(4) = 1.10$; $p > 0.05$, partial $\eta^2 = .19$, indicating no significant difference in responding for younger versus older participants, although inspection of the means by age indicated that older participants rated each variable higher than children did, which may suggest a trend towards an age effect. Of the sample, 85% of participants ($n=23$) endorsed clinically significant checking compulsions on the CY-BOCS (Scahill et al., 1997).

Consistent with the primary hypothesis, separate paired samples t -tests confirmed that the manipulation of responsibility was effective, with a significant difference observed for higher ratings in the high compared to the low responsibility condition $t = 3.86$; $p < 0.005$ $d = .70$ (M difference = 1.42; $SD = 1.88$).

Table 3 presents the mean ratings and standard deviations for memory confidence, intolerance of uncertainty and urge to check across the two responsibility conditions. In contrast to the hypotheses, there was no significant differences across responsibility conditions on ratings of memory confidence $t = 0.72$; $p > 0.05$, $d = .08$ (M difference = 0.59, $SD = 4.25$),

intolerance of uncertainty $t = 0.60$; $p > 0.05$, $d = .09$ (M difference = 0.67, $SD = 5.82$), or urge to check $t = 0.41$; $p > 0.05$, $d = .11$ (M difference = 0.17, $SD = 2.01$).

 Insert table 3 here

To test the hypothesis that IU would mediate any relationship between responsibility and urge to check, we used the well-established procedure of Baron & Kenny (1986). The first step in testing a mediation effect is to establish a significant relationship exists between the predictor (responsibility) and the dependent variable (urge to check). This relationship was not statistically significant for the high responsibility condition ($\beta = .03$, $p = .89$, $R^2 = .001$). When the data for both high and low responsibility conditions were entered, yielding 54 datapoints, the relationship between responsibility and urge to check was still not significant ($\beta = .02$, $p = .88$). Thus indicating that there was no relationship between responsibility and urge to check and hence no relationship for IU to mediate.

DISCUSSION

The results of the present study indicated that the manipulation of responsibility was successful, in that children and adolescents with OCD reported a significantly higher degree of perceived responsibility in the high responsibility condition compared with the low responsibility condition. Contrary to hypotheses however, there were no significant differences on ratings of memory confidence, IU or on the urge to check, across the two responsibility conditions. Whilst the overall rating of responsibility in the high responsibility condition was only moderate (i.e., mean rating of 3.92 ($SD = 1.90$) on a scale 0 – 6), the results suggest that

inflated responsibility in children and adolescents with OCD does not lead to lower memory confidence, increased intolerance of uncertainty, or the urge to check.

Interestingly, there was no significant age by condition interaction, suggesting no differences in responding across two age groups. However, there was a trend for higher ratings across all variables in the adolescent sample. The non-significant finding in the current study was likely a power issue, with a larger sample perhaps indicating significant age-related differences. Nevertheless, the observed trend for higher ratings of cognitive bias in the older sample, in particular higher ratings of responsibility, is consistent with previous research examining age-related differences in cognitive biases in OCD (e.g., Farrell & Barrett, 2006), and suggests that responsibility biases and other cognitive processes may be more relevant or more pronounced in older (i.e., adolescents aged 12 to 17 years) compared with younger samples (i.e., children aged 7 to 11 years).

The mediation model suggested by Lind & Boschen (2009) was not found in the dataset of children and adolescents. This may suggest that the relationship between the variables of responsibility, IU, and urge to check may be different in children and adolescents. Such a change may accord with the developmental idea outlined above, in which cognitive processes develop over adolescence and into adulthood.

The finding that increased responsibility in a pediatric OCD sample did not lead to the hypothesised changes on related cognitive variables (previously demonstrated in adult OCD samples), is consistent with a previous published study examining an experimental manipulation of responsibility in children with OCD (Barrett & Healy-Farrell, 2003). That is, Barrett and Healy-Farrell (2003) manipulated perceived responsibility during a behavioural avoidance task (BAT) by varying the presence of others during the task and assigning responsibility for harm via signed contracts, and examined the effects on levels of perceived probability and severity of harm, distress, ritualizing, and avoidance. Results indicated that the

manipulation successfully inflated perceived responsibility; however, this did not lead to increased ratings of distress, probability or severity of harm, avoidance behaviours, or ritualizing in this sample of OCD children. Nevertheless, since both Barrett and Healy-Farrell (2003) and the current study yielded only moderate levels of responsibility, perhaps the responsibility manipulations were insufficiently potent to inflate responsibility.

Reeves, Reynolds and Wilson (2010) provided a powerful manipulation of responsibility in their study of non-clinical children (aged 9 to 12 years), who were randomly allocated to three responsibility conditions (high, moderate and low responsibility) and were asked to sort sweets according to whether or not they contained nuts. The experimental manipulation in this study was successful, with significantly higher ratings of perceived responsibility in the higher responsibility conditions, compared to the lower responsibility conditions. Furthermore, increased perceived responsibility was associated with increased time taken to complete the task, increased checking behaviours and more frequent hesitations. The results of this study, utilising a non-clinical sample, indicate that inflated responsibility is generally associated with increased checking behaviours. However, given this study did not include a clinical sample, it does not provide direct support for a role of inflated responsibility bias in the development of clinical OCD in children.

The conflicting findings across studies regarding the role of inflated responsibility and OCD symptoms such as checking behaviour, deems it impossible to draw conclusions at this stage about a role for responsibility biases in childhood OCD. Clearly more research is warranted to further explore and understand the role of cognitive biases (e.g., Rachman, 1976; 1993; Salkovskis, 1985; 1996; Wells, 1997; Wells & Matthews, 1994), specifically responsibility biases, associated with OCD in pediatric OCD samples. Research utilising experimental designs, including clinical and non-clinical comparison groups, would shed

further light on the possible etiological role for responsibility and other cognitive biases in the development of obsessive-compulsive symptoms in children and youth.

Limitations of the current investigation include (1) the degree to which responsibility was inflated in the current sample – that is, a more powerful manipulation of responsibility may provide more insight into the role of responsibility in the development of obsessive-compulsive symptoms; (2) the absence of a non-clinical control group, to control for developmental confounds such as cognitive maturation, versus pathological variance associated with within group differences; and (3) the relatively small sample size which limits power to detect between group differences in terms of age and responsibility condition – although the sample was adequate to detect a group difference on responsibility ratings, with a large effect size. Standardised assessment of pediatric OCD cognitive biases is difficult to conduct in experimental studies due to the heterogeneous nature of children's symptoms. In this study the vignette's related to a checking scenario, which was largely relevant across the sample, with 85% of children endorsing some checking symptoms. Idiographic assessment of children's biases may overcome the limitation of using standardised vignette's, which may have varying relevance for children; however, it is then difficult to standardise tasks which compromises reliability.

This research study provides an important addition to the under-studied area of cognitive processing of threat associated with OCD in a clinical sample of children. The study used a novel experimental vignette paradigm, manipulating perceived responsibility, and assessed the impact of responsibility biases on other cognitive processes – namely IU and memory confidence, and the urge to check in children and youth with OCD. Understanding the role of threat interpretations and cognitive biases in OCD is important in terms of our approaches to treatment for childhood OCD. To date, little is known about the importance of cognitive approaches to treatment. Further experimental studies to understand the role of

cognition in the aetiology and maintenance of childhood OCD are warranted, to justify the inclusion and evaluation of cognitive treatment components in the management of pediatric OCD.

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Footnotes

¹ a copy of the procedural manual for the CAT task is available from the first author on request.

Table 1. Participant Diagnostic Presentation at Pre-Treatment

Diagnosis	Primary Diagnosis	Secondary Diagnosis	Third Diagnosis
	N	N	N
	%	%	%
OCD	22	2	2
	81.5%	7.4%	7.4%
GAD	1	7	4
	3.7%	25.9%	14.8%
SAD	1	1	0
	3.7%	3.7%	%
SoPH	0	4	2
	%	14.8%	7.4%
SpPH	1	3	1
	3.7%	11.1%	3.7%
MDD	0	1	2
	%	3.7%	7.4%
Dysthymia	0	1	0
	%	3.7%	%
ADHD	0	0	3
	%	%	11.1%
ODD	0	1	0
	%	3.7%	%
ASD/ PDD	2	2	0
	7.4%	7.4%	%
TS	0	1	0
	%	3.7%	%
TOTAL	27	23	14
	100%	85.2%	51.9%

Abbreviations: GAD = generalised anxiety disorder, SAD = separation anxiety disorder, SoPH = social phobia, SpPH = specific phobia, MDD = major depressive disorder, Dysthymia = Dysthymic Disorder, ADHD = attention deficit / hyperactivity disorder, ODD = oppositional defiant disorder, ASD/ PDD = autistic spectrum disorder / pervasive developmental disorder, TS = Tourettes Syndrome.

Table 2. The two scenarios used in the Cognitive Appraisal Task (the CAT task)

Condition	Scenario
High Responsibility	<p>Your best friend has called you very upset. She has just left for an overseas holiday to Thailand with her entire family. They have been gone two days when your friend calls you. She has just realised that her new cat may be locked inside the family home! It was her job to let the cat out before they left. The neighbours were going to look after the cat but they haven't seen it for 2 days – your friend has a very large yard.</p> <p>You are the only one with a key to the house. Your friend asks you to go and check on the cat. You go to the house, let yourself in through the front door and find the cat – locked in the laundry. The cat is so very excited to see you. You open the laundry door and let the cat outside. You walk outside, to check the side gate is shut. It has been left wide open, so, you make sure you shut it. As you are coming back inside, you remember to check the cat's water bowl outside. You go and fill up her water bowl. You come back inside in a hurry now; your mum is waiting in the car. You grab the keys and leave the house, locking the front door.</p>
Low Responsibility	<p>Your best friend has called you very upset. She has just left for an overseas holiday to Thailand with her entire family. They have been gone two days when your friend calls you. She has just realised that her new cat may be locked inside the family home! It was her job to let the cat out before they left. The neighbours were going to look after the cat but they haven't seen it for 2 days – your friend has a very large yard.</p> <p>Your friend says her cousin Matthew has a key to the house. You call Matthew and ask him to go and check. Matthew calls you when he comes home and tells you that he went to the house. He let himself in through the front door and found the cat – locked in the laundry. The cat was excited to see him. He went through the laundry door and let the cat outside. He walked outside to check the side gate was shut. It had been left wide open, so, he made sure he shut it. He also remembered to check the cat's water bowl outside – he filled up the water bowl. He said he was in a rush as his mum was waiting in the car, but he grabbed the keys and left the house, making sure he locked the front door.</p>

Table 3. Means and standard deviations across high and low CAT responsibility conditions

CAT Ratings	HIGH responsibility Mean	SD	LOW responsibility Mean	SD
Responsibility	3.92*	1.90	2.50*	2.16
Memory Confidence	19.15	6.40	18.56	8.09
Intolerance of uncertainty	10.59	6.81	9.93	7.85
Urge to check	3.63	1.50	3.46	1.56

Note: * $p < 0.005$; Scale ranges: Responsibility 0 – 6; Memory Confidence 0 – 35; Intolerance of Uncertainty 0 – 35; Urge to Check 0 – 6