School of Psychology
Division of Health Sciences

Clinical and Research Developments in the Treatment of Paediatric Obsessive-Compulsive Disorder

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Thesis Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Signature: ……..

Date: ……..

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Table of Contents

List of Tables

List of Figures

Abstract

It is of crucial importance to identify and disseminate effective treatments for paediatric obsessive-compulsive disorder (OCD). OCD is time-consuming and distressing, and can substantially disable functioning at school, at home, and with peers (Piacentini, 2003). Children who do not receive treatment are at risk of psychological difficulties in adulthood, including continued OCD, clinical anxiety and depression, personality disorders, and social maladjustment (Wewetzer et al., 2001). Two-thirds of adult cases of OCD develop in childhood, and adults with OCD have lower employment, poorer academic achievement, and lower marital rates compared to non-OCD adults (Hollander et al., 1996; Koran, 2000; Lensi et al., 1996; Steketee, 1993). The distressing nature of OCD in childhood, accompanying psychosocial impairment and risk of future psychopathology, underscore the need to identify effective treatments. The primary aim of this thesis was to expand knowledge of evidence-based treatments for paediatric OCD. A mixed-methodology approach was employed to examine key issues in this area.

The first study used meta-analytic methodology to determine the evidence supporting available treatments for paediatric OCD. An extensive literature search revealed over 100 published reports of treatments, encompassing a broad array of theoretical approaches and treatment strategies. Examples of treatments used for paediatric OCD included psychodynamic therapy, pharmacotherapy, cognitive-behavioural therapy (CBT), hypnosis, family therapy, immunotherapy, and homeopathy. Study 1 comprised the first known meta-analysis of randomised, controlled treatment trials (RCTs) for paediatric OCD. Included studies were limited to RCTs as they are the most scientifically valid means for determining treatment efficacy and provide a more accurate estimate of treatment effect by removing error variance associated with confounding variables. The literature search identified 13 RCTs containing 10 pharmacotherapy to control comparisons ($N = 1016$) and 5 CBT to control comparisons ($N = 161$). Random effects modelling yielded statistically significant pooled effect size (ES) estimates for pharmacotherapy (ES = 0.48, 95%

CI = 0.36 to 0.61, $p < .00001$) and CBT (ES = 1.45, 95% CI = 0.68 to 2.22, $p = .002$). The results support the efficacy of CBT and pharmacotherapy, and confirm these approaches as the only two evidence-based treatments for paediatric OCD. Implications and suggestions for future research are discussed.

The effectiveness of CBT provided impetus to further examine this treatment. Group CBT is an understudied treatment modality among children with OCD. It was hypothesised that group CBT would possess efficacy because of the effectiveness of individual CBT for children with OCD, the demonstrated effectiveness of group CBT among adults with OCD, the practical and therapeutic advantages afforded by a group treatment approach, and the embeddedness of the approach in robust psychological theory. The aim of the second study was to evaluate the efficacy of group CBT. The study comprised the largest known conducted randomised, placebo-controlled trial of group CBT for paediatric OCD. Twenty-two children and adolescents with a primary diagnosis of OCD were randomly assigned to a 12-week program of group CBT or a credible psychological placebo. Children were assessed at baseline, end of treatment, and at 1 month follow-up. Outcome measures included the Children's Yale-Brown Obsessive-Compulsive Scale, global measures of OCD severity, Children's Depression Inventory, and parent- and child-rated measures of psychosocial functioning. An intention-to-treat analysis revealed that children in the group CBT condition had statistically significantly lower levels of symptomatology at posttreatment and follow-up compared to children in the placebo condition. Analysis of clinical significance showed that 91% of children that received CBT were 'recovered' or 'improved' at follow-up, whereas 73% of children in the placebo condition were 'unchanged'. Effect size analysis using Cohen's *d* derived an effect of 1.14 and 1.20 at posttreatment and follow-up, respectively. These effects are comparable to results from studies of individual CBT. This study supported group CBT as an effective treatment modality for paediatric OCD and demonstrated that the effect extends beyond placebo and nonspecific treatment factors.

In addition to treatment efficacy, the inherent worth of a treatment lies in its adoption by the relevant clinical population. Children with OCD are known to be secretive and embarrassed about symptoms, and there is often a long delay between onset of symptoms and treatment-seeking (Simonds & Elliot, 2001). An important observation during the course of conducting the RCT was that a high rate (39%) of eligible families declined participation. This led to the question, "What barriers

prevent participation in group CBT for paediatric OCD?" Qualitative methodology was employed to address this research question. Eligible families that had declined participation in the RCT were contacted and invited to participate in semi-structured interviews that explored reasons for non-participation and positive and negative perceptions of group CBT. The average time between non-participation and interview was 1.33 years (*SD* = 3 months). Data were collected from nine families and thematic analysis methodology was utilised to identify emergent themes. Failure to participate was predicted by practical and attitudinal barriers. Practical barriers included a lack of time, distance, severity of OCD symptoms, financial, and child physical health. Attitudinal barriers included child embarrassment about OCD symptoms, child belief that therapy would be ineffective, fear of the social aspect of the group, lack of previous success with psychology, lack of trust in strangers, parental concern about the structure of the group, denial of a problem, and 'not being ready for it'. Attitudinal barriers more frequently predicted treatment non-participation. Positive and negative perceptions of this treatment modality were informative. Parents showed no differences in preference for individual or group CBT. An important finding was that 56% of the children had not received treatment since parental expression of interest in the group CBT program. Application of the findings to methods that promote service utilisation is discussed.

Introduction

"*What lies behind us and what lies before us are tiny matters compared to what lies within us*", Ralph W. Emerson.

This research is about helping young people with obsessive-compulsive disorder (OCD) to manage their lives successfully, void of the constraints imposed by the monster that is OCD. OCD can be a chronic and debilitating condition that can rob an individual of friendships, security, time, self-understanding, and an existence that others take for granted. A driving force behind my foray into child clinical psychology stems from a personal philosophy that every child deserves the right to a happy, healthy childhood. During the course of this research I met many children with OCD at various levels of severity. I met a young male housebound with his symptoms, a six-year old girl with dermatitis on her hands and abnormal bleeding around her bottom from excessive washing and wiping, and a boy who performed mathematics calculations five times over even during school tests. I met children afraid to have sleepovers, children that feared death of loved ones by doing things out of a prescribed order, children that expended tremendous energy hiding rituals from peers, and children that felt alien to other children. This research is for these children, and the countless others, that live or have lived under the tyranny of OCD. Thousands of researchers and clinicians worldwide are banded together towards the common goal of improving the lives of these children, and there is much hope now for children affected by OCD. I am privileged to have been a part of the advancement of knowledge in this field. It is with this sentiment that I offer my humble contribution to the field of child clinical psychology – the research that is presented to you in this thesis. The primary aim of my research was to expand knowledge of evidence-based treatments for paediatric OCD. I hope that this knowledge will, in some way, lesson the burden experienced by these children.

I will briefly outline the structure of my thesis. Chapter 1 commences with a broad overview of paediatric OCD including diagnostic criteria, clinical presentation, prevalence, course, comorbidity, assessment, and etiology. Chapter 2

explores existing treatments for paediatric OCD, and summarises the results and methodology of key studies. Many different treatments, ranging from cognitive-behavioural therapy (CBT) to hypnosis, medication to psychodynamic therapy, and homeopathy to transcranial magnetic therapy, are discussed. With such an array of treatments, clinicians need to know which treatments are effective in order to confer the most benefit to families. Chapter 3 addresses this issue, presenting the findings of a meta-analysis of RCTs of treatments for paediatric OCD (Study 1). The overall aim of this study was to enhance knowledge of evidence-based treatments for paediatric OCD. A secondary benefit of meta-analysis methodology is that comparative efficacy of treatments can be assessed because treatment effectiveness is quantified using a standardised methodology. Findings from this study inform the direction for the next part of the thesis. Chapter 4 identifies the understudied nature of group CBT. Practical and therapeutic benefits of this treatment modality are described, and a rationale for its proposed effectiveness within the paediatric OCD population is offered. The chapter concludes by recognising the lack of controlled trials that have been conducted on group CBT for paediatric OCD, and the gains in knowledge of the effectiveness of this treatment that could be achieved should more controlled trials be conducted. Chapter 5 introduces Study 2, which comprises a randomised, placebo-controlled trial of group CBT for paediatric OCD. The study involved 22 children/adolescents randomly allocated to a 12-week program of group CBT or a credible placebo therapy control. Measures employed include the Children's Yale-Brown Obsessive-Compulsive Scale, global indices of OCD severity, Children's Depression Inventory, and the parent version of the Child Obsessive Compulsive Scale. Posttreatment and brief follow-up results, effect sizes, and clinical significance analyses are presented. During the course of conducting Study 2, a high-rate of non-participation in group CBT among families that expressed initial interest was observed. This resulted in the germination of Study 3 (presented in Chapter 6), which explores barriers to treatment access. Individuals with OCD frequently delay help-seeking and children may be secretive and embarrassed about symptoms. Families that met the screening criteria for the group CBT trial but declined participation were contacted and invited to participate in a study about the reasons for non-participation. The aim of this study was to determine the types of barriers, practical and attitudinal, that contributed to non-participation. Consenting parents participated in semi-structured interviews. Data were analysed using thematic

analysis methodology. Implications of the findings are discussed in the context of facilitating treatment accessibility and participation. The thesis concludes with a general discussion in Chapter 7.

Chapter 1

Paediatric Obsessive-Compulsive Disorder

In 1875 Legrand du Saulle referred to OCD as *folie du doute*, or the "disease of doubt". Increasing awareness led to the recognition that children can suffer from the disorder. Janet's publication in 1903 comprised the first report of a child with obsessive-compulsive symptoms. He presented the case of a 5-year-old boy, writing "No reassuring satisfies: the patient must be forever verifying his honesty, cleanliness, sanity, perceptions, and what he did last" (Mayo, 1948, p. 253). Freud's famous case, "rat man", experienced an onset of obsessions at six years of age. Mayo (1948, p. 253) commented "they are experts in an arduous rethinking of the obvious". These reports and others encouraged awareness of the problem contemporarily referred to as paediatric OCD.

Since Janet's seminal publication, our understanding of paediatric OCD has significantly advanced. This chapter overviews OCD in children, including a review of the diagnosis, epidemiology, phenomenology, and course of the disorder. Relevant issues such as differential diagnosis, comorbidity, assessment, and etiology are discussed. Heretofore, the term "children" refers to individuals under the age of 18 years, unless otherwise indicated and childhood OCD refers to individuals aged below18 years that meet formal diagnostic criteria for OCD.

Diagnosis

OCD is characterised by recurrent obsessions and/or compulsions that consume more than one hour a day and cause marked distress or functional impairment (American Psychiatric Association, 2000). The diagnostic criteria for childhood OCD are identical to adults with the exception that children do not have to

display insight into their disorder. Younger children may lack the abstract thinking skills required to identify OCD-related behaviours as atypical and senseless.

A primary characteristic of OCD is the experience of obsessions. Obsessions are persistent thoughts, impulses, or images that are anxiety provoking and perceived as difficult to control. Obsessions differ from worry, which is apprehensive expectation about a real-life event and is experienced ego-syntonic. Individuals with OCD recognise obsessions as originating from their own mind, and not from an external source, such as in psychotic illnesses. Individuals with OCD often attempt to ignore or suppress the unwanted thoughts, images, or impulses, or to neutralise them with some other thought or action.

Compulsions are repetitive behaviours or cognitions that a person performs to reduce the anxiety associated with the occurrence of an obsession, or according to rules that must be applied rigidly. Although compulsions are designed to reduce the anxiety associated with a dreaded event they are not normally logically connected to the event, or are undoubtedly excessive. Approximately 90% of children with OCD report the experience of both obsessions and compulsions, though the presence of both symptoms is not required for a diagnosis (Foa et al., 1995). A diagnosis of OCD is ascribed if the symptoms cannot be better accounted for by a general medical condition or substance that has affected the central nervous system.

Epidemiology

An early study reported that 0.3% of children met criteria for "mixed obsessional/anxiety disorders", and no cases had pure obsessive-compulsive symptoms (Rutter, Tizard, & Whitmore, 1970). Recent epidemiological evidence suggests that OCD is more common than once thought (Thomsen, 1998). Among adults, it is the fourth most common psychiatric disorder, ranking after phobias, substance abuse disorders, and major depressive disorder (Rasmussen & Eisen, 1992). Factors thought to have influenced the upward revision in prevalence rate include increased clinician education, improved diagnostic methods, and increased knowledge of the disorder among referrers (doctors, teachers, etc). An outline of epidemiological studies of childhood OCD is presented below.

Flament and colleagues (1988) screened 5,596 United States students aged 14 to18 years for OCD symptomatology using the Leyton Obsessional Inventory –

Child Version (Berg, Whitaker, Davies, Flament, & Rapoport, 1988). Follow-up diagnostic interviews were administered to 356 students. Eighteen obtained a diagnosis of OCD. The weighted lifetime prevalence rate of the disorder was 1.9% and the weighted current prevalence rate was 1.0%.

Zohar and colleagues (1992) examined OCD symptomatology in 562 male and female Israeli army inductees aged 16 to 17 years. Over 95% of the national cohort of youths this age was screened via induction centres. A diagnostic interview determined OCD status. The point prevalence rate for OCD was 3.6%. Apter and colleagues (1996) utilised a similar methodology and sampling frame. They examined the prevalence of OCD symptomatology among 861 male and female 16-year old Israeli army inductees. Screening involved the use of a self-report questionnaire (the Hebrew version of the Schedule for Tourette's Syndrome and Other Behavioral Syndromes; (Pauls & Zohar, 1991) and a structured diagnostic interview with a child and adolescent psychiatrist. Twenty cases of OCD were identified, representing a current prevalence of 2.3%. In a separate study, Zohar (1999) reported that the lifetime prevalence of OCD among a sample of 861 17-year old Israeli army inductees was 2.8%.

Reinherz and colleagues (1993) examined OCD symptomatology among a sample of late adolescents in the United States. The mean age of the sample of 386 participants was 17.9 years. Trained lay interviewers conducted diagnostic interviews. Eight adolescents met the criteria for OCD, suggesting a 2.1% lifetime prevalence.

Lewinsohn and colleagues (1993) examined the prevalence of OCD in the United States in a sample of 1,710 high school students. Three cohorts of high school students aged 14 to 18 years were recruited in 1987, 1988, and 1989. Demographic characteristics of the sample were equivalent to 1980 census data. Each student received a diagnostic interview. The current prevalence of OCD was 0.06% and the lifetime prevalence was 0.53%. A 14-month follow-up was conducted on 1,508 participants in the original sample. The current prevalence of OCD at time two was zero and the lifetime prevalence was 0.60%. No new cases of OCD were identified between time one and time two, indicating that the incidence of OCD was negligible. These findings differ from other studies, where higher prevalence and incidence rates have been reported. Results may have been biased by a high nonresponse rate of 48% among the first cohort. No efforts were made to recruit

adolescents that had dropped out of high school or been placed in psychiatric institutions. The interrater reliability of diagnoses for current and lifetime anxiety disorders was low (κ_S = .60 and .63, respectively), which may have comprised an additional source of bias.

Valleni-Basile et al. (1994) reported a 12-month OCD point prevalence of 2.9% among a sample of 3283 United States students. Students ranged in age from 12 to 15 years. The study was originally designed to assess depressive symptomatology. Each student was administered the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). The CES-D is a screening questionnaire for depression. A subsample of these students was selected to undergo diagnostic evaluation. The subsample included children who had received elevated scores on the screening instrument, students who submitted questionnaires with missing data, as well as a random sample of children. The authors reported that cases with OCD symptomatology were likely to be identified during this stage as the CES-D demonstrates proficiency in screening for alternative disorders (Garrison, Addy, Jackson, McKeown, & Waller, 1991). Trained psychiatric nurses administered diagnostic interviews to students and their mothers. Twenty-six children met the criteria for OCD. A follow-up study of this sample (Valleni-Basile et al., 1996) revealed that the weighted 1-year incidence of OCD was 0.7%. Subclinical OCD did not predict a diagnosis of OCD at follow-up.

A community-based study conducted by Verhulst and colleagues (1997) examined the prevalence of psychiatric disorders in a Dutch sample of adolescents. In the first phase of the study, a representative sample of 853 13- to 18-year olds was screened using the parent, self-report, and teacher versions of the Child Behavior Checklist (Achenbach, 1991). Parent and child versions of the Diagnostic Interview Schedule for Children, version 2.3 (DISC; National Institute of Mental Health, 1992) were administered to a subsample of these children. The subsample comprised 200 children that obtained a mean *z* score above the 75th percentile on the CBCL, and 112 randomly selected children that obtained a *z* score below the 75th percentile on the CBCL. The six-month weighted prevalence of OCD in the Netherlands was 0.2% and 0.9%, according to the parent and child versions of the DISC, respectively. No significant gender differences were detected.

In the largest study undertaken, Heyman and colleagues (2003) investigated OCD symptomatology among a sample of 10,438 children in the United Kingdom.

The sampling frame from which participants were drawn comprised an estimated 90% of the population of five to fifteen year-olds in the United Kingdom. Parents of children aged 10 years and below and children aged over 11 years were administered a diagnostic interview. The interviews were conducted by trained lay interviewers. Twenty-five children received a diagnosis of OCD with both Diagnostic and Statistical Manual (American Psychiatric Association, 2000) and the Tenth Revision of the International Classification of Disease (*ICD-10-DCR*; World Health Organisation, 1993) criteria. This equated to a weighted current prevalence rate of 0.25%. Significant age differences were detected, with older children more likely to meet diagnostic criteria than younger children. No significant gender differences were found. The prevalence rate reported in this study is lower than that reported in previous studies. This may be due to the use of the *ICD-10-DCR*, which underdiagnoses cases of OCD by more than 50% relative to the *DSM-IV* criteria (Steinberger & Schuch, 2002). The main limitation of *ICD-10-DCR* OCD criteria is that diagnostic stability is highly dependent upon age, and older children are more likely to meet diagnostic criteria than younger children. This bias is evident in the above, and may have attenuated the prevalence rate.

Guerrero and colleagues (2003) reported a current prevalence rate of 12% in a sample of 619 Hawaiian adolescents. Ages ranged from 13 to 19 years, with a mean age of 15.8 (*SD* = 1.23) years. The DISC (National Institute of Mental Health, 1992) was administered to each participant by a lay, trained interviewer. Seventy-four cases of OCD were identified. Environmental and genetic risk factors were provided as explanations for the elevated prevalence rate. Hawaiian individuals have a greater risk of developing a group A β–hemolytic streptococcal infection. The auto-immune response associated with this infection has been linked to the development of obsessive-compulsive symptomatology, thus accounting for the higher prevalence rate (Garvey, Giedd, & Swedo, 1998; Swedo, 1994).

These results suggest that the current prevalence rate of OCD in children is between approximately 0.25% and 2.3%, with the exception of Hawaiian children. The lifetime prevalence of childhood OCD is approximately 2.8%, and the 1-year incidence of OCD in children is approximately 0.7%. The variability in the prevalence rates can be attributed to the heterogeneity of the measures employed. Cross-cultural differences in the prevalence of OCD are uncommon, yet have been

reported (Guerrero et al., 2003). Research has yet to determine whether there are cross-cultural differences in the incidence of OCD.

Phenomenology

Many different types of obsessions and compulsions encompass the clinical presentation of OCD. The most common symptoms are outlined in this section.

Obsessions

Types of Obsessions

Contamination. Many children with OCD experience obsessions related to the theme of contamination. Contamination obsessions typically concern germs, dirt, or excrements. They may be highly specific to vague and poorly defined (American Academy of Child and Adolescent Psychiatry, 1998). For instance, one child with contamination obsessions might experience intrusive thoughts about a particular cleaning fluid or disease (e.g., meningococcal disease), whereas another child may experience obsessions about "sticky" or "dirty" objects.

Children with contamination obsessions may believe that contact with a contaminated object will cause them to feel ill, catch a disease, or even die. March, Franklin, and Foa (2003) reported the case of a 10-year-old boy who had primary obsessions involving contact with bodily fluids, such as saliva or faeces. He believed that contact with these stimuli would trigger illness. Consequently, he avoided contact with objects that had been touched by others and became distressed when he was near items associated with public bathrooms or sick people.

Children with contamination obsessions may worry that they will contaminate others and cause them to feel ill. Harris and Weibe (1992) presented a case illustration of a 15-year-old boy who experienced repetitive, intrusive thoughts that he had caught a disease (e.g., AIDS, cancer) and that contact with other people would facilitate transmission of the disease.

Aggressive. Aggressive obsessions involve a fear that harm will come to oneself or others. Children with aggressive obsessions may worry that they will do something to hurt themselves or other people. Typical obsessions include a fear that they will act upon unwanted impulses, such as stabbing the self, a close friend or

stealing items, fearing that they will uncontrollably express obscenities or insults, or fearing that they will commit an embarrassing act. Children with OCD may experience violent images. Shafran and Somers (1998) described a 14-year-old boy with intrusive thoughts that he would poison himself or someone he loved. The boy also believed that he might accidentally steal items that he touched.

Symmetry. Intrusive urges regarding the need for symmetry and order comprise another common type of obsession. Children with symmetry obsessions may experience the overwhelming urge to align objects in a particular way. They may demonstrate an abnormal preoccupation with the neatness of their personal appearance or aspects of their environment. Owens and Piacentini (1998) described an 8-year-old boy with symmetry obsessions regarding tactile sensations. Specific sensations, such as someone touching him on the shoulder, would trigger thoughts that the sensations had to be "evened out".

Hoarding/saving. Some children experience hoarding or saving obsessions in which they feel driven to collect objects of useless or limited value. They may demonstrate difficulty discarding the items that they have collected. Leonard, Swedo, and Rapoport (1991) discussed a 6-year-old boy that experienced the urge to collect items he walked past. These included sticks, rocks, and paper. He retained useless household items, such as used toothpaste tubes and newspapers, and found it extremely difficult to resist these urges.

Magical. Children with OCD may have obsessions that contain magical or superstitious content. They may experience intrusive thoughts relating to lucky or unlucky numbers, colours or words. Children with magical obsessions may feel compelled to count in their mind, or to count objects, such as windows or tiles, until they have reached a number with special significance.

Scrupulosity. Scrupulosity or religious obsessions can take several forms. Children with these obsessions may present with an excessive concern or fear of offending religious figures. They may have an extreme preoccupation with morality and right or wrong. Leonard, Swedo, and Rapoport (1991) described a 17-year-old boy that ruminated excessively about past deeds. He spent prolonged amounts of time retrospectively examining his activities to determine if he had engaged in sinful behaviours. Children with religious obsessions may have a preoccupation with being truthful. They may avoid answering questions with a direct "yes" or "no" statement,

in case their answers reveal a lie. Responses may be punctuated with “maybe”, “don’t know” or “possibly”.

Sexual. Some children with OCD have obsessions involving sexual content. The image or urge that comprises the obsession is experienced as unwanted and anxiety provoking. The thoughts may involve forbidden or perverse images or impulses, and can sometimes contain themes of homosexuality. Obsessions may involve committing an aggressive sexual act on another person. Sexual obsessions may be extremely difficult for a child to articulate due to shame and embarrassment, although they are more commonly seen in adults with OCD rather than children.

Prevalence of Obsessions

Several studies have identified the prevalence of different types of obsessions in childhood OCD samples. Some obsessions are experienced more frequently than others. In an Australian clinical sample comprising 77 children with a primary diagnosis of OCD the most common obsessions were contamination obsessions (75%) and aggressive obsessions (62%) (Barrett, Healy-Farrell, & March, 2004). Primary obsessions reported in a United States clinical sample of 70 adolescents included contamination obsessions (40%), aggressive obsessions (24%), scrupulosity (13%) and forbidden thoughts (4%) (Swedo, Rapoport, Leonard, Lenane, & Cheslow, 1989). Children in a United States clinical sample most commonly experienced contamination obsessions (73%), aggressive obsessions (53%), and symmetry obsessions (33%) (Last & Strauss, 1989). Hanna (1995) found that the most common obsessions reported in a United States clinical sample were contamination obsessions (87%), aggressive obsessions (81%), symmetry obsessions (64%), hoarding/saving obsessions (36%), magical obsessions (26%), sexual obsessions (26%), religious obsessions (23%), and somatic obsessions (10%). These studies suggest that contamination obsessions are the most common obsessions reported by children with OCD, followed by aggressive obsessions. No cross-cultural differences are apparent.

Compulsions

Compulsions are performed to alleviate the anxiety associated with the experience of an obsession. In rare cases a child may present with compulsions only,

though it is unclear whether the reason is because obsessions are not present or the child is not able to identify or articulate the obsessional content. In these instances, the compulsions are enacted according to specific "rules" that the child has developed. Compulsions can be either overt or covert. Overt compulsions are actions that are potentially observable by another person. Covert compulsions involve mental activity such as counting or rehearsing sentences in one's mind.

Types of Compulsions

Washing. Some children with OCD exhibit washing compulsions. These compulsions usually occur in response to contamination obsessions. A child may have an obsession related to germs or contamination and feel compelled to eliminate the threat by washing parts of his/her body. They may engage in lengthy, elaborate, washing rituals multiple times a day. The presence of negative affect and the frequency and intensity of the washing behaviour differentiates compulsions from normal washing. Observational markers of compulsive washing include excoriation (particularly on the hands) and excessive use of cleaning agents such as soaps and detergents.

Checking. Checking compulsions generally occur in response to aggressive obsessions. The source of the checking may vary greatly from child to child. Some children check excessively that the door is locked, whereas other children may check the kitchen stove. Common items or objects that children with checking compulsions examine include windows, toys, light switches, water faucets, electrical outlets, and appliances. Some children with OCD recheck tasks or activities to make sure that they have not made a mistake, and others retrace parts of their route to ensure that they have not hurt anyone (Thomsen, 1998). Kearney and Silverman (1990) described a 14-year-old male with a severe case of OCD. He repeatedly checked windows in his house to ensure that no bats were present. Checking compulsions occurred on a near-continual basis, thousands of times a day. A 13-year old girl experienced an intrusive urge to place the child she was baby-sitting in a microwave oven (Wagner, 2003). This obsession triggered a checking compulsion, whereby she relieved her anxiety by checking the microwave and/or baby's crib repeatedly to ensure that she had not acted on her urge. A 14-year-old boy with OCD had obsessions that he would poison someone. To relieve his anxiety he checked food to make sure that he had not put poison in it (Shafran & Somers, 1998).

Arranging. Arranging or ordering compulsions usually occur in response to symmetry obsessions. Children with arranging compulsions engage in elaborate ordering routines. They may manipulate aspects of their environment in a highly stereotyped and rigid manner. The arranging compulsion is discontinued when the individual achieves a subjective feeling that things are "just right". Some children with arranging compulsions may need to ensure that objects or body actions are "even". In the case example reported by Owens and Piacentini (1998), an 8-year old boy experienced intrusive urges to even out his or others' tactile sensations. When his mother touched a table with one forearm he became extremely agitated and yelled at her to touch the table with her other forearm. He attempted to physically force her to place her opposite forearm on the table when she did not comply with his demand. An 11-year-old girl spent three hours a day straightening items in each drawer and closet in her bedroom (Leonard, Swedo, & Rapoport, 1991). The compulsions increased in frequency and severity until she refused to go into her room, and had to sleep on the floor outside her bedroom. Family members were prevented from accessing her room in case they disturbed the order of her items. Arranging compulsions can be precipitated by aggressive obsessions. Children may arrange objects until they are "just right" in order to avert harm befalling a loved one (Evans, Milanak, Medeiros, & Ross, 2002).

Repeating. Repeating compulsions can be triggered by aggressive obsessions. Children may repeat certain phrases, words, or activities. They may walk in and out of doorways, repeatedly put on shoes, or re-write sections of homework until the action or outcome feels "just right". Some of these behaviours may be mistaken for boredom by an observer. Leonard et al. (1991) reported the case of a 17-year old boy that repeatedly retraced his steps from his family's car into the house. When he was interrupted or prevented from performing his compulsion he got extremely upset and agitated. He spent 20 minutes traversing a distance that took his family members seconds. This kind of behaviour is often associated with the term "obsessional slowness", whereby individuals with OCD may have trouble completing tasks in a timely fashion due to their preoccupation with their compulsion. Last and Strauss (1989) described a girl and a boy with repeating compulsions. The girl repeatedly produced extensive lists of the names of friends and family members, and the boy repeated particular actions, such as taking the milk in and out of the refrigerator two consecutive times.

Counting. Counting compulsions may be triggered by magical or aggressive obsessions. Children with OCD sometimes feel compelled to count certain objects in a setting (e.g., tiles), words in a written sentence, or syllables during oral communication. Some children may have to count to a "safe" number to prevent a dreaded event from occurring, such as a fatal car accident. Counting compulsions often interfere with task completion.

Touching. Some children perform touching compulsions, whereby they repeatedly touch items until they feel that they have touched them "just the right way". It may take hours until this subjective feeling occurs. Items that children with touching compulsions may be concerned with include walls, doors, furniture, and personal possessions. Leonard and colleagues (1991) described a 13-year-old girl who compulsively touched the corners of chairs, refrigerators, walls, and doors to such an extent that she developed calluses on her hands. She would only discontinue her ritual if she felt that items had been touched "the right way". She engaged in the performance of these compulsions two hours per day. Another girl touched the left and right sides of doorways she passed through in order to 'prevent harm' from coming to her family (Grayson, 2003).

Hoarding. A hoarding compulsion is generally precipitated by an obsession, such as concern that the item would be needed if discarded. The individual feels an irresistible urge to retain a particular item, despite its apparent limited economic or personal value. Individuals with hoarding compulsions may display great difficulty parting with the items that they have collected. Objects that individuals with hoarding compulsions collect are not used for hobbies and are not retained for sentimental worth. They are items that most would consider 'junk' or rubbish. Examples include newspapers, rocks, food wrappers, and magazines. In the example provided by Leonard and colleagues (1991) a 6-year-old boy compulsively collected objects such as sticks, stones and newspapers, despite having no particular use for them. His room became so full of rubbish that his parents were concerned it had become a health hazard. The boy refused to part with the objects he had collected and had to be physically restrained when his parents entered his room to clean it up.

Reassurance-seeking. Reassurance-seeking compulsions can be triggered by an array of obsessions, including aggressive, contamination, and scrupulosity. Reassurance-seeking is a compulsion that often involves other people. Parents or teachers may be asked the same question repeatedly to alleviate the anxiety

associated with an obsession. A 6-year-old boy experienced intrusive obsessions regarding blood and "bugs" (Wagner, 2003). These obsessions were particularly problematic during mealtimes. He alleviated his anxiety by repeatedly asking his family for reassurance that his food did not contain these items.

Prevalence of Compulsions

The most common compulsions reported in an Australian clinical sample of 77 children were washing (57%) and reassurance seeking (57%) (Barrett, Healy-Farrell, & March, 2004). In a clinical sample of 31 children from the United States the most common compulsions were washing (84%), checking (64%), repeating (64%), arranging (61%), touching (58%), counting (42%), and hoarding (42%) (Hanna, 1995). No gender differences in the frequency of obsessive-compulsive symptoms were apparent. March, Mulle, and Herbel (1994) reported that washing (53%) and checking (60%) were the most common compulsions in a United States clinical sample of 15 children. In another United States clinical sample the most common compulsions were washing (64%), checking (27%), counting (14%), touching (11%), and ordering (11%) (Allsopp & Verduyn, 1990). Among a community sample of 3,283 adolescents 26 were identified as meeting diagnostic criteria for OCD (Valleni-Basile et al., 1994). The most common compulsions were arranging (56%), counting (41%), collecting (38%), washing (17%) and checking (12%). Similar results have been obtained in other studies (Last & Strauss, 1989; Swedo et al. 1989).

These results suggest that the most common compulsive symptoms experienced by children with OCD are washing and checking. These results parallel those obtained in adult studies (Rasmussen & Tsuang, 1986). No differences in compulsive phenomenology are apparent across cultures or gender.

Pattern of Symptom Presentation

Children with OCD usually present with multiple obsessions and compulsions. Barrett and colleagues (2004) reported that the majority of children in an Australian clinical sample presented with two or more obsessions and three or more compulsions. Hanna (1995) reported that the mean number of current and lifetime obsessions in a United States clinical sample was 3.5 (*SD* = 2.4) and 4.0 (*SD*

= 1.6; range 1 to 8), respectively. The mean number of current and lifetime compulsions was 4.1 (*SD* = 2.0, range 1 to 9) and 4.8 (*SD* = 1.7, range 2 to 9), respectively. In 90% of cases, the presenting symptom constellation changes over time, with no clear progression in the pattern of symptoms (Hanna, 1995; Rettew, Swedo, Leonard, Lenane, & Rapoport, 1992).

Disability and Functional Impairment in OCD

The World Health Organisation has ranked OCD as the tenth leading cause of disability in the world (Murray & Lopez, 1996). Childhood OCD is accompanied by significant impairments in academic, social, and family functioning. Piacentini, Bergman, Keller, and McCracken (2003) attributed the broad range of impairment to the heterogeneous nature of OCD symptoms. Counting or superstitious compulsions may interfere with a child's ability to read, listen, or communicate, by impairing concentration and attention. Contamination rituals may prevent children from visiting places outside the family home, for fear of catching a disease from an unfamiliar bathroom or alien eating utensils. Contamination obsessions and compulsions may preclude the possibility of sleepovers at friends' houses or family visits to restaurants. Repeating, checking, or just-right compulsions may contribute to school lateness and parent-child conflict.

Clinical observations have provided the main source of evidence that OCD is associated with significant functional impairment. Allsopp and Verduyn (1990) conducted a review of the case notes of 44 consecutive child OCD patients referred to an adolescent mental health clinic in the United Kingdom. OCD was associated with intermittent or non-attendance at school in 36% of cases. School was noted as a precipitating factor for the development of OCD symptomatology in 9% of cases, suggesting that school difficulties were secondary to OCD. Particular problems noted included difficulty concentrating, social withdrawal, and lengthy rituals that precluded timely attendance. OCD was associated with impaired social functioning. Seventy-five percent of the children had no close friendships, with boys more likely to have fewer social contacts than girls.

Toro, Cervera, Osejo, and Salamero (1992) conducted a study using a similar design. They reviewed the case notes of 72 children with a *DSM-III* (American Psychiatric Association, 1980) diagnosis of OCD. Results were compared with a

comparison group of 72 clinical cases that did not meet the criteria for OCD. Primary diagnoses in the comparison condition included elimination disorder, anxiety disorder, affective disorder, and schizophrenia, as examples. Children with OCD demonstrated a higher rate of social withdrawal (65%) compared to children in the comparison condition (25%). Approximately 60% of children with OCD experienced a decline in academic performance following the onset of OCD. They also experienced considerable parent-child conflict (36%), although this rate did not differ significantly from the comparison condition (27%).

Piacentini, Bergman, Keller, and McCracken (2003) used a survey design to investigate the frequency with which OCD symptoms caused interference to aspects of a child's life. Advantages of this study included the use of structured diagnostic interviews and psychometrically sound outcome measures. OCD-related functional impairment was assessed across school, social, and home domains. Participants comprised 151 children with a primary diagnosis of OCD and their parents. The mean age of the children was 11.8 years. Convergence between parent and child reports was examined. Children most commonly reported experiencing significant interference due to OCD in the following areas: concentrating on schoolwork (37%), doing homework (32%), doing household chores (30%), being with a group of strangers (28%), and getting ready for bed at night (28%). Parents most commonly reported significant problems due to OCD in the following areas: concentrating on schoolwork (48%), doing homework (47%), getting ready for bed at night (42%), bathing/grooming in the morning (36%), and getting along with parents (36%). Parents and children reported a greater frequency of OCD-related home and school problems, compared to OCD-related social problems. Parents were more likely to report significant problems in all three domains. Most children (88% according to parent report, 85% according to child report) demonstrated a significant problem in at least one of the three domains of functioning, providing further evidence for the negative impact of OCD upon a child's life. The results are consistent with the results of an earlier study by Piacentini and colleagues (1999).

Sukhodolsky and colleagues (2005) found that children with OCD were more impaired in areas of adaptive functioning and emotional adjustment than children in an unaffected comparison group. Social functioning was indexed by number of friends, time spent with friends, interactions with others, and play. School competence was measured in terms of parental report of child grades, school

problems, and participation in special education classes. Daily living skills sampled personal habits, behaviour in the community, and domestic task performance. They had impairments in all three domains, higher levels of internalising symptomatology, and a lower number of activities (e.g., hobbies, club and sport participation). These studies suggest that childhood OCD is associated with significant disability and burden for the child, and can interfere with academic, social, and family functioning.

Course

Age at Onset

The mean age at onset of childhood OCD in United States clinical samples is between 7 and 11 years of age (Geller, Beiderman, Griffin, Jones, & Lefkowitz, 1996; Hanna, 1995; Last & Strauss, 1989; Piacentini, Bergman, Jacobs, McCracken, & Kretchman, 2002; Scahill, Riddle, McSwiggin-Hardin et al., 1997; Swedo, Rapoport et al., 1989; Thienemann, Martin, Gregger, Thompsen, & Dyer-Friedman, 2001). A study conducted in Denmark reported congruent findings (Thomsen & Mikkelson, 1995). The mean age at onset of childhood OCD in this sample was 10.6 years, providing some support for the generalisability of findings from the United States. In an epidemiological United States sample the age at onset ranged from 7 to 18 years, with a mean age at onset of 12.8 years (Flament et al., 1988). No epidemiological studies have examined the age at onset of childhood OCD in an Australian sample.

A number of studies have suggested that boys have an earlier age of onset than girls (Flament et al., 1985; Hanna, 1995; Last & Strauss, 1989). Boys tend to have a prepubertal onset while girls are more likely to have a pubertal onset. A study by Scahill and colleagues (Scahill, Riddle, McSwiggin-Hardin et al., 1997) failed to support these findings. They reported that the average age at onset of OCD for boys and girls was 9.3 years and 8.9 years, respectively. This discrepancy in age of onset between genders may be spurious. Small sample sizes and ascertainment bias may have attenuated the reliability of the data. Although the above studies have researched age of onset, results should be interpreted cautiously due to design limitations. All of the studies relied on retrospective reports, which lack reliability.

Gender Differences

Some researchers have argued that OCD in children is more common in boys than girls (Hollingsworth, Tanguay, Grossman, & Pabst, 1980; Rapoport, 1989; Swedo, Rapoport et al., 1989). This claim has been challenged by alternative research (Flament et al., 1988; Riddle, Scahill et al., 1990), where it has been suggested that the overrepresentation of males may be due to an earlier age of onset (Flament et al., 1985; Last & Strauss, 1989) or to greater severity of the disorder in males during childhood (Flament et al., 1988). Some researchers believe that OCD may be more common in males than females prior to adolescence, and that the gender ratio becomes equivalent in adolescence (Rapoport, 1989; Valleni-Basile et al., 1994). In adults, the gender ratio is approximately equal (Weissman et al., 1994).

Prognosis

A meta-analysis examining the long-term morbidity of children diagnosed with OCD indicated that OCD is a chronic and persistent illness (Stewart et al., 2004). Follow-up periods of the 18 studies reviewed ranged from 1 to 15.6 years. Pooled mean persistence rates for full OCD and full or subthreshold OCD were 40% and 61%, respectively. Predictors of long-term morbidity included an earlier age of onset, inpatient versus outpatient status, and increased OCD duration. A limitation of the study was that the impact of treatment upon OCD status at follow-up was not examined or statistically controlled for. The authors reported that participants in 15 of the studies received treatment, participants in one study received no treatment, and information on treatment receipt was not reported in two studies. The rates of untreated OCD persistence may be significantly higher.

Wewetzer and colleagues (2001) examined psychiatric morbidity among a sample of adults who had an onset of OCD in childhood. Participants had presented to a treatment clinic a decade earlier. The mean age at onset of OCD was 12.5 years and the mean follow-up time was 11.2 years. At follow-up, 36% of participants met criteria for OCD. Of these, 70% met criteria for an additional clinical disorder. The most frequent comorbid disorders were obsessive-compulsive personality disorder (40%), social phobia (35%), avoidant personality disorder (35%) major depressive

disorder (25%), and paranoid personality disorder (25%). OCD appears to be a persistent condition without treatment.

Differential Diagnosis

Differential diagnosis is useful for distinguishing childhood OCD from other disorders. This section describes the differential diagnosis of childhood OCD in relation to normal childhood development and other psychiatric conditions.

Many children engage in ritualistic behaviours as part of a normal course of development. Young children may have elaborate bedtime rituals, a desire for sameness in their environment, rigid likes and dislikes, concerns about symmetry, or a need to have things done "just so". Leonard and colleagues (1990) noted that OCD symptoms could be reliably differentiated from benign childhood routines on the basis of timing, content, and severity. Whereas OCD symptoms usually have a mean age of onset of 7 to 12 years, normative childhood rituals usually begin at age two and disappear by age eight (Evans et al., 1997; Gesell, Ames, & Ilg, 1974; Thomsen, 1998). They occur most frequently between two and four years of age (Evans et al.). Normal childhood rituals are generally experienced as pleasurable and assist in the facilitation of the child's mastery over his/her environment. Conversely, OCD symptoms are accompanied by significant distress and dysfunction (March & Leonard, 1998).

In an anxiety disorder due to a medical condition the obsessions and compulsions are judged to be the product of a general medical condition. This judgment is based upon a review of the concordance between the course and onset of the medical condition and OCD, and any atypical features associated with the presentation of the condition (e.g., an unusual age of onset). A substance-induced anxiety disorder is distinguished from OCD in that obsessions and compulsions are attributed to the physiological effects of a drug of abuse, a medication, or exposure to a toxin. OCD onset has been reported to occur with carbon monoxide poisoning, Sydenham's chorea, tumors, and postviral encephalitis (American Academy of Child and Adolescent Psychiatry, 1998).

Generalised anxiety disorder (GAD) and OCD require differential diagnosis as both involve an anxiety response that is excessive, disproportionate to a real-life threat, and perceived as difficult to control. Important differences distinguish the two

disorders. GAD-related anxiety tends to be more reality-based, such as worry about hurting a friend's feelings or failing a subject (Albano, March, & Piacentini, 1999). The content of obsessions does not usually consist of real-life problems, and is often identified by the individual as excessive and inappropriate. Individuals with GAD do not tend to perceive their worry as intrusive, and do not feel the need to resist their worries or to perform compulsions to relieve their anxiety. Individuals with GAD are more likely to be able to identify internal or external triggers for their worry than individuals with OCD (Turner, Beidel, & Stanley, 1992).

Recurrent, intrusive thoughts and activities may be observed in the context of many psychological disorders, particularly those involving deficits in impulse control. Some individuals experience intrusive, recurrent thoughts regarding a defect in their appearance, and will repeatedly check their appearance in the mirror. This type of symptom can be better accounted for by body dysmorphic disorder. Other individuals experience the repeated urge to pull out their hair, and may be diagnosed with trichotillomania. Some children have intrusive thoughts and worries regarding specific objects or social situations, which can indicate specific phobia and social phobia, respectively. OCD shares similarities with eating disorders, as both involve excessive worry and preoccupation with certain stimuli. In eating disorders, the content of the thoughts is not neutralised with a compulsion, and other unique diagnostic features are present.

Many children with OCD experience obsessions related to contamination or illness. These types of thoughts are present in hypochondriasis and sometimes specific phobia. Children with hypochondriasis misinterpret benign physical cues as indicating that they have a serious medical illness. A diagnosis of OCD should only be made if the child experiences additional obsessions and compulsions that are unrelated to illness. Some children may be plagued by recurrent fears that they will be exposed to a disease. In this case a diagnosis of specific phobia of illness should be considered.

OCD should be distinguished from major depressive disorder. Major depressive disorder shares similarities with OCD in that both can involve excessive rumination about unpleasant current or future events. However, depressive thoughts are not experienced by the individual as inappropriate or ego-dystonic, and tend to be accompanied by dysphoric affect rather than anxious affect.

OCD shares similarities with schizophrenia. Both conditions involve repetitive behaviours that are socially and culturally inappropriate, and perceived as strange by other people. OCD differs from schizophrenia in that children with OCD usually realise that their behaviours are not normal. OCD behaviours are functional in that they are designed to alleviate anxiety, whereas schizophrenic behaviours are not intended to serve a purpose. OCD and schizophrenia share the feature of intrusive, irrational thoughts. Children with OCD are more likely to recognise that the thoughts originate from their own mind, rather than from an external source as in thought insertion.

OCD symptoms may appear similar in presentation to symptoms of a tic disorder. Tic disorders involve repeated vocal or motor tics. Tics are sudden, rapid, stereotyped movements or vocalisations. Compulsions in OCD are distinguishable from tics as compulsions are performed to relieve anxiety, whereas tics are not. Compulsions are aimed at neutralising an obsession, whereas a tic is not preceded by the experience of a distressing thought.

Comorbidity

OCD is highly comorbid, with most studies suggesting that approximately 80% of children meet diagnostic criteria for at least one other psychiatric disorder and nearly 50% have multiple diagnoses (Swedo et al., 1992; Zohar, 1999). The most common comorbid conditions will be outlined in this section.

Anxiety disorders frequently co-occur with OCD in child and adult samples. In an Australian study using a clinical sample of children with OCD the prevalence rate for GAD was 60% (Barrett et al., 2004). Results of an epidemiological study suggested that 30% of children that met diagnostic criteria for OCD also met diagnostic criteria for social phobia (Swedo, Rapoport et al., 1989). In clinical samples, the rate of comorbidity for social phobia is slightly lower, ranging between 14% and 20% (Barrett et al., 2004; Last & Strauss, 1989; Thienemann et al., 2001; Waters, Barrett, & March, 2001). Specific phobia was diagnosed in 17% of cases of children with OCD in a community sample (Swedo, Rapoport et al., 1989). This is consistent with the rates found in clinical studies, which have ranged between 6% and 43% (Barrett et al., 2004; Hanna, 1995; Last & Strauss, 1989; Thienemann et al., 2001; Waters et al., 2001). The prevalence of separation anxiety disorder among

children with OCD in community samples ranges between 7% and 34% (Swedo, Rapoport et al., 1989; Valleni-Basile et al., 1994; Waters et al., 2001). In clinical samples the comorbidity rate is between approximately 6% and 29% (Barrett et al. 2004; Benazon, Ager, & Rosenberg, 2002; Hanna, 1995; Last & Strauss, 1989; Waters et al. 2001).

Mood disorders are common in children with OCD. Approximately 26% to 45% of children with OCD in community samples meet diagnostic criteria for major depressive disorder (Swedo et al. 1989; Valleni-Basile et al. 1994). In a clinical sample, approximately 73% of children met criteria for a comorbid mood disorder (Gellar et al. 1996).

Childhood OCD is frequently comorbid with tic disorders. Geller and colleagues (2001) found that Tourette's disorder was present in 25% of children and 9% of adolescents. Other studies using clinical samples of individuals aged 18 or younger have reported that the rate of co-occurrence is between 6% and 13% (Hanna, 1995; Thienemann et al., 2001). Children with comorbid OCD and Tourette's disorder are more likely to have an earlier age of onset of OCD symptoms than children with OCD only (Leonard, Swedo, Rettew, Gershon, & Rapoport, 1992). Hanna (1995) found that 13% of a clinical sample of children with OCD had comorbid transient tic disorder.

Comorbidity of childhood OCD and attention-deficit hyperactivity disorder (ADHD) is also common. Between 16% and 33% of children with OCD in clinical samples meet diagnostic criteria for ADHD (Gellar et al. 1996; Hanna, 1995). The rate of comorbidity reported in a community-based study was 10% (Swedo, Rapoport et al., 1989). Geller and colleagues (2002) conducted a study to determine whether ADHD symptomatology in children with OCD represented a by-product of OCD symptoms (e.g., intrusive, obsessional thoughts, anxiety) or a distinct comorbid disorder. They concluded that ADHD symptomatology reflects a true comorbid state and is not merely induced as a result of OCD symptoms.

Oppositional defiant disorder is prevalent among children with OCD. In a community-based study the rate of co-occurrence was 11%, while clinical studies report a rate of between 16% and 43% (Hanna, 1995; Swedo, Rapoport et al., 1989).

Geller and colleagues (2001) examined the relationship between age and onset and comorbidity. An earlier age of onset predicted increased risk for simple phobia, Tourette's disorder, ADHD, agoraphobia, and multiple anxiety disorders.

Age of onset did not predict the onset of mood or psychotic disorders, although these disorders were associated with chronological age.

These results suggest that children with OCD are likely to have a comorbid disorder. An earlier age of onset of OCD is a significant risk factor for the development of additional disorders. The most common comorbid disorders are generalised anxiety disorder, specific phobia, major depressive disorder, and separation anxiety disorder.

Assessment

Many different assessment strategies have been utilised to assess OCD symptomatology in children. These assessment strategies serve numerous functions. Some instruments assist diagnosis and others assist treatment planning and evaluation. A summary of commonly used, psychometrically sound assessment strategies for childhood OCD appears next.

Diagnostic Assessment

Diagnosing OCD in children is crucial to the development of an appropriate treatment plan. Other disorders may accompany or resemble OCD, hence, differential diagnosis is required to determine the nature of the disorder and which disorder causes the most disruption and distress. Many semi-structured interviews have been developed to serve this purpose.

One of the most commonly used semi-structured interview methods is the Anxiety Disorders Interview Schedule for *DSM-IV*: Child and parent versions (ADIS-C/P; Silverman & Albano, 1996). The ADIS-C/P are separate, semistructured interviews that assist in the differential diagnosis of anxiety, affective, and externalising disorders as defined by the *DSM-IV*. Additional items that screen for learning disorders, somatoform disorders, psychosis, substance abuse, and eating disorders, are present. Each diagnosis obtained by the child is ascribed a Clinician's Severity Rating, which ranges from 0 to 8. Higher scores indicate greater levels of distress and disruption. This rating is useful for establishing a principal diagnosis and any additional diagnoses. The interviews can be used with children aged 6 to 18 years. The child and parent versions of the ADIS have good interrater reliability,

test-retest reliability, and concurrent validity (Silverman, Saavedra, & Pina, 2001; Wood, Piacentini, Bergman, McCracken, & Barrios, 2002).

The Schedule for Affective Disorders and Schizophrenia for School-Age Children: Present and Lifetime version (Kaufman et al., 1997) interview is a semistructured diagnostic interview for children aged 7 to 17 years. It can generate 32 *DSM-III-R* and *DSM-IV* Axis I diagnoses, spanning multiple diagnostic categories. It assesses current and lifetime symptomatology. The administration time for the parent and child interviews in clinical settings is approximately 1.25 hours each. It has good reliability and validity (Kaufman et al.).

The Diagnostic Interview for Children and Adolescents Version IV (Reich, 2000) is a semi-structured interview used to diagnose a range of disorders in children aged 6 to 17. It contains a parent and child version. The interview provides an assessment of current and lifetime *DSM-IV* and *ICD-10* diagnoses. The administration time ranges between one and two hours. Lay, highly trained interviewers can administer the interview, although only appropriately qualified professionals should assign clinical diagnoses. In addition to enquiring about psychiatric morbidity, this interview also contains a perinatal section, a psychosocial module, and questions on risk and protective factors. Earlier versions of the instrument demonstrate reliability and validity. Data are beginning to emerge that support the reliability and validity of the present version.

The Diagnostic Interview Schedule for Children Version IV (DISC-IV; Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) can assess a range of disorders using *DSM-IV* and *ICD-10* criteria. It contains two parallel versions: the DISC-P for parents of 6 to 17-year-olds and the DISC-Y for children aged 9 to 17 years. The DISC-IV assesses for the presence of disorders occurring within the past 12 months and past month. Diagnostic categories include anxiety, mood, substance use, schizophrenia, and miscellaneous disorders. Administration time in clinical samples is approximately 90 to 120 minutes. It can be administered by trained, lay interviewers. Previous versions of the DISC demonstrate good reliability. Further studies will need to be conducted to examine the psychometric properties of the current version.

Treatment Planning and Monitoring

Several assessments have been developed to facilitate the planning and evaluation of treatment strategies. These vary in structure, form, and practicality. An interviewer-based measure that is considered the "gold standard" for clinical trials of OCD (et al., 1999) is the Children's Yale-Brown Obsessive Compulsive Scale (CYBOCS; Goodman, Price, & Rasmussen, 1989a, 1989b; Scahill et al., 1997).

The CYBOCS assesses symptom phenomenology and severity. It allows the clinician to generate a rich description of the types of obsessions and compulsions the child experiences. Ten core items are used to generate a Total score, an Obsessions score, and a Compulsions score. The Obsessions and Compulsions subscales are identically structured, containing five items that assess duration/frequency, interference, distress, resistance, and degree of control over symptoms. The Total score ranges from 0 to 40, with higher scores indicating a greater severity of OCD symptomatology. The CYBOCS has demonstrated good reliability and validity. Internal consistency for the total and subscale scores is high (>.9; McKay et al., 2003; .8; Scahill et al., 1997). Interrater reliability for each of the scales is good to excellent (Scahill et al.). Convergent validity for the Total score has been demonstrated with the Leyton Survey Total score (Scahill et al.) and the obsessions, compulsions and total impairment scores on the parent-completed children's Obsessional Compulsive Inventory (CHOCI; Shafran et al., 2003) and the child-completed CHOCI (Shafran et al.). Correlations between the Total CYBOCS score, the standardised Revised Children's Manifest Anxiety Scale Total score (Reynolds & Richmond, 1987) and the raw Children's Depression Inventory score (Kovacs, 1985) suggest sufficient discriminant validity. Scale scores are sensitive to treatment effects (Scahill et al.).

The CYBOCS possesses great clinical utility. Information from the symptom check-list provided with the measure can be used to generate the OCD hierarchy that is devised in CBT programmes. An OCD hierarchy identifies a particular symptom cluster and ranks situations associated with that symptom cluster according to the amount of anxiety they produce. An OCD hierarchy usually contains approximately ten items. The hierarchy is useful for planning, implementing, and evaluating exposure-based interventions. Clients begin their exposure program with the least anxiety-provoking stimulus in their hierarchy then proceed to a more anxiety-

provoking stimulus once mastery of the preceding item has been achieved. Clients may have several OCD hierarchies as more than one OCD symptom cluster is usually present.

The Leyton Obsessional Inventory: Child Version (LOI-CV; Berg, Whitaker, Davies, Flament, & Rapoport, 1988) is a 20-item self-report measure that assesses the phenomenology and interference of current OCD symptomatology. It is useful for formulating baseline symptomatology and monitoring treatment change over time (Grados & Riddle, 1999), although research suggests that it may not be as sensitive to treatment response as other instruments (Gellar et al., 2003). Responses to each item are presented in a yes/no format. If a child chooses the "yes" option he/she is then required to rate the interference of the item on a 4-point Likert scale. Higher scores indicate a greater level of interference. The LOI-CV has good psychometric properties, including high internal reliability, specificity, and sensitivity (Berg et al., 1988; Flament et al., 1988). It has adequate test-retest reliability for children aged 11 years and older (King, Inglis, Jenkins, Myerson, & Ollendick, 1995).

The National Institute of Mental Health Global Obsessive-Compulsive Scale (NIMH-GOCS; Insel et al., 1983) is a single item measure of global diagnostic severity ranging from 1 (minimal symptoms or within normal range) to 15 (very severe). Severity levels are clustered into five main groups (i.e., ratings of 1-3, 4-6, 7-9, 10-12, and 13-15), with detailed descriptions for each cluster. A score of 7 or higher indicates clinical OCD. The NIMH-GOCS shows adequate test-retest reliability (Kim, Dysken, & Kuskowski, 1992; Kim, Dysken, Kuskowski, & Hoover, 1993). Convergent validity has been demonstrated with the Symptom Checklist-90 (Derogatis, Lipman, & Covi, 1973), the Yale-Brown Obsessive-Compulsive Scale Total score (Goodman, Price, & Rasmussen, 1989a, 1989b), a physician global rating scale, and a patient global rating scale (Kim et al., 1992). The scale is sensitive to treatment effects (Barrett et al., 2004; Piacentini et al., 2002; Piacentini, Gitow, Jaffer, Graae, & Whitaker, 1994).

The NIMH Clinical Global Impairment Scale (Guy, 1976) is a clinician-rated device that provides a global rating of severity ranging from 1 (not at all ill) to 7 (extremely ill). The NIMH Clinical Global Improvement Scale is a clinician-rated measure of global improvement. Ratings range from 1 (very much improved) to 7 (very much worse), with 4 indicating no change. These scales are sensitive to

treatment effects (Barrett et al., 2004; Piacentini et al., 2002; Piacentini et al., 1994; Waters et al., 2001). March and Mulle (1998) recommend using these scales throughout the treatment phase to track changes in OCD status. These scales are highly practical and time-efficient, although they lack the reliability and diagnostic utility afforded by alternative measures.

Etiology

The etiology of childhood OCD is not clearly understood. Many theories have been proposed to account for the development of OCD in children. These theories have received mixed empirical support in the literature, and no single theory affords a comprehensive explanation, which would ideally cover neurophysiological, behavioural, and cognitive domains. A brief review of the current knowledge of the etiology of childhood OCD follows.

Genetic Studies

Heredity plays a significant role in the etiology of OCD. Twin studies have found that the rate of concordance of OCD symptoms ranges between 53% and 87% for monozygotic twins and 22% and 47% for dizygotic twins (Alsobrook & Pauls, 1998; Carey & Gottesman, 1998; Rasmussen & Tsuang, 1986). Researchers have speculated that a single gene is likely to be implicated in the development of OCD, rather than a complex array of multiple genes (Risch, 1990). Family studies have found that approximately 18% of parents of children with OCD meet diagnostic criteria for the disorder (Lenane et al., 1990; Riddle, Scahill et al., 1990). Fathers appear more likely to have OCD than mothers (Lenane et al.). These results provide support for the genetic transmission of OCD. Children that develop OCD tend to have different patterns of symptoms than relatives with OCD, providing evidence against a social learning theory of OCD transmission (Leonard, Rapoport, & Swedo, 1997). The particular genetic mechanisms that contribute to pathogenesis have not been clearly identified, although important findings in this area are beginning to emerge.

Preliminary research by Walitza and colleagues (2002) documented an association between OCD in children and a sequence variant of a serotonergic

receptor gene (A-allele of the 5-HT2A-receptor promoter polymorphism -1438G/A). Fifty-five children with OCD were compared to 223 control children. Statistically significant differences in genotype and allele frequencies were found between children with OCD and the control children. This genetic phenotype may comprise a risk factor for the early development of OCD. Similar findings have been documented among female adults with OCD, but not male adults (Enoch, Greenberg, Murphy, & Goldman, 2001).

Family Factors

Family factors have been implicated in OCD development and maintenance. The literature in this area is inchoate. Waters and Barrett (2000) provide a summary of the family factors hypothesised to play a role in OCD development.

Social learning theory proposes that individuals reproduce observed behaviours through vicarious learning (Bandura, 1977). These behaviours are then maintained through operant conditioning. Although advocates of genetic accounts of OCD argue that it is unlikely that OCD behaviours are socially transmitted, this statement has been met with some contention. Other scientists argue that those typically assess symptoms at a single point in time, and do not investigate past symptomatology (Waters & Barrett, 2000). OCD tends to display a waxing and waning course, with the pattern of symptoms changing over time. It is possible that symptoms were initially socially transmitted but that the phenomenology of the disorder changed over time. However, evidence for a modeling account of OCD is limited.

Expressed emotion (EE) has been defined as a parenting style characterised by criticism, hostility, and/or overinvolvement (Hibbs et al., 1991). Early research among schizophrenic patients demonstrated that 76% of individuals with schizophrenia who were discharged from hospital and returned to high-EE households relapsed within 9 months, compared to 28% of patients returning to low-EE households (Brown, Monck, Carstairs, & Wing, 1962). Hibbs and colleagues (1991) compared the families of three sets of children; children with OCD, disruptive behaviour problems (DB), or normal controls. Higher-EE was found in the families of the OCD and DB children compared to the control children. There was no significant difference in EE between the OCD and DB children. Eighty-eight

percent of the DB, 82% of the OCD, and 41% of the control families were of high-EE status. Leonard and colleagues (1993) reported the elevated presence of high-EE in OCD families in a separate study, although no other groups were examined. Research has supported the notion that perceived criticism is associated with relapse following behavioural treatment for OCD (Renshaw, Chambless, & Steketee, 2003). Although explanations have been proposed to account for the maintenance and exacerbation of OCD symptomatology in a high-EE environment (e.g., Steketee, 1993), cohesive etiological accounts have not been specified to account for the pathophysiological origin of OCD. One theory suggests that the relationship between EE and symptom onset may be mediated by psychophysiological reactivity (Hibbs, Zahn, Hamburger, Kruesi, & Rapoport, 1992). The correlational nature of EE research means that confidence cannot be placed in this parenting style as a cause of OCD.

A parenting style characterised by excessive control and overprotectiveness has been hypothesised to play a role in anxiety development in children. Rapee (1997, p. 62) posited that "excessive protection from a parent may help to provide information to the child that the world is a dangerous place and may also reduce the child's opportunities for learning otherwise". Children may be encouraged to avoid potentially difficult situations, which may reinforce maladaptive behavioural and emotional responses, and cognitive overestimations of threat. There is an association between an overcontrolling parenting style and anxiety in children (Barrett, Shortt, & Healy, 2002; Dumas, LaFreniere, & Serketich, 1995; Krohne & Hock, 1991; Siqueland, Kendall, & Steinberg, 1996). This research is only associational at this stage and does not explain the specificity of disorders or symptoms within anxiety disorders for individuals.

Autoimmunity Theory

Recent research has suggested that some children with OCD develop the disorder in the context of an autoimmune response to a group A β–hemolytic streptococcal (GABHS) infection. This condition is described under the acronym PANDAS, which refers to paediatric autoimmune neuropsychiatric disorders associated with streptococcal infections. It occurs when the immune system generates antibodies in response to streptococcal bacteria, and the antibodies cross-

react with the basal ganglia of a genetically vulnerable child, prompting the development of OCD or a tic disorder (Garvey et al., 1998; Swedo, 1994). PANDAS is characterised by a sudden onset or exacerbation of symptoms following GABHS infection. Identification of this condition is based upon the following working criteria: (1) the presence of OCD or tics; (2) pre-pubertal onset of symptoms; (3) episodic course of severity of symptoms; (4) onset or exacerbation of symptoms associated with GABHS infections; and (5) association with neurological abnormalities, such as abnormal motor activity (Swedo et al., 1998).

The post-streptococcal autoimmune theory has its roots in Tourette's disorder and Sydenham's chorea investigations. Researchers noted that these conditions frequently co-occurred with OCD. It was known that these disorders were related to abnormalities in basal ganglia functioning. OCD symptoms tended to develop in the context of Sydenham's chorea, and remit after the condition was treated (Asbahr, Ramos, Negrao, & Gentil, 1999; Swedo et al., 1993). Sydenham's chorea is hypothesised to develop through the same mechanism as OCD, whereby anti-GABHS antibodies cross-react with caudate neural tissue, initiating the onset of symptoms (Husby, van de Rijn, Zabriskie, Abdin, & Williams, 1976). The onset of a tic disorder following GABHS infection has been noted (Kiessling, Marcotte, & Culpepper, 1994). As yet, the prevalence or incidence of OCD due to GABHS infections is unknown. Limitations of this theory are evident. Research suggests that the serum of 20 to 40% of normal children contain similar antibodies, yet these children do not have OCD.

Neuroanatomical Abnormalities

Neuroanatomical abnormalities have been implicated in the etiology of OCD. Brain imaging studies have highlighted dysfunction in the orbitofrontal cortex and basal ganglia circuitry (Insel, 1992; Wise & Rapoport, 1989). Baxter et al. (1987) used position emission tomography to measure neuroanatomically localised cerebral glucose metabolic rates. Three groups of adult participants were compared: adults with OCD, normal controls, and adults with unipolar depression. Glucose metabolic rates in the cerebral hemispheres, caudate nuclei, and orbital gyri, were significantly elevated among individuals with OCD, compared to individuals in the control conditions. Similar results have been obtained in subsequent studies (Baxter et al.,

1988; Mindus, Nyman, Mogard, Meyerson, & Ericson, 1989; Nordahl et al., 1989; Swedo, Schapiro et al., 1989) but refuted in others (Martinot et al., 1990).

Three studies using single photon emission computed tomography (SPECT) have demonstrated significantly greater perfusion in certain structures of the brain in adults with OCD compared to normal controls (Harris, Hoehn-Saric, Lewis, Pearlson, & Streeter, 1994; Machlin et al., 1991; Rubin, Villanueva-Meyer, Ananth, Trajmar, & Mena, 1992). Adams, Warneke, McEwan, and Fraser (1993) detected support for these findings, although did not utilise a comparison group in the study, making it difficult to interpret the results. Implicated brain structures include the frontal cortex, orbital gyri, and cerebellum. Molina and colleagues (Molina et al., 1995) examined cerebral perfusion in a previously untreated adult with OCD before, during, and 6 weeks after treatment with clomipramine. The patient's symptoms remitted while on medication then returned following medication discontinuation. At baseline, SPECT scans indicated that there was a high perfusion ratio in the bilateral orbitofrontal, anterior cingular, frontotemporal and right caudate regions. This ratio normalised during clomipramine treatment and then increased, although not uniformly, at follow-up.

These results are consistent with an etiological explanation of neuroanatomical abnormalities, however, they do not confirm that there is a causal relationship between neuroanatomical abnormalities and OCD. The studies were cross-sectional in design, therefore only an association between brain structure abnormalities and OCD can be posited at this stage. Further studies have shown results inconsistent with those reported in the above studies, casting doubt on the applicability of this theory (Edmonstone et al., 1994; Lucey et al., 1995).

The series of investigations linking OCD to the basal ganglia was precipitated by a number of findings. Some children with OCD experience coexisting choreiform movements consistent with the presentation of Sydenham's chorea (Presta et al., 2003). An increased rate of OCD has been documented in several illnesses involving the basal ganglia, including Tourette's disorder, Sydenham's chorea, Huntington's chorea, and postencephalitic Parkinson's disease (Cummings & Cunningham, 1992; Pauls, Towbin, Leckman, Zahner, & Cohen, 1986; von Economo, 1931). Scientists have compared the structure of the basal ganglia in individuals with OCD to normal controls. Cottraux and Gérard (1998) provided a summary of the research in this area. They reported that 15 of the 26

studies conducted demonstrated involvement of the basal ganglia in cases of OCD, yet the hemisphere concerned, the direction of change following treatment, and the type of functioning (hyper-functioning or hypo-functioning) varied. Research implicating the basal ganglia in the etiology of OCD is inconsistent.

Neurotransmitter Dysregulation

Dysfunction in serotonin neurotransmission has been proffered as a mechanism underlying OCD development (Barr, Goodman, Price, McDougle, & Charney, 1992). Evidence for this theory is derived from multiple sources. Individuals with OCD respond well to selective and non-selective serotonin reuptake inhibitors, OCD is associated with abnormalities in serotonin function, and behavioural and physiological changes coincide with the administration of serotonin receptor agonists in individuals with OCD (Simpson et al., 2003). The utility of the evidence for a serotonergic model is hampered by a lack of ability to infer causality. It is possible that primary deficits in the serotonergic system are associated with OCD pathophysiology, although it is equally plausible that the serotonergic system is involved because serotonin neural pathways modulate dysfunction in other brain regions. Current experimental research in the field has not resolved this ambiguity. Nonetheless, the serotonergic theory remains a leading explanation of the etiology of OCD.

Researchers have implicated the dopaminergic system in the etiology of OCD. Evidence for this putative involvement comes from research into Tourette's disorder. Tourette's disorder is thought to be linked to a dysregulation in the dopaminergic neurotransmitter system due to the effectiveness of haloperiodol and other dopamine antagonists in its treatment (Shapiro, Shapiro, & Eisenkraft, 1983). Tourette's disorder frequently co-occurs with OCD (Pauls et al., 1995). A genetic relationship between the disorders has been proposed (Billet, Richter, & Kennedy, 1998). Evidence for the involvement of the dopaminergic system in the etiology of OCD has been provided by research linking OCD to the basal ganglia. The dopaminergic system interacts with this region of the brain. OCD has demonstrated responsiveness to clomipramine and fluoxetine. These medications may block the reuptake of dopamine (Austin et al., 1991; Lipinski, Mallya, Zimmerman, & Pope, 1989). Although these results suggest that the dopaminergic neurotransmitter system

may play a role in OCD symptomatology the direction and mechanism of causality has not been elucidated. A significant problem with this type of research is that it cannot illustrate causal relationships. Successful treatment of a disorder does not provide evidence of causality. Hence, research linking the dopaminergic system to the development of OCD is inchoate, albeit potentially promising.

Theories of neurotransmitter dysregulation are limited by their inability to account for the specificity of OCD symptoms. For instance, these theories cannot explain why some individuals with OCD develop aggressive obsessions and checking compulsions, while other individuals display an excessive concern with contamination. They are also unable to explain why similar neurochemical imbalances produce depression in one instance and OCD in another.

Learning Theory

Mowrer (1947; 1960) advanced a two-factor theory of fear and avoidance behaviour in anxiety disorders. He proposed that anxiety towards a stimulus develops in the context of a classically conditioned response. Operant conditioning processes then maintain this anxiety. Initially, individuals avert or relieve anxiety by escaping the aversive stimulus. Later, anxiety is averted by implementing avoidance behaviours. These behaviours reinforce the avoidance response by providing relief from anxiety or by preventing a dreaded event from occurring. Avoidance behaviours prevent extinction of the classically conditioned anxious response.

Evidence for this theory was derived from experimental research with animals (Metzner, 1963). These studies suggested that animals could learn to avoid aversive stimuli in a compulsive-like fashion. The avoidance behaviours became so "fixated" that they were often resistant to extinction. Research in the 1980s highlighted limitations in this theory. Most people with OCD could not recall a traumatic event that coincided with symptom onset (Steketee, 1993). In up to 40% of cases, no precipatory fear-inducing event is associated with OCD onset (Barlow, 2002). The theory tends to explain the onset of obsessions and phobic states in a similar manner. Converse to phobic responses, many obsessions are not precipitated by the presence of environmental cues, signifying a further limitation to this theory's explanatory power (Jakes, 1996). Rachman (1990) attempted to compensate for this limitation by suggesting that the classically conditioned response could emerge in

the context of a cognitive, as opposed to an environmental, event. Heightened fear responses (e.g., concerns about contamination, the consequences of leaving the door unlocked) could arise through observational learning or through abstract learning (e.g., learning that a friend or neighbour was robbed or has become ill). The individual uses new information to mentally associate the conditioned stimulus (e.g., thoughts that the door is unlocked, "contaminated" objects) with the unconditioned stimulus (e.g., illness, danger). Although this theory may be plausible for some symptom presentations it fails to explain the full spectrum of OCD symptom development. Clinical reports suggest that many obsessions appear spontaneously, and are not precipitated by the learning of new information. Unlike many phobic responses, obsessions are often not logically connected to sources of danger (e.g., repeating, touching urges) so initial pairing of a conditioned stimulus and an unconditioned seems unlikely.

Mowrer's theory failed to account for the limited range of stimuli that could become the theme of an individual's obsession. The theory predicts that any stimulus could potentially come to elicit a conditioned response via pairing with an aversive stimulus. In OCD, obsessive concerns tend to focus on a specific, non-random distribution of objects. Examples include germs, locks, stoves, and numbers, and not other items which may be more associated with traumatic, anxiety-inducing experiences, such as cars from car accidents, or knives from attacks. Although learning theory has not provided an adequate account of the etiology of OCD, it can explain the maintenance of OCD symptoms. Learning principles underlie the rationale for current exposure-based interventions.

Psychodynamic Theory

Classical psychodynamic theory proposed that obsessions develop from repressed id impulses (Freud, 1894, 1895). The id was conceptualised as a part of the unconscious mind. It was believed to operate on the pleasure principle. If reality permitted, immediate gratification was sought. The id was thought to be organised around primitive, instinctual impulses such as sexuality and aggression. Individuals that had undergone trauma in childhood or who were socialised to become moral, conventional individuals were considered more likely to develop repressed id impulses (Bruno, 1993). Freud (1895) argued that in obsessional neurosis obsessions

were not replaced by another idea or thought, but instead by urges or actions deployed as mechanisms of discharge or protection (Mahony, 1986). These actions or compulsions were instigated to relieve the anxiety associated with the underlying conflict. If the conflict was not resolved, the obsessions and compulsions would recur.

Psychodynamic theorists believed that OCD developed when an individual became fixated in the anal stage of development (18 months to 3 years), perhaps due to punitive toilet training methods or sexual trauma during this stage. OCD symptoms were thought to provide a means for expressing unresolved, repressed thoughts or feelings. Fixation at the anal stage of development was believed to lead to a desire for control, perfectionism, and order.

The psychodynamic theory of OCD has been discredited (March, Franklin, Leonard, & Foa, 2004). It does not offer a convincing account of the etiology of OCD and empirical support for the theory is lacking. Psychodynamically-oriented therapies, such as psychoanalysis, are ineffective in treating individuals with OCD (Jenike, 2001; Kaplan & Sadock, 1995). Recent advances in genetic and neurobiological research provide a more compelling account of the etiology of OCD.

Cognitive Theory

Cognitive theory proposes that catastrophic misinterpretations of intrusive thoughts differentiate individuals with OCD from individuals without OCD. This theory is derived from Beck's (1976) cognitive specificity hypothesis. Beck proposed that pathological anxiety results from one or more of the following cognitive errors: (1) overestimating the probability of a feared event, (2) overestimating the severity of a feared event, (3) underestimating one's personal coping resources, and (4) underestimating external factors that could alleviate the threat.

The cognitive theory of OCD proposes that individuals with OCD appraise intrusive thoughts in a substantively different way from individuals without OCD. The appeal of the cognitive model comes from research that has documented that 80% to 88% of individuals experience intrusive thoughts and that normal obsessions do not differ in content from obsessions in OCD (Freeston, Ladouceur, Thibodeau, & Gagnon, 1991; Niler & Beck, 1989; Rachman & de Silva, 1978; Salkovskis &

Harrison, 1984). This finding illuminates the potential role of cognitive processes in the pathogenesis of the disorder.

Carr (1974) was the first individual to develop a cognitive model of OCD. He proposed that individuals with OCD overestimate the probability of unfavourable outcomes relative to individuals without OCD. Since Carr's original formulation, researchers have sought to establish the key cognitive processes underlying OCD etiology. Cognitive processes suggested have included an inflated perception of responsibility, overestimation of the probability and severity of harm, thought-action fusion, intolerance of uncertainty, overimportance of thoughts, and metacognitive beliefs.

Salkovskis (1989) proposed that individuals with OCD can be differentiated from individuals without OCD by the way in which they appraise personal responsibility for the content of intrusive thoughts. Individuals with OCD are more likely to appraise intrusive cognitions as evidence that they will be responsible for harm to themselves or others unless they take action to avert it (Salkovsks, 1989). Salkovskis and colleagues defined responsibility as:

> The belief that one has the power which is pivotal to bring about or prevent subjectively crucial negative outcomes. These outcomes are perceived as essential to prevent. They may be actual, that is, having consequences in the real world, and/or at a moral level (Salkovskis, Richards, & Forrester, 1995, p. 285)

This model predicts that an inflated responsibility appraisal increases the level of distress experienced by the individual (Salkovskis, 1989). An individual with OCD alleviates this distress by performing a compulsion. Support has been found for this model among adults with OCD (Freeston, Ladouceur, Gagnon, & Thibodeau, 1993). A significant relationship between responsibility appraisals and obsessive-compulsive symptoms has been reported in non-clinical children (Magnúsdóttir & Smári, 2004).

Rachman (1997) proposed that obsessions are caused by catastrophic misinterpretations of the significance and importance of intrusive thoughts. An individual with OCD is more likely to believe that negative intrusive thoughts indicate something significant about his/her self (e.g., "I am weird, deviant,

horrible") or that the thoughts convey highly important information that must be attended to (Thordarson & Shafran, 2002). Individuals with OCD are more likely to appraise intrusive thoughts as personally meaningful, attributing special significance to their intrusive thoughts. This appraisal may occur along one of two dimensions. The individual may overemphasise the importance of intrusive thoughts due to the *frequency* of their occurrence in conscious awareness, or the individual may overemphasise the importance of intrusive thoughts as a result of the *content* of the thought. Catastrophic misinterpretations about the importance of intrusive thoughts can lead to distress, increased obsessions, and the utilisation of neutralisation and thought suppression strategies. However, thought suppression strategies are futile and have the paradoxical effect of increasing the frequency of the occurrence of intrusive thoughts. This is referred to as the "white bear" effect based upon experiments by Wegner and colleagues (Wegner, Schneider, Carter, & White, 1987). Adults with OCD tend to overemphasise the importance of intrusive thoughts relative to individuals without OCD. Studies have not investigated this cognitive processing bias among children with OCD.

Intolerance of uncertainty has been cited as a cognitive process underlying the maintenance of anxiety disorders. Individuals with anxiety disorders tend to have greater difficulty tolerating uncertainty that could possibly signal threat, finding this uncertainty more distressing and upsetting than non-clinical individuals. Mancini and colleagues (2002) proposed a definition based upon Kruglansky's (1990) work on decision-making and cognitive closure. They defined intolerance of uncertainty as involving the desire for "an answer on a given topic, any answer…compared to confusion and ambiguity" (p. 403). Freeston and colleagues (1994) regarded intolerance of uncertainty as a cognitive bias that affects how an individual appraises and responds cognitively, affectively, and behaviourally, to uncertain situations. It involves:

> (B)ehavioral attempts to control the future and avoid uncertainty, inhibition of action based on uncertainty, emotional reactions such as frustration and distress, and cognitive interpretations that being uncertain reflects badly on a person (Freeston et al., 1994, p. 799).

Although Mancini's conceptualisation emphasises the need for cognitive closure, recent research has shown that intolerance of uncertainty may be more related to decreased confidence in one's memory or cognitive abilities. Individuals with OCD appear to desire more vivid memories (Constans, Foa, Franklin, & Mathews, 1995) and have less confidence in their memory (Hermans, Martens, De Cort, Pieters, & Eelen, 2003) than non-anxious individuals. No differences in actual memory function are evident (Hermans et al., 2003).This discrepancy between perceived memory ability and desired memory ability may result in difficulty tolerating uncertainty (Tolin, Abramowitz, Brigidi, & Foa, 2003). Individuals with poorer perceived memory or cognitive confidence are likely to exhibit greater pathological doubting and greater intolerance of uncertainty. Whereas early literature discussed intolerance of uncertainty as a symptom of OCD and other anxiety disorders, the focus has shifted to examining the role of beliefs about uncertainty as a causal factor in OCD. Research has only recently begun to examine the relationship between intolerance of uncertainty and OCD among adults, and no known published research exists among children with OCD. Among adults, intolerance of uncertainty is significantly related to worry and obsessive-compulsive symptoms in clinical and non-clinical samples (Dugas, Gosselin, & Ladouceur, 2001; Steketee, Frost, & Cohen, 1998).

Rachman (1993) stated that individuals with OCD may fuse thoughts and actions. Thought-action fusion is a form of metacognitive processing. Thought-action fusion (TAF) is:

> "…the belief that (one's) specific intrusive thoughts can directly influence the relevant external event and/or the belief that having these intrusive thoughts is morally equivalent to carrying out a prohibited action" (Rachman & Shafran, 1999, p. 139).

This definition highlights the two forms of TAF. Probability or likelihood TAF refers to the belief that thoughts can directly influence external environmental stimuli. Individuals with this type of cognitive distortion fear that thinking about a dreaded event, such as a relative dying in a car accident, increases the likelihood that the event will occur. Morality TAF refers to the belief that having an intrusive thought is morally equivalent to performing the event depicted in the obsession.

Individuals may believe that intrusive thoughts about performing sexual acts on a minor, or stabbing a friend, are as repulsive and evil had the individual actually performed these acts. These irrational beliefs have been documented for over a century. Maudsley (1895) wrote that a patient like this "…is constrained to think of doing an indecent act and is in fright lest he should someday do it" (p. 184). Bleuler (1934) noted that "patients also fear that they might destroy their beloved ones through a thought ('omnipotence of thought')" (p. 561). This cognitive appraisal style can influence the development of clinically significant obsessions by increasing the frequency of occurrence of intrusive thoughts and a person's corresponding level of distress (Berle & Starcevic, 2005).

TAF is related to obsessionality/OCD in adults (Amir, Freshman, Ramsey, Neary, & Brigidi, 2001; Coles, Mennin, & Heimberg, 2001; Emmelkamp & Aardema, 1999; Hazlett-Stevens, Zucker, & Craske, 2002; Muris, Meesters, Rassin, Merckelbach, & Campbell, 2001; S. Rachman, Thordarson, Shafran, & Woody, 1995; E. Rassin, Merckelbach, Muris, & Spaan, 1999; Eric Rassin, Muris, Schmidt, & Merckelbach, 2000; Shafran, Thordarson, & Rachman, 1996). Experimental research has indicated that TAF beliefs can precede and cause symptom onset (Rassin et al., 1999). Zucker and colleagues (2002) showed that psychoeducation was effective at correcting TAF beliefs among a non-clinical adult sample.

Barrett and Healy (2003) examined TAF beliefs among a sample of children with a primary diagnosis of OCD. Children with OCD had significantly higher ratings of TAF than non-clinical children. There were no significant differences in TAF ratings among children with OCD and children with an alternative anxiety disorder. Libby and colleagues (2004) reported that children with OCD displayed stronger TAF beliefs than children diagnosed with an alternative anxiety disorder or non-clinical children. Muris and colleagues (2001) found that TAF was significantly related to obsessionality among a sample of non-clinical adolescents, and that it was also associated with symptoms of other anxiety disorders and depression. TAF may be a phenomenological feature characteristic of many anxiety disorders

Wells and Matthews (1994) proposed a prototypcal metacognitive model of emotional disorders. They incorporate aspects of earlier cognitive theories into their model, but added the additional tier of metacognition. They regard beliefs about cognitions and cognitive processes as central to the etiology of emotional disorders, including OCD. For instance, individuals with OCD are more likely to believe that

thinking about an event is related to the probability of the event's occurrence (thought-action fusion). When an intrusive, ego-dystonic cognition occurs individuals with thought-action fusion beliefs are more likely to overestimate the probability of harm, to experience greater distress, and to engage in a greater frequency of neutralising behaviours. Individuals with OCD are more likely to believe that they need to control their thoughts. Thought control strategies such as suppression often have the paradoxical consequence of increasing the frequency of intrusive thoughts. Individuals with emotional disorders are more likely to believe that worrying or intrusive thoughts are dangerous and uncontrollable. They are more likely to believe that worrying is associated with positive consequences and to display poorer confidence in their memory abilities.

Many aspects of the cognitive model have been supported by empirical examination in adult OCD samples (Turner, 2006), but research among children is lacking. Two studies illustrated that children with OCD displayed bias in cognitive processing relative to normal and anxious control children (Barrett & Healy, 2003; Libby, Reynolds, Derisley, & Clark, 2004). Matthews and colleagues (2007) found that inflated responsibility, thought-action fusion, and meta-cognitive beliefs accounted for 35% of the variance in obsessive-compulsive symptoms in 223 non-clinical adolescents. Williams and colleagues (2002) observed that OCD symptoms covaried with reduction in responsibility appraisals during CBT treatment. Muris and colleagues (2001) found associations between implicated cognitive biases and obsessive-compulsive symptoms in a non-clinical adolescent sample. This preliminary research suggests that the cognitive model may play a role in the etiology and maintenance of paediatric OCD. The scope and methodology of this research area clearly needs to be expanded.

Chapter Summary

OCD is characterised by the experience of repetitive, intrusive obsessions and/or compulsions that consume more than one hour a day and cause marked distress or impairment. Approximately 1 in 100 children meet standardised diagnostic criteria for OCD. Primary symptoms experienced by children include contamination and aggressive obsessions, and washing and checking compulsions. OCD is frequently accompanied by disturbances in psychosocial functioning,

including significant interference in the home, academic and social domains. Untreated OCD may lead to significant adult morbidity, including OCD, other anxiety disorders, personality disorders, and impaired social functioning.

The assessment of OCD should comprise a differential diagnosis and determination of related problems. OCD in children is most frequently comorbid with other anxiety disorders, mood disorders, and tic disorders. The etiology of childhood OCD remains to be determined, yet is likely to be multifactorial. Etiological accounts have implicated genetic factors, neurochemical abnormalities, neuroanatomical abnormalities, a post-streptococcal autoimmunity response, and cognitive factors.

Chapter 2

Treatments for Paediatric Obsessive-Compulsive Disorder

Recent epidemiological evidence suggests that between 0.25% and 2.3% of children and adolescents have OCD (Apter et al., 1996; Douglass, Moffitt, Dar, McGee, & Silva, 1995; Flament et al., 1989; Flament et al., 1988; Heyman et al., 2003; Thomsen & Mikkelsen, 1993; Valleni-Basile et al., 1994; Zohar et al., 1992). OCD in childhood is associated with deterioration in school performance (Toro et al., 1992), poor peer relationships (Allsopp & Verduyn, 1990) and psychological distress. It is a persistent condition, and is a potential risk factor for future morbidity. Without intervention, children are at a greater risk of experiencing further psychopathology in adulthood, including continued OCD, personality disorders, social phobia, depression, and poor social adjustment (Wewetzer et al., 2001). Adults with OCD have lower employment, poorer academic achievement and lower marital rates compared to non-OCD adults (Hollander et al., 1996; Koran, 2000; Lensi et al., 1996; Steketee, 1993). As the disorder is accompanied by significant impairment, and has an onset in childhood in two-thirds of all adult cases, it is of paramount importance to identify and disseminate effective treatments early in the course of the disorder. Over the past few decades, a significant treatment literature has accrued documenting an array of techniques for paediatric OCD. This extensive literature is described and reviewed in this chapter.

Psychological Interventions

Psychological interventions for paediatric OCD are many and involve numerous mechanisms of change. CBT and behavioural therapy are the most extensively studied treatments in the literature. Family therapy targets family systems and family functioning as the mechanism of change in treatment. Psychodynamic therapy has been used to enhance the functioning of the ego, while

anxiety management training teaches stress management techniques. Meta-cognitive therapy is the most recent psychological treatment to emerge in the paediatric OCD literature, and involves targeting unhelpful beliefs about worry and thoughts, that maintain OCD symptoms. Hypnotherapy has been used as an adjunctive treatment, and one case report has examined bibliotherapy.

Cognitive-Behavioural Therapy

CBT refers to a collection of techniques aimed at modifying unhelpful thoughts and behaviours that maintain emotional disorder. CBT programs for paediatric OCD usually have a duration of 12 to 20 weeks. The two core techniques used in the CBT for paediatric OCD are exposure and response prevention (ERP) and cognitive therapy. Adjunctive techniques sometimes employed in CBT programs include behavioural experiments and operant learning procedures.

Exposure and response prevention. ERP involves exposing the client to his/her feared stimulus (e.g., asking a client with contamination fears to touch a dirty plate) while refraining from performing his/her associated compulsion (e.g., hand-washing). ERP is based on the exposure principle, which supposes that prolonged exposure to an anxiety-provoking stimulus will lead to autonomic habituation to anxiety. With repeated exposures, physiological reactivity to the stimulus decreases and the obsession becomes less distressing. Opportunities for negative reinforcement associated with anxiety reduction, through the execution of compulsions or avoidance behaviours, are removed. The lack of "pay-off" facilitates the extinction of compulsions. Exposure is delivered in two common ways that are referred to as flooding and graded. Flooding begins with exposure to a highly anxiety-provoking stimulus and the individual is continuously exposed until habituation occurs. The individual undergoes repeated exposures to this stimulus over the course of therapy, and generalisation of gains to related less anxiety-provoking stimuli occur. Graded exposure begins with the least anxiety-provoking stimulus of a person's hierarchy of feared stimuli. The individual proceeds to the next stimulus on the hierarchy when the preceding stimulus no longer provokes anxiety. While flooding can produce improvement more quickly than graded exposure, it is rarely used due to the high level of discomfort associated it and the risk it poses to therapy engagement and premature withdrawal from therapy.

An example of an ERP application might pertain to a child with obsessions about a robber breaking into her bedroom, family home, and family boat at nighttime. These obsessions are accompanied by a marked increase in anxiety and urge to ritualise. Ritualising occurs in the form of checking, having things arranged in a certain way, and reassurance-seeking from parents. Thoughts about a break-in to the boat are the least anxiety-provoking. Usual rituals following this thought are to check that the boat is locked up before bed, ask parents whether the boat is still locked, and look outside the window to check that no robber is present. The next most disturbing obsession involves thoughts about the robber breaking into the family home. Rituals include checking the front and back door are locked, and repeatedly leaving bed to ask his parents if the doors are locked. Bedroom rituals include making sure the window is locked, making sure curtains are closed (so the robber won't observe a young, vulnerable child inside and consider the house a satisfactory target), and making sure the bedroom door is closed (so that the opening of the door by a potential robber would be heard to give some prior warning that it is necessary to hide). The child and therapist used a shared metric, the subjective units of distress (SUDS) scale to communicate about the anxiety associated with having an obsession and then failing to perform associated rituals. This scale may range from 0 to 10, or some therapists prefer 0 to 100, where the lowest rating is 'no anxiety' and the highest rating is 'most anxious you have ever been in your life'. The therapist collects the child's ratings of each scary situation and, consistent with a graded method of exposure delivery, hierarchically ranks these situations. The child then commences ERP with the least-anxiety provoking situation, for instance, the child refrains from asking her parents if the boat is locked up at nighttime (or if a less-distressing version of this task is required the therapist and child may agree to delay the question for a period of time, or for the child to aim to ask for reassurance about the boat fewer times in a night than usual). This ERP exercise is repeated at nighttimes until the task is no longer anxiety-provoking. When this has been achieved the child and therapist progress to the next item on the exposure hierarchy. Therapy is continued until all the items on the exposure hierarchy do not provoke anxiety or, as a less rigorous criterion, until the symptoms are no longer of clinical significance.

Cognitive therapy. Cognitive therapy targets the cognitions and unhelpful thinking styles that precede the increase in anxiety following the occurrence of an intrusive

thought. Cognitions and beliefs potentially implicated in paediatric OCD were discussed in Chapter 1 in the context of the cognitive theory of OCD. Some cognitive therapy techniques that may be used in the treatment of paediatric OCD will now be described.

Most cognitive therapy techniques are referred to under the umbrella term 'cognitive restructuring'. The idea behind cognitive restructuring is that unhelpful thoughts that maintain emotional symptoms are challenged and replaced with thoughts containing more realistic and helpful content. Overestimation of the probability of harm was one thought bias discussed in Chapter 1 that can be challenged through cognitive restructuring. The child is asked to generate a realistic estimate of the probability that the sequence of events leading to his/her dreaded event will occur. For example, if a child experiences intrusive thoughts that his house will burn down if the oven is left on, the therapist and the child objectively investigate the likelihood of this occurrence. Each event that could potentially lead to the dreaded outcome is enumerated. The child may decide that the probability that the oven will cause a house fire is 1 in 100, the probability that no-one in the house will notice and extinguish the fire is 1 in 10, the probability that no-one in the neighbourhood will notice the fire and alert the firestation is 1 in 1000, and that the probability that firefighters will not extinguish the fire is 1 in 10. The therapist and child compute the actual likelihood of the dreaded outcome by multiplying the probabilities of each step. The child and therapist compare the realistic estimate to the probability "generated" by OCD. The probability "generated" by OCD' is regarded as 100%, as OCD "makes" the child behave as though the event will occur 100% of the time. The child reappraises the actual likelihood of the event occurring as significantly lower, thereby provoking less anxiety and ritualising. This technique is more suitable for adolescents due to the cognitive capacities required.

Inflated and faulty responsibility appraisals can be challenged using the technique of 'pie-charting'. First, the content of the child's intrusive thought and the nature of the dreaded event are elucidated. Children are asked to identify potential causes of the dreaded event and to assign the percentage of responsibility attributable to each cause. For example, a child may have intrusive thoughts that her father will be badly injured while working at a building construction site. The pie chart is constructed to highlight the relative level of responsibility attributable to each potential cause (see Figure 1).

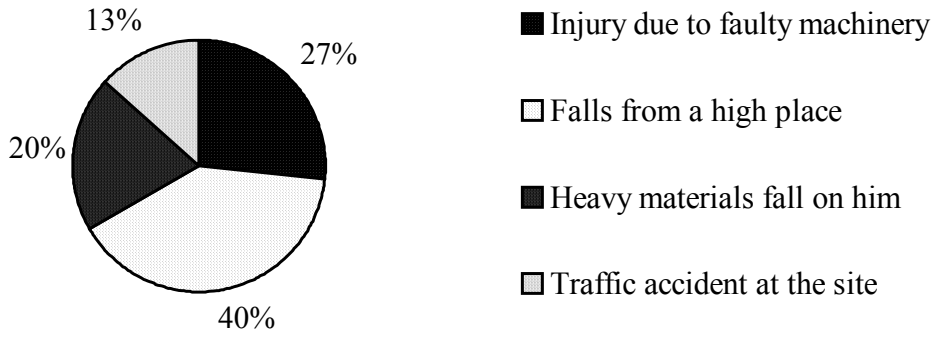


Figure 1. Pie chart of perceived responsibility for a dreaded event.

The child reattributes responsibility for her father's safety from internal factors to external, uncontrollable factors. After completing this task she may recognise that she will be less than 1% responsible for her father experiencing an injury at work, as opposed to her previous estimate of 100%. By reducing the child's tendency to overemphasise personal responsibility for dreaded events Salkovskis' (1995) theory predicts that affective discomfort, and subsequent ritualising, will be reduced.

Catastrophic misinterpretations about the importance of intrusive thoughts can result in distress, increased obsessions, and the utilisation of neutralisation and thought suppression strategies. Cognitive therapy aims to facilitate the benign interpretation of intrusive thoughts, images, or impulses by deemphassing the importance of the thoughts. Some clinicians use Wegner and colleagues (1987) "white bear" paradigm as a clinical tool. Wegner and colleagues instructed study participants to suppress the image of a white bear. Participants had difficulty adhering to this instruction and reported experiencing an increase in the frequency of intrusion of this image. Shafran and Somers (1998) reported a series of case studies in which participants overemphasised the significance of intrusive thoughts. A 14-year-old male presented with intrusions concerning harm to himself and loved ones. He experienced intrusive thoughts that he might accidentally poison or stab himself or others. He interpreted these thoughts as indicating that he was weird and dangerous. He believed that the thoughts were important and occurring for a reason.

His clinician challenged his beliefs by asking him if there was any other reason why he thought the obsessions might be occurring so frequently. After failing to generate an alternative reason the client was told by the clinician that they would perform an experiment. The client was asked not to think about a white bear. Immediately, the client smiled and reported that he was now thinking about a white bear. The client realised that trying to suppress his intrusive thoughts had the counteractive effect of increasing the frequency of these thoughts. The therapist explained to the client that approximately 90% of the population experience intrusive thoughts. These strategies helped the client to replace his beliefs with benign interpretations. His OCD symptoms abated. These results were replicated in a second case using this same technique. It is not clear what the relative efficacy of this treatment was as E/RP was also employed during therapy and the study lacked experimental control.

Another cognitive therapy technique used to alter the importance and meaning of intrusive thoughts is the detachment cultivation (Söchting & March, 2002). Detachment cultivation involves externalising OCD symptoms so to create a 'personal' distance between the child and OCD. Children are asked to give OCD a nasty nickname such as 'germy', 'dragon', or 'baddie'. The child, parents, and therapist ally against the enemy in a mutual battle, seeking to gain control over OCD territory. March and Mulle (1998) present the cause of OCD to the parents and child as neurobehavioural, and describe obsessions as a form of "brain hiccup". Obsessions are portayed as intrusive and annoying, but of no real significance - much like a sneeze. Framing the disorder within a neurobehavioural framework cultivates detachment from the disorder. Clients attribute the experience of symptoms to neurochemical disturbances or to a "brain malfunction" rather than erroneously interpreting the symptoms as evidence that they are bad people.

Psychoeducation encourages the client to adopt a benign appraisal of the significance of an intrusive thought. Clients are informed that over 90% of the population experience intrusive thoughts, and that the form and content of these thoughts does not differ from clinical obsessions. Printed lists outlining intrusive thoughts experienced by the general population are presented to the client. Clients learn that the experience of obsessions is not rare, and that the experience does not imply that the individual is deranged or mentally ill (Rachman, 1997).

Cognitive restructuring may be undertaken to improve the indiividual's ability to tolerate uncertain situations. Grayson (2003) advocates informing the client that

certainty in life is not achievable. No person can perfectly predict future events, no matter how minor. Most people are comfortable with everyday uncertain situations, yet individuals with OCD lack tolerance for uncertainty. For instance, most people cannot remember turning the oven off the previous night at dinner, or they might not know if their spouse is unharmed at a specific point in time, when the couple is apart. Yet, most people are able to tolerate this uncertainty. Individuals with OCD would seek to establish certainty by performing compulsions (e.g., checking that the oven is off, ringing home to determine if spouse is unharmed). The feeling of certainty attained is only temporary. Individuals with OCD need to understand and accept that no individual can ever be completely certain of a future event. Even though some events may seem impossible, they are not improbable.

Whitall and O'Neill (2003) describe using surveys to challenge OCD individuals' catastrophic interpretations of uncertain situations. For instance, a client with checking compulsions may be asked to survey ten people to determine if those people recall locking their front door. The majority of people will not explicitly remember doing so, yet, despite the uncertainty they will be sure the door is locked. This experiment seeks to normalise the experience of uncertainty and illustrate that just because a person does not remember completing a task does not mean that it is not done.

Cognitive therapy techniques and behavioural experiments can be used to test the validity of TAF beliefs. Clark (2000) reported the use of this technique in the treatment of an adult with OCD. This individual believed that thinking about getting sick would increase the likelihood that she would become sick. Clark instructed her to test this belief by repeatedly thinking about becoming sick. She was asked to keep a record of her intrusive thoughts and the perceived probability that she would become ill. This technique helped her to modify her faulty beliefs regarding the contingency between her thoughts and real-life events. The cognitive therapy techniques listed above may be incorporated into treatment plans if the clinician deems the cognitive content to be a maintaining mechanism of the client's disorder.

Behavioural experiments. Behavioural experiments are a cognitive therapy technique whereby the client and therapist contrive a scenario that will enable evaluation of a dysfunctional cognition. Williams and colleagues (2002) reported using behavioural experiments with a 14-year old girl whose obsessions indicated that someone in her family would die unless household objects were aligned in fours. In therapy she

evaluated the "OCD hypothesis" and alternative "non-OCD hypothesis" via a behavioural experiment. The non-OCD hypothesis was that harm would not befall her family if she deliberately left objects misaligned. Although behavioural experiments resemble exposure, they are different in that they are designed to target dysfunctional cognitions, and are terminated as soon as an outcome to the "experiment" has occurred. The efficacy of this treatment technique in isolation from other CBT components has not been studied.

Operant conditioning procedures have been utilised in many paediatric OCD studies. Positive punishment (removal of a pleasant stimulus) and negative punishment (application of an aversive stimulus) have been documented in the treatment literature. Negative punishment has consisted of an aversive tactile experience or the removal of privileges (Apter, Bernhout, & Tyano, 1984; Lyon, 1983). Punishment is not condoned in current psychological practice as it is unethical and may have the counterproductive effect of increasing resistance to treatment (March, 1995). Operant conditioning procedures were utilised in a small number of studies to manage comorbid oppositional behaviour, with the goal of increasing treatment compliance (e.g., Owens & Piacentini, 1998). Current CBT protocols favour operant techniques, such as positive reinforcement, as a means of increasing compliance with ERP. In March and Mulle's (1998) treatment manual, rewards for achieving difficult exposure tasks are planned collaboratively by the child, therapist, and family.

Over 60 treatment studies have evaluated CBT. Four of these were RCTs. Himle and colleagues (2003) conducted a trial with 10 children comparing group CBT to a placebo control. Children received a programme containined ERP and cognitive therapy. Children receiving CBT showed an average 40% reduction in symptoms at posttreatment, while children in the placebo group showed an average 22%. Barrett, Healy-Farrell, and March (2004) compared changes in OCD symptomatology among 77 children randomly assigned to an individual CBT, group CBT, or wait-list control condition. Three main components were employed in the CBT programme; (1) psychoeducation, anxiety management, cognitive therapy, (2) ERP, and (3) relapse prevention. Component 1 was delivered across weeks 1 to 5, component 2 across weeks 6 to 10, and component 3 across weeks 11 to 14. The programme lasted 14 weeks and treatment contained an extensive family component. Sessions were held once weekly, with approximately 50 minutes allocated to work

with the child and 30 minutes with the parent and/or siblings. It was desirable for siblings to attend a prespecified eight treatment sessions, with partial session content focusing on sibling anxiety management, support for siblings, sibling accommodation of symptoms, and discussion of the impact of OCD on siblings. Siblings mostly saw the treating therapist one-on-one, or within a group of other siblings for the group programme. Children in the active treatment conditions showed significantly lower symptom severity (64% and 61%) at posttreatment than children in the wait-list condition, who worsened by 5%. The improvement was maintained at six months and three years follow-up (Barrett, Farrell, Dadds, & Boulter, 2005).

The Pediatric OCD Treatment Study Team (2004) evaluated the efficacy of CBT alone among a sample of 28 children using a randomised, placebo-controlled design. The CBT regimen comprised a 14-session programme of psychoeducation, cognitive therapy, and ERP. The mean reduction in symptom severity was 46%. The rate of clinical remission (defined as a mean CYBOCS score of 10 or less at posttreatment) was 39%. CBT was significantly more effective than pill placebo at reducing OCD symptom severity.

Bolton and Perrin (in press) compared ERP only to waitlist-control among 20 children in a randomised design. Symptom severity of children receiving ERP decreased an average 44% compared to 2% for waitlisted children.

Other Behavioural Techniques

Satiation. Satiation, or 'massed practice', involves prolonged exposure to obsessional content. This is achieved by playing a prerecorded monologue of the obsession on a closed-loop audiotape, repeating obsessions verbally, or writing out the obsession.

Satiation has been used in the treatment of paediatric OCD (Campbell, 1973; Friedmann & Silvers, 1977; Green, 1980; Kellerman, 1981; O'Connor, 1983; Taylor, 1985). These case reports reported positive outcomes, yet it is difficult to assess the effectiveness of satiation because most reports used a combination of treatment techniques, such as medication and behavioural therapy, and all used uncontrolled methodology. It is inconclusive whether this technique is beneficial.

Thought Stopping. Thought stopping involves an attempt to eliminate an intrusive thought from conscious awareness by executing a verbal command (e.g., "stop!") or behaviour (e.g., snapping a rubber band on the wrist) upon emergence of the thought. Thought stopping has been used, usually as an adjunctive technique, in many paediatric OCD studies (Campbell, 1973; Frare & Lebel, 1996; Friedmann & Silvers, 1977; Kellerman, 1981; Ownby, 1983; Taylor, 1985). These studies tended to support the efficacy of the technique, although they were uncontrolled and usually included other treatment components, making it difficult to discern treatment efficacy. Researchers have not validated the efficacy of this technique within a paediatric OCD population in a controlled design, perhaps because a) thought stopping has shown little efficacy in adult OCD populations b) procedures contradict the implementation of ERP techniques and c) cognitive theory does not justify its use (Rachman, 2003). Rachman (1997) claimed that this technique was an *ad hoc* method, because it attempted to control the problem after it had taken place, rather than correcting the underlying dysfunctional cognitions responsible for distress. The technique has been criticised for contradicting recent evidence that attempting to suppress an intrusive thought may increase the frequency of intrusion (Salkovskis, 1996). This outcome was noted in one case report of the technique (Wilhelm, 2003).

Metacognitive Therapy

Metacognition has been proposed as a central mechanism of change in the treatment of OCD. Metacognition refers to "the psychological structures, knowledge, events and processes that are involved in the control, modification and interpretation of thinking itself" (Wells & Cartwright-Hatton, 2004, p. 386). At its simplest level, metacognition can be understood as 'thinking about thinking' or beliefs about mental events and cognitive processes (Clark & Purdon, 1993; Janeck, Calamari, Riemann, & Heffelfinger, 2003).

Metacognitive therapy for OCD alters metacognitive processes implicated in the maintenance of OCD, such as beliefs that one's memory is excessively fallible or thought-action fusion beliefs. Though-action fusion beliefs are thoughts about a dreaded event that an individual with OCD catastrophically interprets as increasing the likelihood that the dreaded event will occur. Simons and colleagues (2006) presented a case series of 10 children randomly assigned to receive a 20-week

program of ERP or metacognitive therapy. An example of one of the metacognitive techniques was thought experiments to test thought-action fusion beliefs. For instance, one female child had obsessions about dying, and interpreted these thoughts as indicating that she would soon die. To counter the anxiety generated by this obsession, her compulsions centered on generating counteractive thoughts that she wanted to live. She was instructed to practice thinking certain thoughts, such as winning the lottery, and to examine whether the outcome occurred. OCD severity in the metacognitive group decreased an average 78%, compared to a 95% reduction in the ERP-treated children. Metacognitive therapy shows promise for paediatric OCD and requires evaluation through controlled designs and analysis of clinically significant change. Although it has lower efficacy than ERP therapy, it may be an acceptable alternative psychotherapy for children reluctant to undertake ERP, and may result in significant clinical change.

Anxiety Management Training

Anxiety management training (AMT) has occasionally been included as a supportive component of CBT (e.g., Lyon, 1983; March et al., 1994; Waters et al., 2001). AMT techniques include progressive muscle relaxation, breathing retraining, visualisation, isometric relaxation, and stress reduction methods. AMT has not been tested as a treatment for paediatric OCD, perhaps because it has been found to be ineffective in treating adult OCD. One study sought to ascertain whether ERP without AMT techniques was effective, and found an average 67% decrease in symptom severity at posttreatment (Franklin et al., 1998). The authors concluded that AMT does not seem to be a necessary part of treatment. Himle (2003a) used AMT as a placebo control in a group CBT-control comparison, and found that AMT reduced symptoms by an average of 22% (compared to 40% for CBT), however, symptoms returned to approximately baseline at the 6-month follow-up for the AMT group. The CBT group maintained treatment gains. The sample was very small so it is unclear how generalisable these findings are. Some therapists believe that AMT may support CBT treatments by lowering the peak level of anxiety, thereby reducing the difficulty of challenging exposure tasks. This may increase the tolerability of CBT to children (March, 1995). However, anxiety management strategies are generally not recommended as they may interfere with core mechanisms in ERP – habituation and

cognitive change (Maltby & Tolin, 2003). There is no evidence that AMT in isolation is an effective treatment for paediatric OCD.

Bibliotherapy

Tolin (2001) used bibliotherapy to treat a 5-year old boy with obsessive-compulsive symptoms. The child was given a story about a tiny obnoxious flea, O. C. Flea, that annoys his friends by telling them that things are dangerous, urging them to perform bizarre behaviours to prevent danger. Events transpire that preclude the animals from performing their rituals, and they learn that no dangerous consequences result. The animals begin changing their behaviour to banish O. C. Flea. While not comprising a strict ERP or CBT procedure, the mechanisms underlying this therapy appear to be cognitive (externalising OCD via metaphors and reinterpreting obsessive thoughts) and behavioural (resisting compulsions). It is unclear whether this technique is effective. Although the child's symptoms decreased by 96%, this study was a case study, and the technique of blocking reassurance about germs from others in the child's environment was simultaneously employed. Further research needs to be undertaken.

Family Therapy

Family therapy alters patterns of interaction between family members in order to increase family functioning or to reduce emotional disturbance in one family member. Many suggestions have been proffered on targets for OCD family therapy intervention, including high expressed emotion, reassurance-seeking, communication, conflict resolution, problem-solving, OCD accommodation by family members, and family difficulties that impede successful implementation of CBT (Freeman, Garcia, Fucci, Miller, & Leonard, 2003; Hibbs et al., 1991; March, Leonard, & Swedo, 1995). A number of studies have reported the use of family therapy (Barrett et al., 2004; Dalton, 1983; Fine, 1973; Hafner, Gilchrist, Bowling, & Kalucy, 1981; Hand, 1988; O'Connor, 1983; Scott, 1966; Van Noppen, Steketee, McCorkle, & Pato, 1997; Waters et al., 2001). A problem with these studies is that the targets of intervention were highly diverse. In most to all cases designs were uncontrolled, additional interventions (particularly behavioural) were employed,

valid outcome measures were not utilised, and studies were limited to few cases. There is no evidence to support the efficacy of family therapy. It may be a promising avenue to pursue as an adjunct to CBT treatment.

Psychodynamic Therapy

Psychodynamic therapy has not featured markedly in child OCD treatment studies, probably because of poor results obtained in adult treatment studies and substantial problems with the theoretical model governing treatment. A common drawback of psychoanalysis in general is that it may take a long time to achieve improvement. McGehee (2005) presented the case study of a 10-year-old boy. Therapy was biweekly for three months. No improvement in symptoms led the therapist to increase sessions to four-times weekly. Symptom remission was observed at the end of a two-year treatment period. The author did not report on the method used to diagnose OCD or include outcome measures, making interpretability impossible. There is no evidence to support the efficacy of psychodynamic therapy for childhood OCD.

Hypnotherapy

Two studies have examined hypnosis as an adjunctive component of treatment (Kellerman, 1981; Taylor, 1985). These studies reported a reduction in obsessive-compulsive symptomatology. Other techniques were utilised, OCD diagnosis was not standardised, and uncontrolled methodology was used, hence, it is not possible to draw conclusions about the efficacy of this intervention.

Biological Interventions

Biological interventions target biological mechanisms of change, such as deficiencies in serotonin or dopamine neurotransmitter functioning, brain structures, and immunological deficiencies. Pharmacotherapy has received the most attention in the literature, particularly the SSRIs. Other biological interventions for paediatric OCD include immunological treatments for the PANDAS subgroup and homeopathy.

Pharmacotherapy

Clomipramine

Clomipramine is a tricyclic antidepressant and was the first medication to be studied among children with OCD. Treatment guidelines suggest that clomipramine should generally be administered for a 12-week period at a dosage of 3 mg/kg per day (American Academy of Child and Adolescent Psychiatry, 1998). Dosages in excess of 5 mg/kg per day or 250 mg per day should not be administered due to risks such as seizures, toxicity, and electrocardiographic changes (American Academy of Child and Adolescent Psychiatry).

Six studies on clomipramine treatment for paediatric OCD have been conducted (de Haan, Hoogduin, Buitelaar, & Keisjers, 1998; DeVeaugh-Geiss, Moroz, & Biederman, 1992; Flament et al., 1985; Hanna, Yumiler, & Cantwell, 1993; Leonard et al., 1989; Rapoport, Elkins, & Mikkelsen, 1980). Length of treatment ranged between 8 to 12 weeks. Three of the studies were RCTs, which reported an average improvement in symptoms ranging from 37% to 51%, and significantly lower posttreatment symptom severity than the control groups. De Haan compared clomipramine to behaviour therapy and found that children in the clomipramine condition improved an average 26% compared to 58% in the CBT condition.

Leonard and colleagues (1991) sought to determine whether treatment gains were maintained following clomipramine discontinuation. Twenty-six children who had participated in a previous clomipramine-desipramine double-blind crossover study (Leonard et al., 1989) received maintenance clomipramine treatment at follow-up. The mean length of clomipramine treatment prior to entry into the maintenance study was 17 months. Twenty children completed the 8-month maintenance phase. Eight (89%) of the nine participants in the substitution desipramine hydrochloride condition and two (19%) of the 11 participants in the nonsubstitution clomipramine condition relapsed during the two-month comparison period. These results suggest that OCD symptoms return following withdrawal of clomipramine.

Fifty-four probands comprising consecutive participants in earlier studies (Flament et al., 1985; Leonard et al., 1993) were followed up two to seven years after receiving five weeks of clomipramine treatment (Leonard, Swedo, & Lenane, 1993). The mean age of the participants at follow-up was 17 years (*SD* = 3.0 years,

range = 10 to 24 years) and the mean follow-up period was 3 years (*SD* = 1.0 years, range = 1.9 to 7.3 years). At follow-up, 43% of participants met criteria for OCD and 18% were classified as "subclinical OCD".

The average improvements in outcome in Leonard and colleagues' (1993) study cannot be attributed solely to previous treatment with clomipramine, due to limitations in the study's design. Children were not excluded from the study if they had received interim treatments. Most of the children that participated in the follow-up had received further, multiple, treatments. The interim treatments comprised medication (96%), behavioural therapy (33%), individual psychotherapy (54%), and family therapy (20%). Many of the participants were receiving treatment for OCD at the time of follow-up. The most common current pharmacological treatments were clomipramine (37%), fluoxetine (24%), and fluvoxamine (4%). No participant was receiving CBT at follow-up. Due to the absence of internal validity in the study's design, the long-term effects of clomipramine on OCD symptomatology are not interpretable. However, the findings indicate that despite multiple treatments for OCD, a significant proportion of children continue to meet diagnostic criteria.

Clomipramine appears to be an efficacious treatment for children with OCD. However, treatment effects are not durable following medication discontinuation and approximately one third of children with OCD do not respond to the treatment. A limitation of clomipramine treatment, and other pharmacotherapies, is that it has been associated with the experience of adverse events. An adverse event is a clinical or physical change experienced by a participant during the course of a treatment, whether or not the treatment is considered to be responsible for that event. Adverse events include side effects, diseases, and changes to cognitive and affective functioning. Adverse events associated with the use of clomipramine include palpitations, sweating, tremor, drowsiness, weight gain, increased seizure risk, and arrhythmias (DeVeaugh-Geiss et al., 1992; Leonard et al., 1988; Liebowitz et al., 2002). Clomipramine has a more hazardous side effect profile compared to treatment with SSRIs. This is because clomipramine is not as selective for serotonin reuptake. Clomipramine inhibits the neuronal reuptake of serotonin, dopamine, and noradrenaline, and acts as an antagonist at cholinergic, adrenergic, histaminergic, and dopaminergic receptors. This non-selectivity produces greater neurobiological disturbance than that produced by SSRIs, which is restricted to blocking the reuptake of serotonin. The seriousness of the adverse events associated with clomipramine,

and innovations in pharmacological treatments for depression, prompted the investigation of the efficacy of the SSRIs (Liebowitz et al.).

Fluvoxamine

Fluvoxamine is an SSRI and has been evaluated in two open studies (Apter et al., 1994; Yaryura-Tobias, Grunes, Walz, & Neziroglu, 2000), one RCT (Riddle et al., 1996; Riddle et al., 2001), and one follow-up study (Walkup et al., 1999) and is a first-line pharmacological agent for children with OCD. Riddle and colleagues conducted a 10-week multicenter, randomised, double-blind, placebo-controlled trial (50-200 mg/day). Of the 120 children that participated in the study, 44 withdrew prematurely. Reasons cited included a lack of improvement (22 placebo, 9 fluvoxamine), side effects (3 fluvoxamine, 1 placebo) and 'other' reasons. An intention-to-treat, last-observation-carried forward analysis revealed that children in the fluvoxamine condition had a significantly lower level of symptom severity than children in the placebo condition at posttreatment. The mean reduction in OCD symptom severity from pretreatment to posttreatment was 25% for the fluvoxamine-treated children and 14% for the placebo-treated children. This difference was statistically significant. Treatment response was defined by the researchers as a 25% decrease in symptom severity from baseline to endpoint. Twenty-four (42%) participants in the fluvoxamine condition and 17 (26%) participants in the placebo condition were treatment responders.

The long-term efficacy of fluvoxamine was evaluated in a 52-week trial with 99 children (Walkup et al., 1999) who had participated in the above study. Medication dose was titrated to 20 mg per day during the first three weeks of treatment. The children that had been treated with fluvoxamine in the original study ($N = 34$) experienced a 31% reduction in symptoms in the original study and an additional 16% in the extension phase. Continued medication management may be useful for improving treatment response and for preventing relapse. The risks associated with long-term medication use are unknown.

The results of Riddle's (1996) study support the efficacy of fluvoxamine as a short- and long-term treatment for childhood OCD. The results of the open trials are consistent with the RCT. Research has not shown that the effects are durable when medication is withdrawn. Adverse events associated with fluvoxamine use among

children with OCD include headaches, insomnia, infection, abdominal pain, and nausea (Riddle, 1996, 2001).

Sertraline

The efficacy and safety of the SSRI sertraline has been examined in two randomised, placebo-controlled trials (March et al., 1998; Pediatric OCD Treatment Study Team, 2004), one uncontrolled trial (Alderman, Wolkow, Chung, & Johnston, 1998; Johnston et al., 1996), one case study series (Procter, McNicholas, & Baird, 2001), and one extension trial (Cook et al., 2001).

March and colleagues (1998) conducted a 12-week, multicenter, randomised, double-blind, placebo-controlled trial among 187 children. Children treated with sertraline (200 mg/day) showed significantly greater improvement on outcome measures. Average reduction in symptom severity was 29%. Children receiving sertraline were significantly more likely to experience adverse events, such as insomnia, nausea, agitation, and tremor, and were more likely to discontinue the study as a result of adverse events than children in the placebo condition. Approximately 13% children treated with sertraline and 3% of placebo-treated children discontinued treatment prematurely.

The Pediatric OCD Treatment Study Team evaluated the efficacy of sertraline, CBT, and CBT and sertraline combined (POTS, 2004). The study employed a randomised, placebo-controlled design and was conducted across three treatment sites in the United States. Ninety-seven of 112 participants completed the full 12 weeks of treatment. Intention-to-treat analyses revealed a statistically significant advantage for sertraline compared with placebo. Clinical remission was defined as a CYBOCS score less than or equal to 10. The rate of clinical remission for participants treated with sertraline only was 21% compared to 4% for placebo. Sertraline-treated participants experienced a greater number of treatment-emergent adverse events than participants in the placebo condition. The most commonly experienced adverse events were stomachache and nausea. No serious adverse events accompanied sertraline use.

Cook and colleagues (2001) conducted a 52-week extension study with 137 participants from March and colleagues' (1998) trial. Of these, 62 completed the 52-week extension phase. All participants began the extension study within three days of completing the 12-week treatment phase. Participants were treated in dosages of

50-200 mg per day. Efficacy analyses were conducted on 132 evaluable participants. The average decrease in symptoms was 25% between baseline and endpoint of the original study (from 0 to 12 weeks of treatment), 36% between baseline and endpoint of the extension study (from 12 to 52 weeks of treatment), and 53% between baseline of the original study and endpoint of the extension study (between 0 and 64 weeks of treatment). Significant incremental improvements were demonstrated on all outcome measures from the baseline of the extension phase to endpoint. At endpoint, 67% of the participants were classified as treatment responders. Of those who completed the 52-week extension phase, 85% that were responders to sertraline in the initial 12-week phase of the study remained responders at the endpoint of the extension phase. Forty-three percent of children who did not meet the criteria for treatment response to sertraline in the initial 12-week phase were treatment responders at the endpoint of the extension phase. The incidence of treatment-emergent adverse events in the extension phase was 77%. The most common adverse events were headache, insomnia, nausea, diarrhoea, somnolence, abdominal pain, hyperkinesia, nervousness, and vomiting. These findings complement the recommendations of practice guidelines, which suggest that medication should be continued for a further 9 to 18 months after an acceptable acute response has been demonstrated (Grados, Scahill, & Riddle, 1999; March, Frances, Carpenter, & Kahn, 1997; Thomsen, 2000). Shortcomings in the methodological design of the study limit the extent to which the findings can be considered valid. The limitations represent the practical and ethical constraints of conducting research with this population. Children in the study were not excluded if they received concomitant psychotherapy. No information was collected on psychotherapy, therefore, it is not possible to determine the extent to which this confounded treatment outcome. Some children received CBT, which is an efficacious treatment for children with OCD. The lack of a comparison condition means that a placebo response may have accounted for improvements in symptomatology. Outcome measures were administered by clinicians who were not blind to the treatment. Hence, results of the extension study are promising but must be interpreted with caution.

Sertraline appears to be an efficacious treatment for paediatric OCD, although there is no evidence to suggest that improvement is maintained when sertraline is withdrawn.

Fluoxetine

Fluoxetine is an extensively studied SSRI agent. Seven uncontrolled trials (Baysal & Ünal, 1996; Bouvard & Dugas, 1993; Como & Kurlan, 1991; Geller, Biederman, Reed, Spencer, & Wilens, 1995; Liebowitz, Hollander, Fairbanks, & Campeas, 1990; Riddle, Hardin, King, Scahill, & Woolston, 1990; Semerci & Unal, 2001) and three RCTs (Geller, Hoog et al., 2001; Liebowitz et al., 2002; Riddle et al., 1992) have been published. Riddle and colleagues examined the efficacy of fluoxetine (20 mg/day) among a sample of 14 children with OCD in the United States. They employed a 20-week randomised, double-blind, placebo-controlled design with a crossover at eight weeks. The first agent was administered for eight weeks, and the second agent was administered at 12 weeks. This discrepancy in timing was implemented to allow for the long half-life of fluoxetine and its metabolite, norfluoxetine. Plasma fluoxetine levels were monitored to evaluate compliance with the treatment. Due to a small sample size, analyses on the primary outcome measures were conducted on the data obtained at baseline and at eight weeks. OCD severity decreased by an average of 44% between baseline and the initial 8 weeks for the fluoxetine condition, compared to 27% for the placebo condition. Change score analyses revealed that there was a statistically significant difference favoring fluoxetine on a global OCD measure, but not on the two other frequently used OCD severity measures. Interpretability of the study is difficult, due to methodological shortcomings and low power. The statistical analyses employed by Riddle and colleagues had unacceptably high Type I error rates. Inflation of the familywise error rate, which occurs when multiple analyses are conducted on a single data set, was not controlled. The familywise error rate for the study was 30 times the acceptable level. An acceptable per test alpha level using the Bonferroni correction procedure is .0017. Only one result was statistically significant at this alpha level, namely, the change in global OCD severity from pretreatment to the first eight weeks in the fluoxetine condition. No statistically significant differences in OCD symptom severity, anxiety symptoms, depressive symptoms, or obsessive-compulsive symptoms were observed from pretreatment to eight weeks for either of the conditions, or between the conditions at eight weeks, at the corrected per test alpha level. Effect size calculation on change scores revealed a small and non-significant effect (.18, 95% *CI* = -.92 to 1.27). The large confidence interval suggests

that the treatment effect could be as small as negligible or as voluminous as large, rendering study results difficult to interpret.

Geller and colleagues examined the efficacy of fluoxetine (20-80 mg/day) among 103 children with OCD. A 13-week, randomised, placebo-controlled, double-blind design was employed. Twenty-two participants (31%) in the fluoxetine condition and 12 participants (37%) in the placebo condition withdrew from the study prematurely, although this difference was not statistically significant. The groups did not differ significantly at baseline in demographic characteristics, patient characteristics or symptom severity. Intention-to-treat analyses were conducted using the last-observation-carried-forward approach. Those receiving fluoxetine improved an average 39%, compared to 19% in the placebo condition. In the fluoxetine condition, 35 of 71 children (49%) were classified as treatment responders, compared to 8 of 32 children (25%) in the placebo condition. Eighty children (78%) reported at least one treatment-emergent adverse event. There were no significant differences between the conditions in the number of children that reported adverse events.

Liebowitz and colleagues conducted a randomised, double-blind, placebo-controlled trial to assess the efficacy of fluoxetine (20-80 mg/day). Forty-three children received eight weeks of treatment followed by an eight week maintenance phase. Due to attrition, only eighteen children completed the maintenance phase. Treatment group did not predict the rate of attrition. Intention-to-treat analyses were conducted using the last-observation-carried-forward approach. The fluoxetine and placebo condition demonstrated significantly lower OCD severity at eight weeks, although the study was slightly underpowered. More fluoxetine-treated children (51%) were classified as treatment responders than placebo-treated children (32%), although this difference was not statistically significant. Post hoc analyses controlling for baseline scores were conducted on all study entrants to examine treatment efficacy at week 16. The fluoxetine-treated condition had lower average symptom severity. A high rate of adverse events was reported. All children in the fluoxetine condition and 86% of participants in the placebo condition reported experiencing at least one adverse event. The majority of these events were treatment-emergent. The most common adverse events experienced by children in the fluoxetine condition were headaches (52%), fatigue (47%), abdominal pain (43%), drowsiness (38%), difficulty staying asleep (38%), decreased appetite (38%), weight

loss (33%), nausea (33%), and muscle ache (33%). The most common adverse events experienced by children in the placebo condition were headaches (36%), fatigue (32%), and nausea (32%). The extent of adverse events attributable to the medication is unclear, as between-groups differences in comorbid psychopathology existed. The fluoxetine condition had a significantly higher level of depressive symptomatology at baseline than participants in the placebo condition. Depression is often associated with sleeping difficulties, physical symptoms, and changes in appetite, including weight loss. No follow-up studies examining the long-term efficacy of fluoxetine for children with OCD have been published.

A concern in the use of fluoxetine is the risk of increased frequency of suicidal ideation or behaviour. King and colleagues (1991) studied a sample of 42 children treated with fluoxetine for depression or OCD and observed this phenomenon in six children. A pooled analysis of adult clinical OCD trials showed no single incident of suicidality among fluoxetine-treated individuals (Beasley et al., 1992). Results are currently inconclusive.

Paroxetine

Paroxetine is an SSRI agent that has been studied in two RCTs (Geller, Stewart, Farrell, & Emslie, 2003; Geller et al., 2004) and two open trials (Diler & Avci, 2000; Rosenberg, Stewart, Fitzgerald, Tawile, & Carroll, 1999). Geller and colleagues (2004) conducted a 10 week, multisite, randomised, placebo-controlled study of paroxetine (10-50 mg/day). The intention-to-treat sample comprised 203 children. Mean reduction in symptoms was 36% and 21% for the paroxetine and placebo groups, respectively. This represented a change from severe OCD symptomatology to mild OCD symptomatology in the paroxetine group. Analyses using the last-observation-carried-forward technique revealed a statistically significant difference in OCD symptom severity at endpoint, favouring paroxetine.

Geller (2003) used a randomised controlled withdrawal design to examine paroxetine efficacy. Children ($N = 193$) that responded to a 16-week paroxetine treatment phase were randomised to a 16-week extension trial of paroxetine versus placebo. Children in the paroxetine condition displayed an average 36% worsening of symptoms compared to an average worsening of 72% in the placebo condition. Geller reported that the differential relapse rates were 44% and 35%, though this difference was not statistically significant, despite the study being overpowered.

The two open trials have reported favourable results, noting reductions in symptoms between 29% and 57%. The side effect profile for paroxetine appears reasonable, with fewer than 10% of the sample reporting adverse events such as decreased appetite, vomiting, diarrhoea, and so forth. The durability of paroxetine outcome has not been investigated.

Immunotherapy and PANDAS Treatment

Immunotherapy has been studied among children with the PANDAS subtype of OCD. PANDAS-related disorders are indirectly triggered by streptococcal infection, leading researchers to propose that treatments that alter immune function may be of benefit. Current methods investigated have included plasmapheresis, intravenous immunoglobulin, penicillin prophylaxis, or prednisone (Allen, Leonard, & Swedo, 1995; Garvey et al., 1999; Giedd, Rapoport, Leonard, Richter, & Swedo, 1996; Grados, Scahill, & Riddle, 1999; Nicolson et al., 2000; Perlmutter et al., 1999). Surgical treatments, such as adenotonsillectomy have also been reported in the treatment of PANDAS OCD (Heubi & Shott, 2003). The PANDAS subtype of OCD is believed to be a unique subtype of OCD with specificity in characteristics. A review of the PANDAS area is outside the scope of this thesis.

Homeopathy

Case reports have suggested that homeopathic remedies may assist children with OCD (Reichenberg & Ullman, 1998, 1999, 2000; Reichenberg-Ullman & Ullman, 2002). These reports are of poor methodological quality. OCD was not diagnosed using standardised methods and assessments were not administered. There is no evidence confirming homeopathy as an efficacious treatment method.

Combination Treatments

Empirical evidence indicates that combined treatment is superior to treatment with CBT alone or sertraline alone (POTS, 2004). The POTS team evaluated the relative efficacy of CBT, sertraline, and combined CBT and sertraline, in a randomised, placebo-controlled study. The clinical implications of this study are

significant. Intention-to-treat analyses revealed that treatment with CBT alone (p = .003), sertraline alone (p = .007), and combination treatment (p = .001) was significantly superior to a placebo. Combination treatment was statistically superior to CBT or sertraline alone. The rate of clinical remission was 54% for combined treatment, 39% for CBT alone, 21% for sertraline alone, and 4% for placebo. The effect size was 1.4 for combination treatment, 0.97 for CBT alone, and 0.67 for sertraline alone.

Open-label case series reports have suggested that a clomipramine-SSRI combination may be useful (e.g., Figueroa, Rosenberg, Birmaher, & Keshavan, 1998; Simeon, Thatte, & Wigins, 1990). Methodological limitations do not permit conclusive interpretations regarding efficacy.

Other Treatments

Neurosurgery and electroconvulsive therapy have been suggested as potential treatments among adults with severe, treatment refractory OCD and comorbid depression. Several procedures have been reported, including capsulotomy, cingulotomy, limbic leucotomy, and central lateral thalamotomy with anteromedial pallidotomy, executed by radiosurgery or radiofrequency thermolesions (Polosan, Millet, Bougerol, Olie, & Devaux, 2003). Electroconvulsive therapy involves the induction of a bilateral tonic clonic seizure by passing a brief electrical current through the brain. The mechanism of action has not been identified, though is thought to be related to neurotransmitter functioning.

Neurosurgery and electroconvulsive therapy are proscribed for children with OCD, due to the risk of irreversible consequences such as seizures, and structural and cognitive damage. OCD is known to remit without treatment in a third of paediatric cases. Developmental changes such as increased cognitive capabilities may overcome previous non-response to a specific type of treatment. Legal and ethical challenges present concerns in the consent required for such procedures. These considerations mean that neurosurgery and electroconvulsive therapy for child OCD are unlikely to be examined for treatment efficacy.

Transcranial magnetic stimulation is a noninvasive technique whereby powerful magnetic fields are used to excite neurons in the cortex. It is currently

being studied among adults, but not children. A review of available adult trials suggested that there are insufficient data to conclude that transcranial magnetic stimulation is efficacious and more research is needed to investigate this treatment technique (Martin, Barbanoj, Pérez, & Sacristán, 2006).

Further medications that have been highlighted in case reports or open-label trials, but not studied within RCTs, include sumatriptan, buspirone, and citalopram (Fitzgerald, Stewart, Tawile, & Rosenberg, 1999; Pathak, Cottingham, & McConville, 2003; Simeon et al., 1994; Thomsen, Ebbesen, & Persson, 2001). A NIMH sponsored trial is currently underway to assess the efficacy of riluzole, a glutamate receptor blocker. It is likely that new pharmacological treatments and augmenting treatments for paediatric OCD will continue to be investigated.

Integrating the Literature

The diversity in literature and lack of a coherent picture of etiology (as outlined in Chapter 2) and maintaining mechanisms presents a potential hindrance navigating treatment options by consumers, clinicians, and researchers. Most published studies report results favouring the treatment modality presented, yet there is great variety in quality of methodology, statistical techniques, and patient samples that makes interpretation of outcomes problematic. To optimise outcome for children with OCD evidence-based treatments require distinction from non-evidence based treatments and insight into comparative effectiveness is required.

Chapter Summary

Many different treatment strategies relying on heterogeneous theoretical mechanisms of change have been applied to the treatment of paediatric OCD. Psychological interventions have included CBT, behavioural therapy, psychodynamic therapy, family therapy, bibliotherapy, AMT, metacognitive therapy, and hypnotherapy. Biological interventions have comprised pharmacotherapy with clomipramine and the SSRIs, immunotherapy for PANDAS, and homeopathy. The paediatric OCD treatment literature would benefit from systematic integration to identify evidence-based treatments and determine the relative effectiveness of treatment modalities.

Chapter 3

Study 1: Meta-Analysis of Randomised, Controlled Treatment Trials for Paediatric Obsessive-Compulsive Disorder

OCD affects approximately 1 in 100 children. It can substantially disable children's functioning at home, school, and with peers (Piacentini et al., 2003) and increase the risk of psychological problems in adulthood, including continued OCD, clinical anxiety and depression, personality disorders, and social maladjustment (Wewetzer et al., 2001). OCD was previously thought to be a psychiatric condition extremely refractory to treatment (Kobak, Greist, Jefferson, Katzelnick, & Henk, 1998). The past two decades has witnessed a surge of clinical and research literature. Treatment discourse has covered a diverse array of approaches, including pharmacotherapy, CBT, psychodynamic therapy, hypnotherapy, AMT, family therapy, bibliotherapy, metacognitive therapy, and immunotherapy.

Expert Consensus Guidelines (March, Frances, Kahn, & Carpenter, 1997) recommend CBT as the first-line treatment of choice for all prepubertal children with a primary diagnosis of OCD, and for adolescents with mild to moderate symptoms. A combination of CBT and pharmacotherapy is recommended for adolescents with severe symptoms. The expert recommendations were based largely on extrapolations from adult treatment trials and the belief that OCD in children is "virtually identical" in clinical presentation to OCD in adults (O'Kearney, Anstey, & von Sanden, 2006, p. 2). In recent years many treatment trials have emerged, including several RCTs. RCTs are the "gold standard" for determining whether a cause-effect relation exists between a treatment and an outcome. They control for all factors, known and unknown, that could influence treatment response (Kraemer, 2002). Systematic integration of these trials could enhance understanding of the treatment of paediatric OCD.

A treatment effect becomes more probable when findings from multiple studies are consistent. Meta-analysis is a statistical technique that pools the results of

multiple, separate studies and quantifies the effectiveness of an intervention in terms of a standardised treatment effect (Glass, 1976). Meta-analytic results provide greater evidence of the reliability of a treatment effect, and have more statistical power than individual studies, which reduces the Type II error possibility. Findings provide external validity through inclusion of samples with varied practitioner, patient, and geographical characteristics. An advantage of meta-analysis is that it allows indirect comparison of the effectiveness of different types of treatments through the utilisation of a common metric.

Five known studies have provided meta-analytic summaries of treatments for paediatric OCD (Abramowitz, Whiteside, & Deacon, 2005; Freeman et al., 2007; Geller et al., 2003a; Guggisberg, 2005; Phillips, 2003). All but one pooled results from RCTs and non-RCTs (study results are summarised in Table 1). A limitation with pooling results from non-RCT trials is that the true treatment effect is likely to be significantly inflated, because the effect includes error from threats to validity.

Table 1
Results of Previous Meta-Analyses Including RCTs and non-RCTs for Paediatric OCD

First author	Year	Treatment	Included studies	Effect size	95% CI	*n*
Freeman	2007	CBT	3 RCT 9 non-RCT	1.55	1.12-1.97	12
Abramowitz	2005	Pharmacotherapy	7 RCT 4 non-RCT	1.13	.82-1.25	11
		CBT	1 RCT 9 non-RCT	1.98	1.40-2.56	10
Phillips	2003	Pharmacotherapy	9 RCT 10 non-RCT	.95	.68-1.25	19
		CBT	1 RCT 10 non-RCT	1.68	.95-1.46	11
Guggisberg	2003	Pharmacotherapy & CBT trials	12 RCT 20 non-RCT	1.32	1.01-1.62	32

Patients often present for treatment when symptoms are most severe, therefore improvement unrelated to treatment is expected merely with time. Other factors, such as the therapeutic alliance and patient expectations, may autonomously influence treatment outcome. These effects are not partialled out when non-RCTs are

pooled, leading to a potentially biased and misleading estimate of treatment effectiveness.

This meta-analysis offers a unique contribution to previous research as it includes RCTs only (i.e., not uncontrolled or active comparator trials), no duplicated data (e.g., subtrials), and is not restricted to a specific treatment modality. Results from important recent trials, such as the POTS (2004) trial, are included.

Method

Data Sources

A comprehensive literature search was conducted for treatment studies of paediatric OCD. Systematic searches of MEDLINE (1966-), PSYCINFO (1887-), and CURRENT CONTENTS (2005-) from 1st available year of coverage to January 2007 were conducted using the terms "obsessive compulsive disorder", "treatment", "child", and "therapy". A manual search of the contents of *Journal of the American Academy of Child and Adolescent Psychiatry, Archives of General Psychiatry, JAMA, and Journal of Child and Adolescent Psychopharmacology* was conducted. Bibliographies of previous meta-analyses cited in the introduction to this chapter were searched. Citations from relevant articles were searched iteratively for further possible studies.

Study Selection

Studies were included if they (a) included participants aged 19 or under with a *DSM* or *ICD* primary diagnosis of OCD (b) included a control comparison (waitlist, placebo pill, or placebo therapy) (c) employed randomisation (d) used a reliable and valid primary outcome measure (e) were published in English and (f) presented sufficient information to enable calculation of effect sizes, including means or *SD*s, *t* or *F* values, change scores, and probability values. Duplicate publications were omitted, as were publications reporting on subsample results when another publication using the full sample existed.

Statistical Analysis

Effect Size Calculation

Standardised mean difference was used to represent effect size (*d*). Where available, effect sizes were calculated using change scores. Change scores increase the precision of effect size estimators by controlling for pretreatment group differences on dependent measurements. The formula used to obtain *d* is provided below, where $M_{T\Delta}$ is the mean change in the treatment group from pretreatment to posttreatment, $M_{C\Delta}$ is the mean change in the control group from pretreatment to posttreatment, and $\sigma_{pooled\Delta}$ is the pooled change *SD*:

$$d = \frac{M_{T\Delta} - M_{C\Delta}}{\sigma_{pooled\,\Delta}}$$

When change scores were not provided, effect size was determined by subtracting the mean posttreatment control group score from the mean posttreatment treatment group score, and dividing by the pooled posttreatment *SD*. The pooled *SD* was computed using the equation below, where N_C and N_T are the number of observations in the control and treatment conditions respectively, and σ_C and σ_T are the posttreatment *SD*s of the control and treatment conditions, respectively.

$$\sigma_{pooled} = \sqrt{\frac{(N_T - 1)(\sigma_T)^2 + (N_C - 1)(\sigma_C)^2}{N_T + N_C - 2}}$$

The above procedure has been used previously (Kobak et al., 1998). In some studies, more than one treatment condition was compared to a control condition. When computing effect sizes, the number of participants in the control condition was evenly divided across the treatment conditions, so that each subject was included once only per meta-analysis. Hedge's small-sample correction was applied as *d* is known to overestimate the population effect size when the sample size is small. Effect sizes were standardised so that a positive result indicated that the treatment condition performed better than the control condition.

Pooled Effect Size Calculation

A random-effects model (REM) was employed to compute mean effects sizes across sets of studies. A REM includes a variance component that accounts for between-study variance, or uncontrollable differences between studies that may have influenced treatment effect. A REM is indicated when heterogeneity is likely to be present between comparison samples, or when the researcher wishes to generalise REM results to treatment conditions that do not exactly match those included in the data analysis. A fixed effects model (FEM) assumes that samples are homogenous and treatment conditions are similar across studies. Although the FEM has greater statistical power, recent research suggests that the REM is preferable (Field, 2003; Hunter & Schmidt, 2000).

Individual effect sizes were weighted, because effect sizes with smaller variances (derived from studies with larger *Ns*) are more precise estimators of effect. Weight in a REM needs to take into account within-study variance (v_i) and between-study variance (η^2). Within-study variance was calculated using the formula:

$$v_i = \frac{N_T + N_C}{N_T \times N_C} + \frac{d^2}{2(N_T + N_C)}$$

Between-study variance was calculated using the formula:

$$\eta_i = \frac{Q - (n-1)}{\Sigma\, 1/v_i - \frac{\Sigma\, 1/v_i 2}{\Sigma\, 1/v_i}}$$

Weighted effect sizes were averaged across a given group of studies to determine a pooled effect size. To test whether pooled effect sizes differed from zero, 95% confidence intervals were calculated:

$$95\%\ confidence\ interval = 4\sqrt{\frac{N_T + N_C}{N_T \times N_C} + \frac{d^2}{2(N_T + N_C)}}$$

The confidence limits are therefore:

$$confidence\ limits = \ d \pm 2\sqrt{\frac{N_T + N_C}{N_T \times N_C} + \frac{d^2}{2(N_T + N_C)}}$$

If the interval did not include zero, the hypothesis that the true pooled effect size equaled zero was rejected at the .05 significance level.

Publication Bias Estimation

As only published studies were included, effect sizes may have been inflated due to publication bias, or the 'file drawer problem' (Rosenthal, 1979). Such a problem occurs if studies reporting significant findings are published (large effect sizes) and studies reporting null results (small effect sizes) are not. Publication bias was investigated using funnel plots and Egger's unweighted regression asymmetry test. The fail-safe *N* estimated the number of unpublished studies producing null results that would need to exist to negate an observed pooled effect size (Orwin, 1983; Rosenthal, 1979). It is computed using the formula:

$$Fail\text{-}safe\ N = \left(k / 2.706\right)\left\lfloor k\left(\overline{Z}_k\right)^2 - 2.706\right\rfloor$$

where *k* is the number of studies in the meta-analysis and *z* is the standard normal deviate corresponding to the one-tailed *p* value of the effect. An analysis is considered resistant to the file-drawer problem if the fail-safe *N* exceeds 5*k* plus 10 (Rosenthal, 1979).

Heterogeneity Analysis

Heterogeneity in a meta-analysis is undesirable and implies that treatment outcome varies across studies. This may be due to diversity in patients, interventions, trial methodology, or statistical heterogeneity (differences in random error among trials). Trials may be unsuitable for pooling. Sources should be explored using meta-regression (given at least 10 trials per meta-analysis and sufficient moderator variable data) or subgroup analysis (Higgins, 2005).

The I^2 statistic was used to index degree of heterogeneity. This method is unaffected by sample size and has greater power than other heterogeneity tests (2002; Higgins, Thompson, Deeks, & Altman, 2003). I^2 ranges from 0% to 100%, and values above 50% are considered problematic (Higgins, 2005). I^2 was calculated using the formula:

$$I^2 = 100\% \times \frac{\left[\sum w_i (d_i - \bar{d})^2\right] - df}{\sum w_i (d_i - \bar{d})^2}$$

Additional chi square tests of significance of heterogeneity were conducted to increase rigor.

Sensitivity Analysis

Sensitivity analysis increases the validity of a meta-analysis by investigating how results differ when the criteria for including studies is modified. Subgroup analysis was performed and interpretation was based on inspection of the magnitude of the pooled effect size and statistical significance of the confidence intervals for each subgroup, and heterogeneity between subgroups. Deeks (2001) methodology for conducting a chi-square test of heterogeneity between subgroups was employed. Q_{int} represents the test statistic and is evaluated at a .10 alpha level due to the underpowered nature of the test (Higgins, 2005).

Results

Study Characteristics

The search identified 127 reports documenting the treatment of paediatric OCD. Types of treatments are shown in Table 2. Thirteen studies, containing 15 treatment comparisons, met inclusion criteria for the meta-analysis. The studies are summarised in Table 3. There were five control comparisons (N = 161) and ten pharmacotherapy to control comparisons (N = 1016). All studies utilised the

Table 2
Publications Reporting the Use of a Treatment for Paediatric OCD

Treatment	Study[a]					
	Uncontrolled design					RCT design
Psychological treatments						
CBT	Weiner (1967)	Bolton (1984)	Van Noppen (1997)	Detweiler (2001)	Lewin (2005)	(2003a)
	Fine (1973)	Hand (1988)	Owens (1998)	Benazon (2002)	Martin (2005)	Barrett (2004)
	Mills (1973)	Wilmuth (1988)	Fischer (1998)	Lumpkin (2002)	Fernandez (2006)	POTS (2004)
	Rosen (1975)	Mehta (1990)	de Haan (1998)	Williams (2002)	Storch (2006)	Bolton (in press)
	Lindley (1977)	Kearney (1990)	Franklin (1998)	Piacentini (2002)	Tobias (2006)	
	Yamagami (1978)	Thornicroft (1991)	Gold-Steinberg (1999)	Benazon (2003)	Michael (2006)	
	Ong (1979)	Nicolau (1991)	Neziroglu (2000)	Himle (2003)	Whiteside (2006)	
	Harbin (1979)	Harris (1992)	Rosenberg (2000)	Cannon (2003)	Valderhaug (2007)	
	Stanley (1980)	Piacentini (1994)	Woods (2000)	Freeman (2003)	Storch (in press)	
	Hafner (1981)	March (1994)	Thienemann (2001)	Turner (2004)		
	Ownby (1983)	March (1995)	Franklin (2001)	Piacentini (2004)		
	Zikis (1983)	Knox (1996)	Tolin (2001)	Sallinen (2004)		
	Morelli (1983)	Scahill (1996)	Waters (2001)	Asbahr (2005)		
Behavioural (non-ERP) therapy	Hallam (1974)	Queiroz (1981)	Lyon (1983)	Francis (1988)		
Meta-cognitive therapy	Simons (2006)					
Family therapy	Scott (1966)	Dalton (1983)	O'Connor (1983)			
Psychodynamic therapy	McGehee (2005)					
Hypnosis	Kellerman (1981)	Taylor (1985)				
Biological treatments						
Pharmacotherapy						
Buspirone	Simeon (1994)					
Citalopram	Thomsen (1997)	Thomsen (2001)	Mukaddes (2003)			
Clomipramine	Rapoport (1980)	Leonard (1989)	March (1990)	Hanna (1993)	de Haan (1998)	Flament (1985)
						DeVeaugh-Geiss (1992)
Fluoxetine	Liebowitz (1990)	Como (1991)	Geller (1995)	Semerci (2001)		Riddle (1992)
	Riddle (1990)	Bouvard (1993)	Baysal (1996)			Geller (2001)
						Liebowitz (2002)
Fluvoxamine	Apter (1994)	Riddle (1996)	Walkup (1999)	Yaryura-Tobias (2000)		Riddle (2001)
Paroxetine	Rosenberg (1999)	Diler (2000)	Gilbert (2000)			Geller (2003b)
						Geller (2004)
Sertraline	Johnston (1996)	Alderman (1998)	Procter (2001)	Asbahr (2005)		March (1998)
						POTS (2004)
Sumatriptan	Pathak (2003)					
Homeopathy	Reichenberg (1998)	Reichenberg (1999)	Reichenberg (2000)	Reichenberg (2002)		

Treatment	Study[a]				
	Uncontrolled design				RCT design
Immunotherapy	Allen (1995)	Perlmutter (1999)	Grados (1999)	Heubi (2003)	
	Giedd (1996)	Garvey (1999)	Nicolson (2000)		
Combination treatment					
Pharmacotherapies	Simeon (1990)	Figueroa (1998)	Thomsen (1999)	Fitzgerald (1999)	
Pharmacotherapy and CBT	Wever (1997)				POTS (2004)

Note. RCT = Randomised, controlled trial, POTS = Pediatric OCD Treatment Study Team, ERP = Exposure and response prevention

[a] First author of study reported only

Table 3
Characteristics of Studies Included in the Meta-Analysis

First author	Year	Location	Condition	Design	Type	Time (weeks)	Diagnostic system	*N*	Mean age (years)	Male (%)	Pretest *M*	Pretest *SD*	Posttest *M*	Posttest *SD*	Change in score *M*	Change in score *SD*
Bolton	In press	UK	CBT - individual	Parallel	ITT	5[a]	DSM-IV	10	13.0	60.0	24.00	4.78	13.90	10.74	-10.10	NR
			Wait-list control					10	13.4	80.0	22.00	8.25	21.10	5.90	-.90	NR
Barrett	2004	Australia	CBT - individual	Parallel	COM	14	DSM-IV	22	10.75[b]	50.0[b]	23.64	4.30	8.36	6.93	-15.28	NR
			CBT - group					29	12.9	44.83	21.38	5.62	8.28	7.33	-13.10	NR
			Wait-list control					24	11.7	54.17	22.95	5.49	24.04	4.14	1.09	NR
POTS	2004	USA	CBT - individual	Parallel	ITT	12	DSM-IV	28	11.4	50.0	26.00	4.60	14.0	9.5	-12.00	NR
			Sertraline					28	11.7	50.0	23.50	4.70	16.50	9.10	-7.00	NR
			Placebo - pill					28	12.3	50.0	25.20	3.30	21.50	5.40	-3.70	NR
Geller	2004	USA/ Canada	Paroxetine	Parallel	ITT	10	DSM-IV	98	11.3	54.1	24.40	4.95	15.10	8.60	-9.30	NR
			Placebo - pill					105	11.3	61.0	25.30	5.05	19.40	8.20	-5.90	NR
Himle	2003	USA	CBT - group	Parallel	ITT	10	DSM-IV	5	14.4[c]	50.0[c]	24.10	2.66	14.40	3.56	-9.70	NR
			Placebo - therapy					5	14.4[c]	50.0[c]	22.20	4.15	17.40	5.98	-4.80	NR
Geller	2003b	USA	Paroxetine	Withdrawal	ITT	16	DSM-IV	95	11.8	49.5	9.90	6.53	13.50	NR	3.60	9.0
			Placebo - pill					98	11.6	59.2	9.60	6.04	16.50	NR	6.90	8.5
Liebowitz	2002	USA	Fluoxetine	Parallel	ITT	16	DSM-III-R	21	13.0	52.4	22.50	4.16	12.76	10.00	-9.74	NR
			Placebo - pill					22	12.3	63.6	23.82	5.77	19.68	10.61	-4.14	NR
Riddle	2001	USA	Fluvoxamine	Parallel	ITT	10	DSM-III-R	57	13.4	50.9	24.20	4.40	18.20	8.60	-6.00	NR
			Placebo - pill					63	12.7	56.6	24.20	4.80	20.90	8.50	-3.30	NR
Geller	2001	USA	Fluoxetine	Parallel	ITT	13	DSM-IV	71	11.4	48.0	24.50	5.10	15.00	9.60	-9.50	9.2
			Placebo - pill					32	11.4	47.0	26.30	4.60	21.10	8.40	-5.20	7.4
March	1998	USA	Sertraline	Parallel	ITT	12	DSM-III-R	92	12.6[c]	NR	23.36	4.56	16.56	8.30	-6.80	8.3
			Placebo - pill					95	12.6[c]	NR	22.25	6.15	18.85	8.00	-3.40	8.0
DeVeaugh-Geiss	1992	USA	Clomipramine	Parallel	ITT	8	DSM-III	31	14.5	74.2	27.10	5.90	17.10	8.30	-10.00	7.9
			Placebo - pill					29	14.0	55.2	28.40	4.40	26.10	6.80	-2.30	5.8
Riddle	1992	USA	Fluoxetine	Crossover	COM	8	DSM-III-R	7	12.0	28.6	24.30	4.20	13.60	5.70	-10.70	NR
			Placebo - pill					6	11.2	50.0	20.20	7.70	14.80	7.00	-5.40	NR
Flament	1985	USA	Clomipramine	Crossover	COM	10	DSM-III	19	14.5[c]	73.7[c]	20.90	8.60	10.30	6.20	-10.60	NR
			Placebo - pill					19	14.5[c]	73.7[c]	20.90	8.60	14.90	9.90	-6.00	NR

Note. POTS = Pediatric OCD Treatment Study Team, COM = Completers analysis, ITT = Intention-to-treat analysis, NR = not reported.
[a] Treatment was intensive (up to 10 sessions, once to three times weekly) [b] Based on full sample, data not available for completers [c] Pooled data given for treatment and control condition.

Children's Yale-Brown Obsessive Compulsive Scale (Goodman et al., 1986) as the primary OCD measure, except for Flament and colleagues (1985) who used the Leyton Obsessional Inventory - Child Version (Berg & Whitaker et al., 1988). A study by March and colleagues (1990) was excluded because it was part of a larger study by DeVeaugh-Geiss and others (1992), and a study by Scahill and colleagues (1997) was excluded because results had been published previously (Riddle et al., 1992). Two pharmacotherapy studies (Leonard, Swedo, Lenane et al., 1991; Leonard et al., 1989) were excluded because the comparison group was an active comparator and not a control comparator. A study on a PANDAS OCD subgroup was excluded (Perlmutter et al., 1999). Remaining studies were excluded as they were not RCTs.

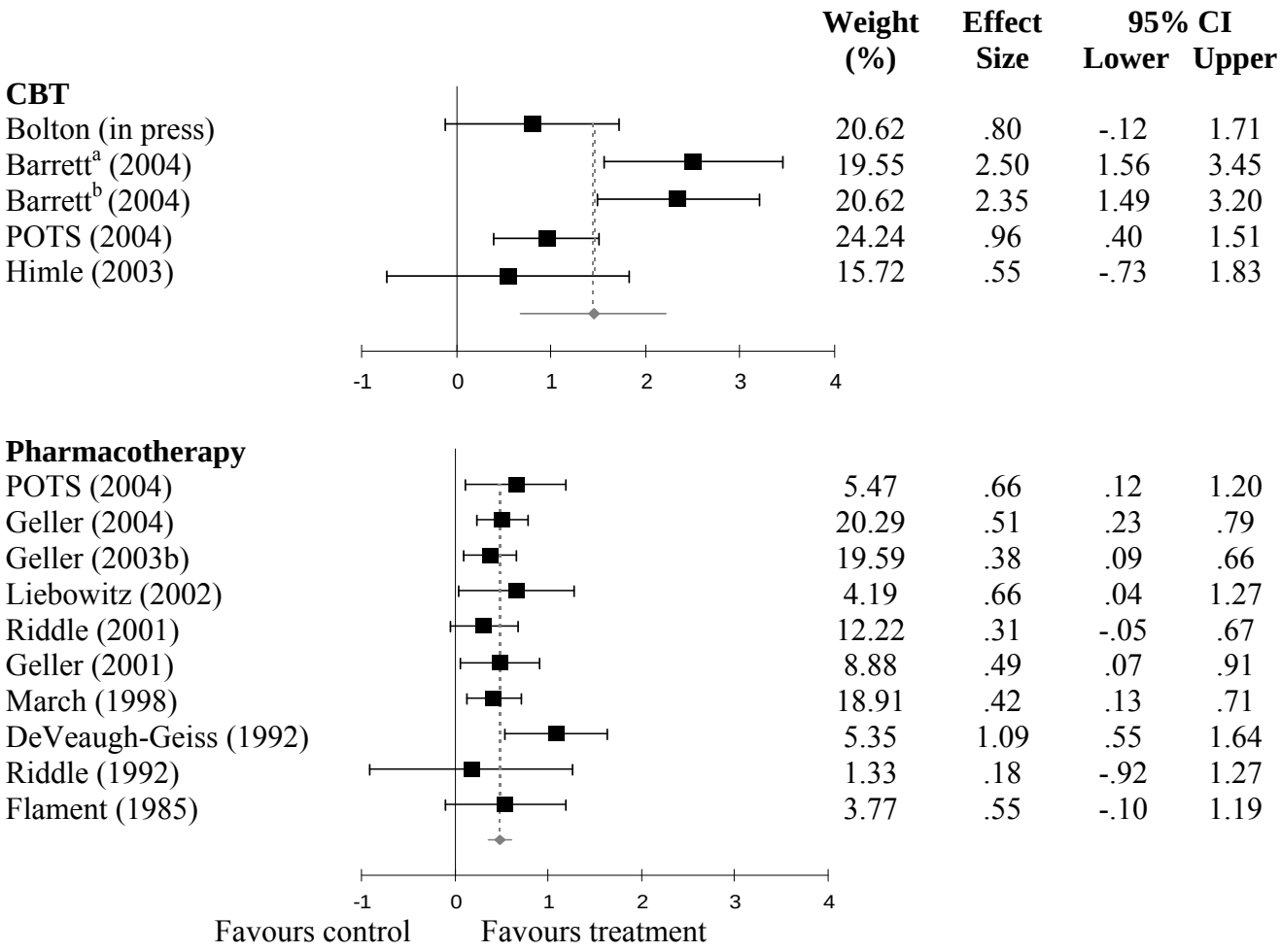
Standardised Mean Difference and Pooled Effect Sizes

A forest plot of bias-corrected effect sizes is presented in Figure 1. Table 4 shows the pooled weighted effect sizes for each subset of studies that was compared. No significant heterogeneity was observed in the pharmacotherapy versus control comparison (I^2 = 0%, p = .59), whereas significant heterogeneity was observed in the CBT versus control comparison (I^2 = 91.9%, p = .0006).

Table 4
Pooled Effect Sizes of OCD Symptom Severity for Treatment Approach Compared to Control

Treatment	Average effect size	95% CI (lower, upper)	I^2 (%)	Test for overall effect (z, p)	n
CBT	1.45	0.68, 2.22	76.0	3.69, p =.0002	5
Pharmacotherapy	.48	0.36, 0.61	0	7.50, p < .00001	10
Clomipramine	.85	0.32, 1.38	37.2	3.21, p = .0018	2
Fluoxetine	.51	0.18, 0.84	0	3.02, p = .0026	3
Fluvoxamine[a]	.31	-0.05, 0.67	NA	1.71, p = .09	1
Paroxetine	.44	0.24, 0.64	0	4.36, p < .0001	2
Sertraline	.47	0.21, 0.73	0	3.61, p = .0003	2

Note. n = number of studies. NA = not applicable
[a] Results were not pooled due to lack of multiple studies



[a]Individual CBT condition [b]Group CBT condition

Figure 2. Weighted effect sizes and 95% confidence intervals of RCTs included in the CBT and pharmacotherapy meta-analyses.

The 95% confidence interval for the pooled effect size of the CBT versus control comparison did not contain zero, indicating that the effect of CBT on OCD symptom severity was significantly greater than zero. This significant random effect is generalisable to the population. Using Cohen's conventions, the magnitude of the treatment effect is large. The large standard error of the pooled effect indicates low precision. Pharmacotherapy versus control generated a significant treatment effect, with a medium magnitude. The narrow conference interval indicates precision in measurement.

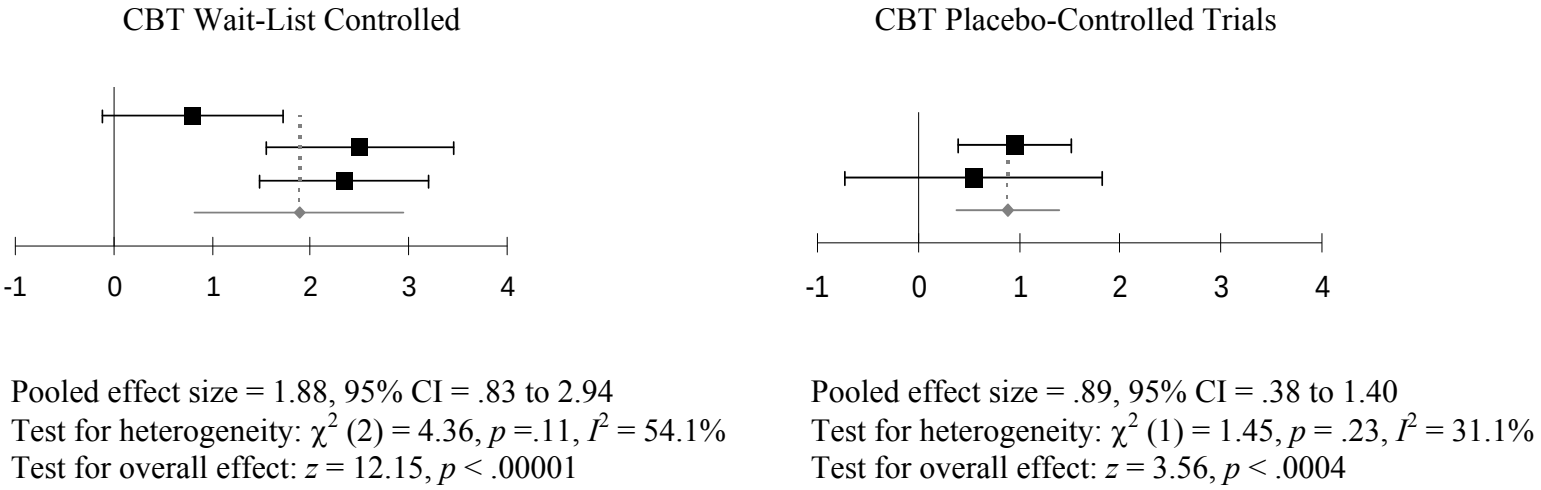
Publication Bias

Publication bias was tested graphically and statistically. Funnel plots of effect size plotted against the reciprocal of the standard error were constructed. The small number of studies included in the meta-analyses presented difficulty verifying the presence or absence of asymmetry. Egger's (1997) unweighted regression test showed no evidence of publication bias. (CBT, $p = .72$; pharmacotherapy, $p = .28$). The fail-safe *N* statistic indicated that 66 CBT RCTs and 132 pharmacotherapy RCTs with null results would have to exist to reduce the effect sizes to a non-significant level. Rosenthal's (1983) guideline suggests that the results are robust to publication bias.

Heterogeneity, Sensitivity, and Moderators

Significant heterogeneity existed in the CBT versus control comparison. Separate forest plots of CBT subgroup outcomes (wait-list versus placebo) are presented in Figure 2. The chi-square test revealed statistically significant between-subgroup heterogeneity [$Q_{int}(1) = 7.67$, $p = .006$]. The placebo subgroup had a lower pooled effect size than the wait-list subgroup, though both pooled effect sizes remained large and statistically significant.

Figure 1 illustrated that the effects attained in Barrett and colleagues study were larger than other CBT studies. Sensitivity analysis excluding this study's results revealed that CBT still had a large and significant pooled effect of 0.87 (95% CI = 0.42 to 1.32) and significant heterogeneity between subgroupings, $Q_{int}(1) = 15.25$, $p < .001$.



Pooled effect size = 1.88, 95% CI = .83 to 2.94
Test for heterogeneity: χ^2 (2) = 4.36, p =.11, I^2 = 54.1%
Test for overall effect: z = 12.15, p < .00001

Pooled effect size = .89, 95% CI = .38 to 1.40
Test for heterogeneity: χ^2 (1) = 1.45, p = .23, I^2 = 31.1%
Test for overall effect: z = 3.56, p < .0004

Figure 3. Subgroup analysis of CBT RCT studies differentiated by method of control.

Sensitivity analysis comparing pharmacotherapy trials by intention-to-treat to completer analyses yielded medium effects for these subgroupings, yet the completers pooled effect was no longer significant. Heterogeneity among subgroups was non-significant, $Q_{int}(1) = 0.01$, $p = .92$. Among the CBT trials, the completers subgrouping yielded a higher effect size. There was significant heterogeneity between the completers and intention-to-treat subgroups [$Q_{int}(1) = 15.25$, $p < .001$], but both effect sizes were large.

Table 5
Characteristics and Reporting of Moderator Variables in CBT and Pharmacotherapy RCTs for Paediatric OCD

Moderator variables	CBT			Pharmacotherapy		
	n	Percent missing	Mean[a]	*n*	Percent missing	Mean[a]
Methodological						
Method of control						
Placebo	2	0	-	10	0	-
Wait-list	2	0	-	0	0	-
Prior course of treatment						
Excluded	2	0	-	6	0	-
Did not exclude	2	0	-	4	0	-
Tic disorder and/or Tourette's						
Excluded	1	0	-	3	0	-
Did not exclude	3	0	-	7	0	-
Patient						
Age, years	4	0	12.06	10	0	12.19
Sex, % male	4	0	51.60	10	0	55.12
Baseline OCD severity (CYBOCS)	4	0	23.55	10	0	21.12
Age at onset, years	2	50%	11.25	5	50%	8.48
Duration of symptoms, years	2	50%	2.36	5	50%	4.18
Comorbidity						
Any Axis I	3	25%	76.84	6	40%	44.84
Internalising	2	50%	69.31	2	80%	59.71
Externalising	1	75%	26.95	2	80%	24.89
Tourette's/tic disorder	3	25%	9.89	8	20%	7.08
ADHD	1	75%	20.00	7	30%	8.16
Baseline depression severity	2	50%	-[b]	4	60%	-[b]
Treatment						
Length of treatment						
Weeks	4	0	11.74	10	0	11.91
Hours of therapy	4	0	16.37	NA	NA	NA
Attrition, %	3	25%	11.89	10	0	22.17

Note. [a] Weighted by study sample size [b] Not computed as difference measures were employed. CYBOCS = Children's Yale-Brown Obsessive Compulsive Scale (Goodman et al., 1986).

The small number of studies negated meta-regression examination of moderator variables or further heterogeneity analysis. Several potential moderator variables were coded in the studies, and the nature of these variables and reporting rates are presented in Table 5.

Discussion

Despite a variety of treatments discussed in the literature, a comprehensive literature search revealed that CBT and pharmacotherapy were the only treatment modalities examined using RCT methodology. The effect size of CBT was large at 1.45 (95% CI = 0.68 to 2.22). The pharmacotherapy effect was medium at 0.48 (95% CI = 0.36 to 0.61). The pharmacotherapy response varied somewhat according to type of medication used. Both treatments were significantly superior to control, with CBT yielding a larger treatment effect. These findings are consistent with treatment outcomes in the adult OCD population (Kobak et al., 1998) and support the recommendations of the Expert Consensus guidelines. CBT should comprise the first line treatment for paediatric OCD, followed by pharmacotherapy. Although clomipramine had the largest effect size of the pharmacological interventions, it is known to have a more adverse side effect profile than the selective serotonin reuptake inhibitors (Rapoport & Inoff-Germain, 2000). Clomipramine is generally regarded as a second-line pharmacological agent compared to these medications (Geller et al., 2003a).

The theories underlying CBT and pharmacotherapy have different bases. Whereas pharmacotherapy emphasises a biological mechanism of change involving correction of dysfunction to neurochemistry, CBT modifies unhelpful thinking styles and promotes habituation to anxiety-provoking stimuli. The efficacy of these interventions supports current discourse highlighting not one, but both models, as implicated in the maintenance of OCD in children. These results are consistent with literature reporting that treatment using a combination of pharmacotherapy and CBT is superior to one treatment modality only (POTS, 2004). Although the models differ in proposed change pathways, an alternative way of conceptualising these models is via a shared commonality. Both treatments are anxiolytic, therefore, it may be that a reduction in anxiety precedes a reduction in OCD symptoms. Although this conceptualisation is plausible it cannot explain the finding that relaxation training

among adults with OCD is an inert treatment. Nonetheless, this study should serve to focus research and clinical attention on the theoretical models above, as opposed to theoretical models that fail to predict treatment change.

This study substantiated findings from previous meta-analyses of RCTs and non-RCTs, showing that CBT and pharmacotherapy are efficacious, but contributed unique insight into the composition of this effect. Pooled effect sizes can be significantly inflated in meta-analyses employing non-RCTs. Lipsey and Wilson (1993) examined 45 treatment meta-analyses, and found that effect sizes were an average 62% larger in studies not including a control group (e.g., one group pre-post designs) and a meta-analysis of adult OCD treatments found that effect size was 52% larger for uncontrolled studies compared to controlled studies (Kobak et al., 1998). Uncontrolled studies do not rule out the influence of non-specific factors, which may bias effect size upwards. Nonspecific factors are contextual or incidental aspects of treatment, such as therapeutic alliance, expectations for improvement, and attention (Grencavege, Bootzin, & Shoham, 1993). Placebo control groups are the only effective means of controlling for non-specific factors. All of the medication trials used a placebo control. As expected, the exclusion of uncontrolled trials in the pharmacotherapy meta-analysis resulted in an attenuated pooled estimate of effect compared to previous meta-analyses. The pooled effect size for pharmacotherapy was 49% to 57% lower than in meta-analyses including non-RCTs. In the CBT meta-analysis, 40% used placebo-controls and 60% used wait-list controls. The pooled effect size was 6% to 27% lower than in previous meta-analyses with controlled and uncontrolled trials (Abramowitz et al., 2005; Freeman et al., 2007; Phillips, 2003). It cannot be conclusively inferred whether the attenuated CBT effect is due to a placebo effect, as waitlist controls do not control for many nonspecific factors. Subgroup analysis provided evidence that placebo factors may influence treatment outcome. However, this may have been confounded by differences in between-study characteristics, such as hours of treatment and use of completer versus intention-to-treat analyses.

The precision of treatment effect varied between CBT and pharmacotherapy. The narrow confidence interval of the medication effect shows that improvement can be predicted with good reliability. Conversely, the confidence interval surrounding the pooled CBT effect size were large. Poor reliability can result from heterogeneity in study outcomes, attributable to small subject numbers or moderator variables.

Moderator variables include patient (e.g., age, comorbidity), methodological (e.g., control method used, rater blinding) and treatment characteristics (e.g., intensity, duration, delivery method). Heterogeneity in the CBT meta-analysis was diminished when the outlying high effect size study by Barrett was excluded. Without moderator analysis, it is unclear what source produced heterogeneity and greater improvement in this trial. The higher effect size could have been due to the use of a wait-list control, completer analysis (as opposed to intention-to-treat), or increased treatment hours (21 hours of treatment versus an average 14 hours in the other trials). Moderator analysis is required to identify variables that produce differences in treatment outcome.

Moderator analysis is an important application of meta-analytic procedures. Individual trials often have insufficient statistical power to detect moderators. Many putative treatment moderators have been documented in the extant paediatric OCD literature (March & Curry, 1998). Moderator investigation methods, such as meta-regression, require a minimum sufficient number of studies and variable statistics (e.g., means, *SD*s) must be available for extraction in published trials. This meta-analysis found that putative moderator variables are not adequately described in RCTs. RCTs forthwith are urged to include this information.

Study Limitations

There were only a small number of RCTs available and subject exclusion criteria within RCTs means that results may not be generalisable to the entire paediatric OCD population. The method of effect size calculation for a meta-analysis can vary. The effect size methodology chosen in this study was prespecified and contemporary, yet alternative procedures would have produced somewhat varying estimates. In this meta-analysis, CBT studies were pooled based on theoretical grounds, despite heterogeneity. This may not have been appropriate.

Research Implications

The large treatment effect generated by CBT is encouraging to researchers. The therapeutic promise inherent in this treatment, and the inchoate nature of research in this area, necessitates further investigations. Barrett and colleagues

(2003b) initiated the examination of cognitive developmental factors implicated in the maintenance of paediatric OCD. The extension of this line of research could have important application to cognitive treatment strategies, which may increase treatment effect. Component studies could be conducted to tease apart the relative efficacy of cognitive and behavioural elements. Focus on the impact of developmental factors on treatment response is overdue. Investigations are required to understand how well individuals of different age groups respond to the cognitive therapy component of CBT. Young people with OCD are more likely than adults to have comorbid diagnoses of Tourette's Syndrome and tic disorders, or may be part of the Paediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections (PANDAS) subgroup. It is not clear whether CBT or pharmacotherapy treatment response varies as a function of paediatric patient characteristics. A further avenue for exploration is CBT delivered in different treatment formats. Other formats may comprise useful alternatives to traditional individual CBT. Delivery in an intensive format may increase uptake and retention in treatment, as therapy time would conflict less with external family commitments. As children with OCD experience shame and embarrassment regarding their symptoms, group therapy may comprise a powerful means for normalising experiences, and obtaining support and motivation. Only one pilot study has investigated this treatment modality in comparison to a placebo, but the sample size was only ten (Himle, 2003). The contribution of family involvement in treatment to CBT efficacy is also unknown, as is the efficacy of treatments following discontinuation. In the adult literature CBT outperforms pharmacotherapy at follow-up, yet follow-ups periods are short or non-existent in the paediatric literature. Studies need to be controlled and incorporate longer follow-up periods in order to be meaningful. Further understanding of the long-term effects of CBT and medication is warranted. More randomised CBT research incorporating standard methodology and placebo control groups is required, as is more research that investigates the long term physical, social, and behavioural sequelae of SRI and SSRI use among children.

Clinical Implications

The findings from this meta-analysis clearly show that CBT and pharmacotherapy are the only treatment methods for paediatric OCD supported by

evidence. There is often a time-lag between research studies and knowledge uptake by clinicians (Weisz, Donenberg, & Han, 1995). The preferred treatment method of psychiatrists and psychologists in clinical practice often differs from those recommended in research publications (Valderhaug, Gotestam, & Larsson, 2004). A recent survey of clinicians involved in the treatment of paediatric OCD found that only one third regularly used exposure techniques, one third "sometimes" used them, and the remaining third reported "rarely or never using" them (Valderhaug et al., 2004). This is concerning because exposure (and response prevention) is the core treatment strategy in CBT. Efficacious treatments need to be made available to the individuals they can assist. A reason treatment may not be accessible is because few therapists are adequately trained in the use of cognitive-behavioural techniques for OCD, especially those proficient in working with children (March, Frances, Carpenter, & Kahn, 1997). To date, only one treatment manual has been published (March & Mulle, 1998). Accessibility to CBT could be enhanced via inclusion in relevant graduate training programs, peer supervision from practitioners proficient in CBT treatment for paediatric OCD, workshops by skilled practitioners, and literature illuminating the process of treatment.

Conclusion

Even though the pooled effect size for CBT is larger than pharmacotherapy, meta-analysis cannot outrightly determine which treatment is superior. Differences in design, methodology, and patient characteristics (i.e. moderator variables) could account for the difference in observed effect sizes rather than differences in the efficacy of the interventions. Only head-to-head RCTs can determine the relative efficacy of different interventions. Nonetheless, this study presents findings consistent with the POTS study, which determined a large CBT treatment effect and medium pharmacotherapy effect, and that both treatments alone and in combination were significantly superior to placebo.

Chapter Summary

This study is the first known meta-analysis of randomised, controlled treatment trials for paediatric OCD. Despite the availability of multiple treatment modalities for paediatric OCD, only CBT and pharmacotherapy have been evaluated using randomised, controlled methodology. This study makes an important contribution by highlighting the most likely magnitude of the effect of these treatments, as the use of RCTs eliminates bias in effect size calculation arising from confounding variables. Study results supported the efficacy of CBT and pharmacotherapy relative to placebo. CBT demonstrated the largest effect size of all the treatments. The medications (sertraline, fluoxetine, paroxetine, and fluvoxamine) had moderate effect sizes, except for clomipramine which had a large effect size. The results of this meta-analysis support the recommendations of the Expert Consensus Guidelines. Literature suggests that although clomipramine is more effective at treating paediatric OCD, it has a more adverse side effect profile than the SSRIs. It should be used as a second line pharmacological agent. CBT appears to be the most effective treatment available for paediatric OCD. Many opportunities to expand the knowledge related to this clinical approach are possible. One such avenue of inquiry is the evaluation of innovative treatment delivery formats.

Chapter 4

Group Therapy: An Alternative Model of Treatment Delivery for Paediatric Obsessive-Compulsive Disorder

CBT administered in an individual format has proven to be an effective treatment for paediatric OCD. Despite the recent advances in the treatment research literature, relatively few studies have examined the delivery of CBT in a group format. There is a strong rationale for investigating this treatment modality. There are; (1) practical and therapeutic advantages to this treatment modality, (2) firm theoretical grounds for CBT, and (3) adult OCD studies have supported the efficacy of group CBT.

Practical and Therapeutic Advantages of Group CBT

The practical rationale for evaluating therapy in a group format is compelling. Group therapy is more time and cost efficient than individual treatment (Fals-Stewart, Marks, & Schafer, 1993; Himle et al., 2001; Himle, Van Etten, & Fischer, 2003). Fals-Stewart and colleagues reported that the number of hours required to treat approximately 30 adult clients with OCD over a 12-week period was 720 for individual therapists compared to 48 for group therapists. This corresponds to a 93% reduction in therapist time. A 12-week course of CBT with an estimated cost of $120 per individual session and $70 per group session would save the client approximately $600 if they opted for group therapy (Himle, Van Etten et al., 2003). Group therapy provides a means of utilising specialist skills in a resourceful manner. Few therapists are adequately trained in the use of cognitive-behavioural techniques for OCD (Marks, 1997), especially those proficient in working with children (March et al., 1997). Delivery of the treatment in a group

format is a useful means of deriving the most benefit from limited resources (Himle et al., 2001; Whittal & McLean, 2002).

Unique group therapeutic benefits add further incentive to explore this treatment modality. Group therapy may be associated with a lower participant attrition rate than individual therapy (Cordioli et al., 2003). Clinical observations suggest that treatment compliance is superior during adolescent group therapy than individual therapy (Fischer et al., 1998). Peer reinforcement promotes engagement in ERP tasks during sessions and homework completion between sessions (McLean et al., 2001). Attendance at sessions may be positively reinforced by the pleasure group members receive in helping others gain success over OCD-related behaviours. This can enhance perceptions of mastery, competence, and a positive self-concept, and decrease feelings of isolation and loneliness (Himle, Van Etten et al., 2003; Van Noppen et al., 1997). High levels of group cohesiveness and likeability have been reported among individuals receiving group treatment (Himle, Van Etten et al., 2003). The pattern of OCD symptoms varies over time. In group treatment, children are exposed to a broader array of OCD symptoms and ERP applications (Himle, Van Etten et al., 2003). This can promote the generalisation of treatment gains should children develop subsequent alternative symptomatology. In the context of individual therapy, the therapist models ERP tasks and functional behaviours. In group therapy the child's peers model CBT exercises. Social learning theory predicts that individuals will be more likely to adopt a modelled behaviour if they perceive the model to be similar to themselves and the model is rewarded (Bandura, 1977). Seeing other children perform ERP exercises and experience gains can promote therapeutic imitative behaviour. Children have the opportunity to teach other children how to initiate ERP tasks. Pedagogical action in the form of teaching enhances the retainment of procedural and declarative knowledge relative to other forms of learning, such as teacher-directed instruction. Group contexts allow group members to identify the cognitive distortions of others, which may potentially facilitate the recognition and disputation of their own unhelpful distortions (Morrison, 2001).

Additional therapeutic benefits may be afforded by the group process. These include the normalisation and destigmatisation of symptoms (Fischer, Himle, & Hanna, 1998; Himle, Van Etten, & Fischer, 2003; Whittal & McLean, 2002). Children often keep their symptoms secret as they fear that they are going "mad" or

worry about the consequences of disclosure (Chowdhury, Caulfield, & Heyman, 2003). Group treatment can afford children and parents the opportunity to develop informal and durable support networks (Himle, Van Etten et al., 2003). These networks can comprise invaluable sources of information about OCD and relevant community resources. Theories of group therapy support the utility of group approaches. Yalom (1995) proposed a number of therapeutic factors that may operate in the group treatment mode, including altruism, interpersonal learning, social learning, group cohesiveness, and universality. Universality refers to the learning that one is not alone in the types of thoughts, feelings, and experiences one has.

Theoretical Rationale

Treatment interventions utilised in group CBT are derived explicitly from cognitive-behavioural theory. The cognitive-behavioural model proposes that OCD symptoms are maintained by unhelpful cognitions that lead to anxiety when an individual is confronted with relevant internal or external situational stimuli. Compulsions maintain OCD symptoms by precluding opportunities for habituation to anxiety and disconfirmation of unhelpful cognitions. Compulsions negatively reinforce rituals, due to an anxiety-alleviating effect, thereby increasing the likelihood that they will be repeated. Theoretical mechanisms of OCD symptom maintenance are targeted in group CBT interventions. The reader is referred to Chapter 1 and 2 for a more comprehensive account of this model and related intervention techniques. The application of this model to adult and child OCD has been supported in an extensive clinical and research literature (Clark, 2004). The intervention strategies in group CBT for OCD are derived directly from this theory, hence, group CBT is likely to be an effective treatment for paediatric OCD.

Group CBT for Adult OCD

A third rationale for the hypothesis that group CBT is likely to be effective for paediatric OCD is derived from its demonstrated efficacy in treating adult OCD. Eight known studies have examined group CBT in adults, with four including a control comparison. Table 6 displays the properties of these studies, including the

Table 6
Studies on Group CBT for Adult OCD

First author	*N*	Control group	Total treatment (hours)	Exclusion criteria	Follow-up (months)	Reduction in symptoms (%)		Effect size[a]	
						Pre-post	Pre-follow-up	Pre-post	Pre-follow-up
Krone (1991)	36	No	14	Yes	3	24	45	.79	1.49
Fals-Stewart (1993)	93	Yes	24	Yes	6	46	37	-	-
Van Noppen (1997)	17	No	20	No	12	31	39	1.01	1.31
Van Noppen (1998)	90	No	15	Yes	25	24	NA	.93	3.89
Himle (2001)	113	No	14	No	3	30	32	1.03	1.38
		No	19	No	3	32	30	1.02	.94
McLean (2001)	76	Yes	30	Yes	3	27	21	1.00	.79
		Yes	30	Yes	3	39	41	1.87	1.95
Cordioli (2003)	47	Yes	24	Yes	3	43	55	2.37	2.98
Anderson (2007)	63	Yes	20	Yes	1	29	33	1.00	1.14

[a]Effect size (Cohen's *d*) was calculated as the difference between the mean posttreatment and pretreatment score, divided by the pretreatment *SD*. Effect sizes could only be computed if pretreatment *SD*s were available.

average reduction in symptom severity and treatment effect sizes. Group CBT resulted in mean reductions in symptom severity ranging between 24% and 43% at posttreatment and between 21% and 55% from pretreatment to follow-up. The effect size for each treatment arm across time was large. The four RCTs supported the efficacy of group CBT. Anderson and Rees (2007) randomly allocated subjects to group CBT, individual CBT, and wait-list control. The treatment conditions had significantly lower symptom severity compared to the control condition at posttreatment. Group CBT had equivalent effectiveness to individual CBT. McLean (2001) compared group CBT and group ERP to wait-list control. Each treatment was significantly more effective than the control group at alleviating OCD symptoms. The control condition used in Cordioli's (2003) study was a wait-list condition. Group CBT was significantly effective at reducing the severity of OCD symptoms over time. Fals-Stewart (1993) used individual relaxation as a comparison to group and individual CBT, and found that group and individual CBT were significantly more effective than control at reducing symptomatology. Neither treatment arm was significantly superior to the other. This result suggests that group CBT for adults is effective beyond a placebo effect or nonspecific treatment effect.

Results from adult group CBT are likely to be applicable to children. The clinical presentation of OCD is very consistent between children and adults (Grados, Labuda, Riddle, & Walkup, 1997). Children appear to have a similar response to treatments used with adults and similar pathophysiology has been implicated, including neurochemical, cognitive, behavioural, and genetic factors. Although the disorder is not perfectly congruent in childhood and adulthood, there seems to be sufficient overlap to warrant the prediction that group CBT will be efficacious among children with OCD.

Existing Studies on Group CBT for Paediatric OCD

Despite the numerous practical and therapeutic advantages potentially afforded by group CBT and the compelling rationale for its validation and use, group CBT is an understudied mode of treatment delivery. Six studies have examined the

efficacy of this treatment approach. These studies utilised a treatment protocol based upon the work of March and Mulle (1998). March and Mulle developed an individual CBT treatment manual including elements of psychoeducation, cognitive therapy, and ERP which has been adapted to group delivery by research teams. The existing child group CBT treatment studies will now be reviewed.

Fischer, Himle and Hanna (1998) reported results from an open trial of group CBT with 15 adolescents (aged 12 to 17). Participants were administered a 7-week treatment program that provided a) education about OCD and its treatment b) a framework for externalising OCD c) behavioural techniques to 'fight' OCD, and d) therapist-guided ERP. The program was based on March and Mulle's (1998) program. Children met once weekly for 1.5 hour sessions. OCD was diagnosed using unstructured clinical interviews based on *DSM-III-R* or *DSM-IV* criteria. Symptom severity decreased an average 32% at posttreatment. Follow-up data at six months indicated significant treatment gains. Symptom severity had decreased by a further 23%. This reflected a change in symptom severity from moderate (distress and functional impairment) to mild (distress but not necessarily functional impairment). Methodological shortcomings limit the validity of the findings. The lack of a control group poses problems for the attribution of causality. Although the results could have been due to a specific treatment effect it is just as plausible that they were the product of nonspecific factors, such as regression to the mean or a natural reduction in symptom severity over time. Treatment was not restricted between posttreatment and follow-up, hence, it is unclear whether the treatment gain during this phase was the result of group CBT or additional treatments. The lack of a standardised approach to diagnostic assessment limits conclusive interpretations. Unstructured diagnostic procedures reduce the reliability and validity of the diagnosis. The researchers employed a narrow assessment procedure. Greater confidence in findings is enhanced when multiple measures are employed. Strengths of the study included the stabilisation of medication and discontinuation of other psychotherapies prior to the commencement of group treatment. The researchers employed the use of a protocol-driven treatment, which increases the likelihood that different therapy groups received similar treatment content. This strengthens the generalisability and internal validity of

the findings, and makes transportability to alternative research and clinical settings more feasible. Exclusion criteria employed included mental retardation and autistic disorder, as examples. This strategy is commonly utilised in efficacy studies to examine the effects of the treatment upon 'pure' symptomatology. Despite the shortcomings of this study, it set a valuable benchmark in that it supplied preliminary information regarding the effectiveness of group CBT for children with OCD.

Thienemann and colleagues (2001) conducted an open trial of group CBT for adolescent OCD. Eighteen adolescents aged 13 to 17 years received a 14-week program of CBT adapted from March and Mulle's (1998) program. Weekly two-hour sessions were held, and parents attended the final 15 minutes of each session, and all of session six. Session nine comprised an individual session, and was used to check in with individual patients and their parents to address individual issues. *DSM-IV* diagnoses were assigned during a clinical interview, although no standardised interview schedule was employed. No exclusion criteria were utilised. Results showed that symptom severity declined from severe at pretreatment to moderate at 14 weeks, representing a 25% mean reduction. Several potential confounds were inherent within the design of the study. Firstly, no control group was employed. Secondly, a number of participants received concomitant treatment. Fifteen of the participants reported concurrent use of medication, and eight received concurrent individual or family psychotherapy. Four adolescents underwent a change in medication dosage during the study. It is not possible to attribute the improvement to CBT alone. Nonspecific factors including placebo effects may have led to an inflation in improvement ratings. No follow-up data were collected to determine the durability of the results.

Himle (2003) compared group CBT to a credible placebo intervention using a block randomised, controlled design. Five adolescents received a 12-week course of group CBT and five adolescents received a 12-week course of group AMT. Sessions lasted 90 minutes, and parents attended sessions one, six, and twelve. The CBT programme was adapted from March and Mulle's manual (1998). Structured, clinical interviews based upon *DSM-IV* diagnostic criteria were used to assign a diagnosis of OCD. The Schedule for Affective Disorders and Schizophrenia for School-Age Children – Epidemiological Version – 5 (Orvaschel, 1995) was used. Exclusion

criteria included co-occurring diagnoses (current substance use disorder, mental retardation, autistic disorder, chronic neurological disorder other than chronic tics, schizophrenia and other psychotic disorders, bipolar I disorder, anorexia nervosa), a prior course of CBT for OCD, and prominent suicidal/homicidal ideation with imminent risk. At posttreatment, children in the group CBT condition showed a significantly greater reduction in symptom severity (average 40% versus 22%) compared to children receiving placebo. This outcome was established using blind raters. At follow-up, children in the group CBT condition maintained gains, while children in the AMT programme returned to baseline. A strength of the study was that none of the children received concurrent pharmacotherapy or psychotherapy for OCD. The results provide preliminary support for the efficacy of group CBT in treating childhood OCD beyond non-specific treatment factors, such as normalisation of symptoms, increased social support, and the therapeutic relationship. The small sample size attenuates the validity of the findings. It is unclear whether the results would generalise to children with OCD as only adolescents were included in the study. The authors stated that the placebo was credible, yet did not appear to assess credibility from patients. No follow-up data were collected making it impossible to determine whether the improvement in symptomatology was sustained beyond treatment completion.

Barrett and colleagues (2004) compared group and individual CBT to a wait-list control condition. The program consisted of 14 weekly sessions and two booster sessions that lasted approximately 1.5 hours each. Eighty-two children aged 7 to 17 years were randomly assigned to conditions. Children were diagnosed using the *DSM-IV* based ADIS-P (Silverman & Albano, 1996). Exclusion criteria were primary major depression, primary externalising disorder, Tourette's syndrome, autistic spectrum disorder, schizophrenia, organic mental disorder, concurrent psychotherapy, and non-stabilisation of OCD medication in the three months prior to treatment. The study utilised a group adaptation of the March protocol with an extensive family component. The programme targeted intervention at the child, parents, and siblings. At posttreatment participants in the individual and group CBT conditions had a significant mean reduction in the severity of OCD symptomatology (65% and 61%,

respectively), contrary to the control group (5% increase). At 6-month follow-up 87% of the group CBT participants were OCD diagnosis-free, compared to 65% of the individual CBT participants. No data were available on the control condition at follow-up, as these participants had since completed a CBT program. Gains were maintained at 3-year follow-up (Barrett et al., 2005). Relative strengths of the study included assessment raters that were blind to pre- versus post-group status, a standardised diagnostic procedure, standardised treatment delivery, randomisation to conditions, and stabilisation of medication prior to CBT. Some methodological limitations were inherent within the methodological design. The primary limitation was the lack of equivalence of the control condition. The wait-list condition received endpoint assessments 4 to 6 weeks after pretest assessments, while participants in the individual and group CBT conditions were reassessed 14 weeks after pretesting. This design issue and the use of a wait-list as a control condition do not allow a researcher to discriminate between specific or nonspecific treatment effects. As well as differing in the level of exposure to active treatment components, participants in these conditions also differed in the amount of attention they received, the quality of the therapist-client relationship, cognitive expectations for change, and the opportunity for normalisation of symptoms. These nonspecific factors may be important in promoting treatment outcome. Overall, this was a high-quality research study with promising findings.

Martin and Thienemann (2005) conducted an open trial of group CBT among 14 children aged 8 to 14 years. Treatment lasted 14 weeks, and included weekly 90-minute sessions comprising a one-hour session for parents with one therapist; a one-hour session for children with a separate therapist, and a 30-minute combination session with parents and children. The program was based on March and Mulle's (1998) manual. OCD was diagnosed using a *DSM-IV* based clinical interview, though it was not reported if a standardised, diagnostic interview schedule was employed. No exclusion criteria were utilised. At posttreatment children showed an average 25% reduction in symptoms. Limitations of the study were that four of nine children utilising concurrent medication for OCD had medication dosage adjusted during treatment, children receiving concurrent psychotherapy were not excluded, and a

controlled design was not employed. It is unclear whether the treatment or extraneous variables were the causal agent of improvement.

Asbahr and colleagues (2005) randomly allocated 40 children with OCD to group CBT or sertraline for 12 weeks. Children in the group CBT condition met for weekly 90-minute sessions. Families attended sessions one, seven, and 12. The program was based on March and Mulle's (1998) program. OCD was diagnosed using *DSM-IV* clinical interviews, though the particular interview schedule used was not reported. Exclusion criteria were bipolar disorder, ADHD with psychostimulants, neurological disorders except for Tourette's syndrome, pervasive developmental disorders, posttraumatic stress disorder, borderline personality disorder, psychosis, or an organic brain disorder. Both treatment conditions demonstrated significant improvement in OCD symptomatology. Children in the CBT condition showed an average 79% reduction in symptoms at posttreatment. The study included one, three, six, and nine-month follow-ups. One of 19 children in the group CBT condition and 10 of 18 children in the sertraline condition relapsed during the follow-up period, and did not complete the follow-up due to reintroduction of treatment. Data from those completing follow-up indicated that improvement in the CBT condition was maintained over the follow-up period. The average reduction in symptoms from pretreatment was 87% at 9-month follow-up. Group CBT demonstrated equivalent efficacy to sertraline, with promise of greater treatment durability.

Direction for Future Paediatric OCD Treatment Research

A consistent finding among the studies summarised above is that group CBT is a promising treatment for children with OCD, with symptom severity decreasing up to 87% following treatment. A deficit in studies of group CBT for paediatric OCD is the lack of use of a credible placebo control condition. The efficacy of a treatment must be evaluated relative to control because factors extraneous to the treatment can produce a treatment response. In child OCD medication trials, placebo response has ranged between 0% to 37%, and between 6% and 51% in trials of CBT for paediatric anxiety disorders (Thienemann et al., 2001). Only two trials of paediatric group CBT

included a control group. Barrett (2004) employed a wait-list control, yet it did not have equivalent pre-post duration to the experimental condition, and Himle (2003) included a placebo control comparison but had a sample size of only 10 and did not evaluate whether participants viewed the treatments as equally credible. Clearly there is a need for controlled trials to evaluate the group CBT treatment modality. A well-designed placebo control condition can rule out non-specific factors as an explanation for treatment improvement. A brief overview of specific and nonspecific factors and their relevance to efficacy trials follows.

Specific treatment factors are well-defined, intentional actions or intervention strategies derived from a particular theoretical orientation (Grencavege et al., 1993; Jones, Cumming, & Horowitz, 1988). They are referred to as the 'active' components of a treatment. For instance, cognitive therapy is used to alter dysfunctional thinking. Active treatment techniques are theorised to result in specific treatment effects. Nonspecific factors are the contextual or incidental aspects of the treatment process (Grencavege et al., 1993). Examples of non-specific factors include the personality of the therapist, the therapeutic alliance, the passage of time, expectations for improvement, attention, regression to the mean, societal conditions or events, and effort justification. Non-specific factors are contingent on contextual aspects of the broader treatment milieu. Non-specific factors that may affect treatment outcome in group CBT for paediatric OCD include the above examples and incidental aspects of the group approach, such as peer modeling, incidental reinforcement, and the development of informal support networks. Non-specific factors exert indirect and non-specific treatment effects.

Much debate exists on the dimensionality and independence of specific and non-specific treatment factors. The most common view asserts that specific and non-specific factors represent parallel dimensions. Grencavage and colleagues (1990) proposed that the specific-nonspecific dimension might be orthogonal to the unique-common dimension of therapy. This idea is outlined in Table 7. Common specific interventions are outcome-oriented therapist actions that are shared by a number of therapeutic approaches and intervention programs. For instance, cognitive restructuring is utilised in the treatment of many psychological problems, including

panic disorder, major depressive disorder, adjustment difficulties, OCD, and relationship and work difficulties. A unique specific intervention is a therapeutic action or strategy that is applied in only one (or a few types of) therapy. Examples include systematic desensitisation, interoceptive conditioning, and ERP. These techniques are used to treat phobias, panic disorder, and OCD, respectively.

Table 7
Examples of Specificity and Uniqueness of Treatments: Two Interacting Dimensions

	Common	Unique
Specific	Offer alternative view (reframing, cognitive restructuring)	A particular intervention (ERP, systematic desensitisation)
Nonspecific	Rapport, expectations for improvement, passage of time	Therapeutic setting (e.g., context, particular group therapy members, etc.)

Grencavage and colleagues defined common non-specific interventions as process-oriented therapist actions that are incidental to the treatment context. They occur irrespective of the therapist's theoretical orientation or preferred treatment strategy. Examples are rapport building, the therapeutic relationship, attention, and modeling. I would also argue that this includes other factors such as time and statistical regression to the mean. Unique non-specific interventions are contextual factors of the treatment setting, such as the influence of other clients in a group therapy session, the personality of the therapist, and the perceived credibility of the professional and/or organisation. It may also include the sociocultural context and circumstances that locate the individual.

Specific and non-specific factors are often presented as juxtaposed in the literature, yet they are not independent. Shoham-Solomon (1990) argued that each serve as each other's context and acquire meaning only though association with the other. It is not possible to exclude non-specific treatment factors during the application of a specific treatment intervention, nor in order to evaluate the "specific effect" of a treatment. Instead, the researcher must utilise a placebo comparison group, which holds the non-specific treatment factors constant between the treatment and placebo groups. The placebo condition should be equivalent to the intervention condition in all respects

except that it should not contain the active treatment ingredients. In psychological research, such as OCD efficacy studies, the placebo condition comprises an inert therapy modality. A randomised, placebo-controlled design enables researchers to evaluate whether the effect of intervention strategies exceeds the effect of non-specific treatment factors. A randomised, placebo-controlled evaluation of group CBT for paediatric OCD will contribute important insight into the efficacy and specific effectiveness of this treatment approach.

Chapter Summary

Group CBT represents a potentially valuable means of treating paediatric OCD. It has practical and therapeutic advantages, a sound theoretical rationale supporting its use, and demonstrates efficacy in treating adult OCD. Currently, six studies have evaluated group CBT among children with OCD. OCD symptomatology appears to decrease between 25% and 79% at the conclusion of a 7 to 14 week treatment programme. Methodological shortcomings limit the validity of results and provide difficulty assessing the true magnitude of the treatment effect and clinical relevance of the changes. Four of the studies did not include a control condition, and one included a non-equivalent wait-list control condition. The one study that used a placebo control only had a sample size of ten, and did not include children younger than 13, and did not verify how the placebo control condition was deemed credible. Undeniably, the rationale outlined in this chapter and the results of these studies indicate that group CBT is likely to be a promising and specific treatment for paediatric OCD. Assessing the effect of this treatment beyond nonspecific factors is an important direction for future research. Credible placebo controls in treatment trials represent the only adequate means of determining treatment efficacy beyond nonspecific effects.

Chapter 5

Study 2: A Randomised, Placebo-Controlled Trial of Cognitive-Behavioural Group Therapy for Paediatric Obsessive-Compulsive Disorder

Previous studies have highlighted the utility of CBT for childhood OCD delivered in an individual format, yet group CBT for children with OCD remains understudied. Chapter 4 discussed the practical and therapeutic advantages inherent in the group approach and outlined a rationale for hypothesised efficacy and specific treatment effectiveness.

The aim of this study was to determine if group CBT for paediatric OCD is effective beyond non-specific treatment effects. Group CBT was compared to a credible placebo control condition that received group AMT. Children in the group CBT condition were hypothesised to demonstrate a lower average level of symptom severity at posttreatment and follow-up compared to children in the placebo control condition.

Method

Participants

Twenty-two children aged 6 to 16 years with a *DSM-IV* primary diagnosis of OCD comprised the intention-to-treat sample (11 in CBT; 11 in AMT). Exclusion criteria included schizophrenia, mental retardation, Tourette's syndrome, an autistic spectrum disorder, a substance-related disorder, suicidal ideation, or concurrent psychotherapy for OCD. Children receiving pharmacological treatment were included

provided medication dosage had been stabilised for at least three months. Four children were on concurrent SSRI treatment. Medication was stabilised prior to study entry and dosage remained unchanged throughout the treatment and follow-up phase.

Figure 3 shows patient flow over the course of the study. This sample size was lower than intended, due to difficulties recruiting and retaining eligible families. Of the ITT population, 36% were adolescents (aged 13 and older) and 64% were children (aged 12 and younger). The mean age of the sample was 11.82 years (*SD* = 2.66, range 6 to 16). Five groups were assembled, of which three were CBT groups ($n_1 = 3$, $n_2 = 3$, $n_3 = 5$) and two were AMT groups ($n_4 = 5$, $n_5 = 6$). Demographic characteristics are presented in Table 8.

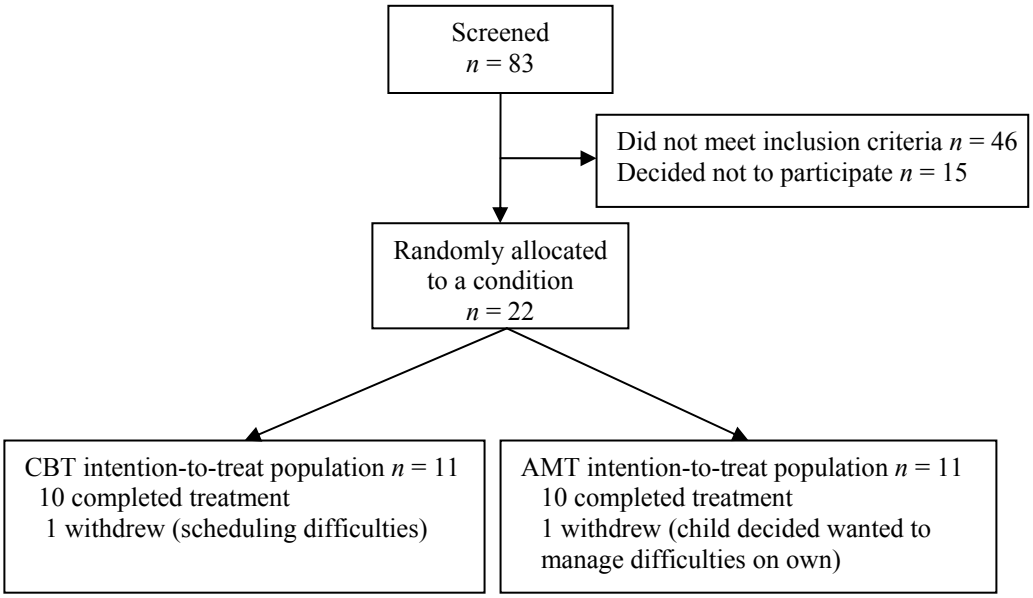


Figure 4. Flow diagram of participant recruitment and allocation.

Twenty participants (91%) had both obsessions and compulsions, while two (9%) reported compulsions only. Types of obsessions included contamination (50%), aggressive (41%), magical/superstitious (9%), somatic (5%), and miscellaneous (14%). Compulsions included washing/cleaning (45%), repeating (36%), ordering/arranging (27%), checking (23%), counting (18.2%), and miscellaneous (27%). Most children (73%) reported one obsessions type only, 23% reported two types, and 5% reported

three types. Nearly half the children (45%) reported one type of compulsion, 32% reported two types, 14% reported three types, and 9% reported four types.

Table 8
Demographic and Baseline Characteristics of Study 2 Sample by Condition (Intention-to-Treat)

Demographic characteristics	Group CBT (n = 11)	Group AMT (n = 11)
Sex, *n* (%)		
Male	6 (54.55)	7 (63.64)
Female	5 (45.45)	4 (36.36)
Age (yr), mean (*SD*)	11.81 (2.63)	11.83 (2.81)
OCD characteristics		
Age at onset (yr), mean (*SD*)	9.46 (2.74)	8.39 (1.87)
Illness duration (yr), mean (*SD*)	2.18 (2.62)	3.20 (2.68)
Psychiatric comorbid disorders, *n* (%)		
Internalising	5 (45.45)	8 (72.73)
Externalising	3 (27.27)	3 (27.27)
Concurrent medication, *n* (%)	1 (9.09)	3 (27.27)

Note. No significant differences between subjects in conditions on demographic characteristics (as tested by the independent group *t* test for continuous variables and Fisher's exact test for categorical variables).

Design and Statistical Analysis

This study utilised a randomised, placebo-controlled design, with measurements taken at pretreatment, posttreatment, and one-month follow-up. To expediate treatment entry, a block randomisation procedure (stratified by timing and age < 13 or ≥ 13 years) was employed. This protected against attrition and was ethically beneficial as it reduced wait times).

One-way analyses of covariance (ANCOVAs) were used to test for differences between treatment conditions on outcome measures. ANCOVA was considered more appropriate to alternative applicable analyses because it statistically equates groups on pretreatment variables and increases statistical power by removing the variance associated with the covariate from the *F* test error term. ANCOVAs were conducted on posttreatment and follow-up scores using pretreatment scores as covariates. Because a priori hypotheses had been determined for each study variable, each ANCOVA was evaluated at a one-tailed alpha level of .05 without adjustment for multiple comparisons

(Tabachnick & Fidell, 2007). ANCOVAs test for differences between groups, but do not provide information about the nature of the treatment effect or the change within conditions over time. Significant ANCOVAs were followed by mixed 2 x 2 analyses of variance (ANOVAs) to explore main and interaction effects. Treatment condition (group CBT/group placebo) comprised the between-subjects factor and time (pretreatment/posttreatment) comprised the within-subjects factor.

An a priori power analysis was conducted to determine the sample size required to detect a large treatment effect (f = .40) at 80% power on a one-tailed between-groups F test (alpha level = .05). G*Power 2 (Erdfelder, Faul, & Buchner, 1996) computed a sample size of 42. This number was determined based on individual randomisation to conditions and not cluster randomisation (randomisation of individuals to therapy groups nested within conditions). Calculations pertaining to cluster randomisation require estimates of variances that were unavailable in the published literature. When small numbers in clusters (i.e., therapy groups) are required there is only a marginal inflation to sample size requirements (Kerry & Bland, 1998). Hence, a required sample size of 42 was deemed appropriate, or 21 per treatment and placebo condition.

Statistical hypothesis testing was supplemented by calculation of effect size and clinically significant change. The effect size of group CBT at posttreatment and follow-up on outcome measures was determined using Cohen's d, with Hedge's small sample correction (Hedges & Olkin, 1985). Hedge's correction provides a more conservative estimate of effect size when the sample size is small. Effect size was calculated using change scores, as these increase reliability by controlling for pretreatment differences between groups. The mean control change score was subtracted from the mean treatment change score, and divided by the mean pooled *SD* of change. This method is outlined in more detail in Chapter 3. The effect size sign was standardised so that a positive score meant that the group CBT condition performed better than the placebo control condition.

The clinical significance of individual change in outcomes was assessed using Jacobson and colleagues methodology. Clinically significant change occurs when the status of a patient's measured functioning falls in the non-functional range at the beginning of treatment and in the functional range after treatment, providing that the

change is statistically reliable (Jacobson & Truax, 1991). There are two steps to determining clinically significant change; (1) the establishment of cut-offs for assessing clinically significant change; and (2) determining the reliability of that change. Jacobson's methodology (1986) and subsequent revision (Jacobson & Truax, 1991) proposed three cut-off criterions. Cutoff *a* refers to the point at which values fall outside the range of the dysfunctional population, operationalised as two *SDs* from the pretreatment mean in the direction of functionality. Cutoff *b* is the point at which values fall within the range of the functional or normal population, operationalised as within two *SDs* from the mean of the functional population. Cutoff *b* can only be calculated if non-patient data are available. Cutoff *c* is the midpoint between the mean of the functional population and the mean of the dysfunctional population. Scores falling closer to the functional population mean are deemed clinically significant. When normative data exists for both functional and non-functional populations, *c* is the method of choice. Cutoff *a* is applied when normative data are unavailable for the functional population, and Cutoff *b* when normative data are not available for the dysfunctional population. For change to be clinically significant it must be reliable beyond measurement error. Reliability is determined by calculating the Reliable Change Index (Jacobson et al., 1986). If the value of RCI occurs outside the range ±1.96 it is unlikely that the change is due to random measurement error, therefore the change is considered reliable ($p < .05$). Jacobson and Truax (1991) suggested a classification system based on RCI and outcome scores. If the client's posttreatment score falls in the functional range, and the RCI is larger than 1.96, the client is classified as *recovered*. If the RCI is above 1.96, but the client's posttreatment score does not fall in the functional range, the client is classified as *improved*. If neither criterion is met, the client is classified as *unchanged*. If the RCI is greater than 1.96, and the client's posttreatment score has moved in the direction of dysfunction, the client is classified as *deteriorated*.

Measures

Anxiety Disorders Interview Schedule for DSM-IV – Parent Version (ADIS-P)

The ADIS-P (Silverman & Albano, 1996) was used to establish a diagnosis of primary OCD. The ADIS-P is a semistructured interview that diagnoses anxiety, affective, and externalising disorders in children aged 6 to 18. It has good test-retest reliability (Silverman et al., 2001) and concurrent validity (Wood et al., 2002). Silverman et al. reported that this interview and the earlier version (Anxiety Disorders Interview Schedule for Children; Silverman & Nelles, 1988) have been used in all published childhood anxiety clinical trials (Scahill, Riddle, McSwiggin-Hardin et al., 1997).

Children's Yale-Brown Obsessive-Compulsive Scale (CYBOCS)

The CYBOCS (Goodman et al., 1989a, 1989b; Scahill, Riddle, McSwiggin-Hardin et al., 1997) assessed severity of OCD symptomatology. The CYBOCS is a widely used, clinician-rated, semi-structured interview, comprising 10 core items that yield a total score ranging from 0 to 40. Higher scores indicate greater severity of OCD symptomatology. Clinical descriptions for clusters of scores on the scale are mild (10-18; distress but not necessarily functional impairment), moderate (19-29; distress and functional impairment) and severe (30 or above; severe distress and functional impairment requiring significant help from others). The CYBOCS has good reliability and validity. Internal consistency is high ($\alpha = .90$) and interrater reliability is excellent (McKay et al., 2003; Scahill, Riddle, McSwiggin-Hardin et al., 1997; Storch et al., 2004). Convergent validity has been established with the Leyton Survey ($r = .62$), and discriminant validity with the Revised Children's Manifest Anxiety Scale ($r = .37$) and Children's Depression Inventory ($r = .34$; Scahill et al., 1997). The measure is sensitive to treatment effects.

NIMH Global Obsessive-Compulsive Scale (NIMH-GOCS)

The NIMH-GOCS (Insel et al., 1983) is a single item measure of global diagnostic severity ranging from 1 (minimal symptoms or within normal range) to 15

(very severe). A score of 7 or higher indicates clinical OCD severity. The NIMH-GOCS has good test-retest reliability (Kim et al., 1992; Kim et al., 1993). Convergent validity has been demonstrated with the Symptom Checklist-90, the Yale-Brown Obsessive-Compulsive Scale, a physician global rating scale, and a patient global rating scale (Kim et al., 1992; Taylor, 1998). It has sensitivity to treatment effects (Barrett et al., 2004; Piacentini et al., 2002; Piacentini et al., 1994).

NIMH Clinical Global Impression of Severity of Illness Scale (CGIS)

The CGIS (Guy, 1976) is a single-item, clinician-rated device that provides a psychological impairment rating ranging from 1 (not at all ill) to 7 (extremely ill). This scale is sensitive to treatment effects and has been used in many previous OCD treatment trials (Barrett et al., 2004; Piacentini et al., 2002; Piacentini et al., 1994; Waters et al., 2001).

Children's Depression Inventory (CDI)

The CDI (Kovacs, 1985) is a 27-item self report measure of children's depressive symptomatology in the previous 2-week period. It measures a range of cognitive, behavioural, and affective symptoms of depression. Psychometric studies have shown that the scale has good internal consistency (Chronbach's α = .71 to .89), test-retest reliability (r = .74 to .83), and convergent and divergent validity. Scores range from 0 to 54, with higher scores indicating greater symptom severity.

Child Obsessive Compulsive Impact Scale – Parent Version (COIS-P)

The COIS-P (Piacentini & Bergman, 1999) is a 52-item parent report of the impact of OCD upon child psychosocial functioning. It assesses impairment across school, family, and social settings on a scale ranging from 0 (not at all) to 3 (very much). The total score ranges from 0 to 156 and is derived by summing item scores. Higher scores suggest greater functional impairment. Preliminary data suggest that the COIS-P displays sound internal consistency and construct validity (Piacentini, 1999).

Credibility/Expectancy Questionnaire (CEQ)

The CEQ (Devilly & Borkovec, 2000) measures beliefs about treatment credibility (how logical and suitable a particular treatment seems) and expectancy (how much improvement an individual expects). It contains six items, three comprising the credibility scale and three comprising the expectancy scale. The CEQ utilises two Likert rating scales, one from 1 (not at all) to 9 (very much) and one from 0% (not at all) to 100% (very much). Scale scores are derived by applying a linear transformation with a minimum value of one and a maximum value of nine, and a composite score is created by summing individual items. Scale scores range from 3 to 27, with higher scores indicating greater credibility or expectancy. Factor analysis has shown that the scale produces two reliable factors, credibility and expectancy. Standardised alpha is between .79 and .86 for the credibility scale (Devilly & Borkovec). Cronbach's alpha ranges between .81 to .90 for the expectancy factor (Devilly & Borkovec). The test has good test-retest reliability (Devilly & Borkovec). The CEQ was administered to children and parents. Parents received an adapted version, with the wording changed to reflect beliefs about child treatment. The adapted version is presented in Appendix A.

Treatment Protocol

Group Cognitive-Behavioural Therapy Programme

Individuals in the group CBT condition met for 1.5 hour sessions once weekly for 12 weeks. The treatment programme was adapted from March and Mulle's individual CBT protocol (March & Mulle, 1998). Appendix B contains a session-by-session outline of the programme. The core components of the treatment programme included graded ERP, cognitive therapy, family skills training, and relapse prevention. Parents were present for the full duration of sessions 1, 7, and 12.

Session 1 consisted of psychoeducation, dissemination of the treatment rationale, and a general introduction to the therapeutic strategies. In weeks two, three, and four, children were introduced to the fear thermometer, learnt cognitive techniques to externalise OCD, and constructed exposure hierarchies. Weeks 5 and 6 comprised in-session exposure combined with practice of cognitive therapy techniques. Session 7

included reiteration of the therapeutic rationale, discussion of family accommodation of symptoms, and parents had relevant concepts and procedures explained to them. In session ERP was were continued in Sessions 8 through 11, whereby children moved progressively to more difficult items on the exposure hierarchy. Session 12 consisted of relapse prevention, programme review, presentation of achievement certificates, and a celebration party. Homework was administered weekly. In the first four sessions, homework involved "playing a detective" and writing down the ways that OCD "bullied" or "bossed" the child and his/her family around. From Session 5 onwards, daily out-of-session exposures were planned. Homework worksheets were administered which encouraged children to record completed exposure exercises, subjective units of distress ratings during exposure exercises, the self-talk the child used to boss back OCD, or tallies of the number of times the child "won" compared to OCD.

Group Anxiety Management Training Programme

The control condition received weekly, 1.5 hour sessions of a 12-week programme of group AMT (session-by-session outline in Appendix B). AMT was selected as a placebo control because of perceived credibility and lack of specific efficacy among adults with OCD (Fals-Stewart et al., 1993; Lindsay, Crino, & Andrews, 1997). The program was adapted from child relaxation texts (e.g., Rickard, 1994) and included education in stress management, controlled breathing, progressive muscle relaxation, visualisation, problem-solving, and goal-setting. Parents were present during sessions 1, 7, and 12.

The first session introduced the therapeutic rationale - that stress can exacerbate OCD symptoms and that stress management techniques reduce OCD symptoms by decreasing stress and general anxiety. This session included psychoeducation about OCD. Session 2 and 3 comprised an introduction to relaxation, such as the identification of anxious body clues, progressive muscle relaxation, and deep breathing. Session 4 to 6 involved identification and exploration of feelings, brainstorming of pleasant events one can engage in during stressful periods, and advanced practice in breathing and progressive muscle relaxation. Session 7 reviewed the treatment rationale and techniques learnt in previous sessions. Scenarios of anxious children were presented and

family units brainstormed strategies to decrease stress and anxiety. Sessions 8 through 11 introduced problem-solving, visualisation, and goal-setting. Problem-solving was aimed at addressing stressful psychosocial situations. Children were taught to brainstorm as many strategies as possible, to evaluate the advantages and disadvantages of each strategy for themselves and others, to choose and plan the implementation of a strategy, and to evaluate the outcome of implementation. Breathing and progressive muscle relaxation exercises were continued. Session 12 comprised relapse prevention, review of the programme, presentation of achievement certificates, and a celebration party. Daily homework was administered in the form of relaxation exercises (e.g., deep breathing, progressive muscle relaxation, visualisation) or completion of worksheets related to session content.

Procedure

The Curtin University Human Research Ethics Committee granted ethical approval to conduct this research. Participants were recruited via the Curtin University Psychology Clinic and were self-referred, referred from community health agencies, or were respondents to media advertisements.

Screening was conducted to determine if children met study inclusion criteria. Screening comprised a semi-structured telephone interview with a parent of the child (see Appendix C). This form was adapted from a telephone screening interview used in a previous CBT trial for youth with obsessive-compulsive disorder (Farrell, 2003). The parents of children meeting screening criteria were invited to attend a diagnostic interview at the Curtin University Psychology Clinic. If the child met the criteria for a primary diagnosis of OCD, an appointment session for the child was scheduled. Only the child and a clinician were present in the child session. The child session involved establishment of rapport, general information about group therapy and attendance, and pretreatment assessments. The interview to inform ratings on the CY-BOCS was conducted with children at this point. An exception to this was if the child did not have the cognitive developmental abilities required to provide reliable answers. This was gauged at the time of administration by the clinician according to factors such as child

difficulty answering questions, limited attentiveness, and child age. This occurred for three children (< 8 years old; 1 female in CBT; 1 female in AMT; 1 male in AMT) at pretreatment and at repeated time points and one parent was interviewed in addition to the child. This was deemed a non-ideal, but preferable, adequate approach. Young children that present to treatment are likely to exhibit primarily behavioural symptoms that are observable to parents and that originally inspired parental treatment-seeking. The protocol and consent documentation was approved by the Curtin University Human Research Ethics Committee. At their respective appointments, parents and children were provided with a participant information sheet that described the nature of the study and the rights of participants. This was discussed verbally at the parent and child appointments. Participant information sheets and consent forms are shown in Appendix D. Written consent was obtained from a parent or legal guardian, and participating adolescents.

Children were randomly assigned to group CBT or placebo using a randomised list generated by an online randomiser. Individuals in each condition attended 12 weekly 1.5 hour sessions. Groups were cofaciliated by two therapists. All therapists that facilitated groups were clinical psychology doctoral candidates and there were six in total. These clinicians also administered the assessment measures. Credibility of the treatment programs was assessed at the end of the first session, after the therapeutic rationale had been given. Posttreatment data were collected in the week of the final session and follow-up data by telephone at one month. Longer follow-ups were not feasible given the resources and time constraints of the study.

Results

Preliminary Analyses

Treatment Credibility

Conditions were assessed for differences in perceptions of treatment credibility and expectations for treatment improvement on the CEQ. Mean child-rated credibility for the CBT condition was 20.89 (*SD* = 5.11) compared to 18.72 (*SD* = 4.73) for the

AMT condition. Parents of CBT participants gave a mean credibility rating of 21.22 (*SD* = 3.46) compared to 22.95 (*SD* = 3.26) for AMT. Children in the CBT condition rated average expectations for improvement as 19.24 (*SD* = 6.50) compared to an average 15.37 (*SD* = 5.41) in the AMT condition. Mean parent-rated expectation for improvement was 17.25 (*SD* = 3.62) for children in the CBT condition and 18.27 (*SD* = 4.13) for children in the AMT condition. Four independent groups *t*-tests were conducted with parent and child credibility and expectation ratings serving as the four dependent variables and treatment condition as the independent variable. A Bonferroni correction was applied for multiple testing, resulting in a per test alpha level of .012. Parent and child treatment credibility and expectation ratings were equivalent across conditions.

Data Screening

Univariate descriptive statistics were generated to assess the accuracy of data input (Tabachnick & Fidell, 2007). Data were screened for missing values using SPSS Missing Values Analysis. Of 440 possible observations, four (.91%) were missing. Little's MCAR test was used to determine whether data were missing randomly or non-randomly. The test was non-significant, χ^2 (56) = 46.310, p = .819, suggesting that data were missing completely at random. If less than 5% of data are missing in a large data set in a random pattern, the seriousness of the problem is reduced and almost any method for remedying the problem yields similar outcomes (Tabachnick & Fidell, 2007). Data were imputed by substituting the mean DV score of the relevant treatment condition.

Assumption Testing

Assumptions underlying analyses were tested prior to data analysis. ANCOVA assumptions include normality, homogeneity of regression slopes, homogeneity of variance, and linearity (Coakes & Steed, 1999). Assumptions underlying the mixed model ANOVA are normality, homogeneity of variance, sphericity, and homogeneity of intercorrelations (Coakes & Steed, 1999).

Normality, homogeneity of regression slopes, and homogeneity of variance. Normality of variables and standardised residuals was tested at each treatment level through examination of box-plots and normality statistics such as skewness, kurtosis and the Shapiro-Wilks test. Shapiro-Wilks test indicated non-normal distributions for some variables and standardised residuals ($p < .05$). Values of univariate skew greater than ±3 and univariate kurtosis greater than ±10 are considered problematic (Keppel, 1991). There were no values outside these parameters. Cases with standardised z scores greater than 3.29 *SD*s from the mean for that variable ($p < .001$, two-tailed test) are considered univariate outliers. No univariate outliers were detected. In an ANCOVA, DVs and covariates are screened for outliers at each level of the IV. Standardised residuals with absolute values greater than 3 are considered problematic. This assumption was met. Cooks distance (values greater than 1), Mahalanobis distance (values with $p < .001$) and leverage (values greater than .5) were used to detect multivariate outliers. No suspect cases were observed.

Homogeneity of regression slopes was investigated via a multivariate analysis of variance (MANOVA) procedure (Tabachnick & Fidell, 2007). The assumption was satisfied for all variables except for the pretreatment NIMH-GOCS and the pretreatment CDI ($p < .05$). Homogeneity of variance of the DVs and the covariates was tested. Violation of the assumption was observed on the posttreatment NIMH-GOCS and the posttreatment CDI.

Although in some instances data departed slightly from normality, homogeneity of regression slopes, and homogeneity of variance, the *F* test is robust to these departures when group sizes are equal (Hamilton 1977; Levy, 1980; Olejnik & James, 1984; Shields, 1978). Hence, the decision was made to leave data intact and avoid applying a corrective strategy as this would have compromised power and interpretability.

Linearity. Linearity between DVs and covariates was inspected via scatterplots. This assumption was violated for some variables. Violation produces a loss of power to the ANCOVA test, and can lead to the biasing of results in a conservative direction. No corrections, such as transformation, were undertaken, as it was considered more important to preserve the constructs and to be able to compare the results to previous

OCD paediatric studies. This decision was also based on the consideration that violation does not inflate the Type I error rate, a potentially serious circumstance, but instead produces more conservative results.

Sphericity. The sphericity assumption assumes that the covariances and variances are equal in the population. This assumption was automatically satisfied as mixed ANOVAs contained only two levels of the within-subjects factor.

Homogeneity of intercorrelations. The pattern of intercorrelations among the levels of the within-subjects factor should be equivalent across levels of the between-subjects factor in mixed ANOVAs. This assumption was tested using Box's *M* statistic. Heterogeneity is indicated when the statistic is significant at an alpha level of .001. This assumption was satisfied.

Intragroup dependency. Treatments delivered in group formats jeopardize the independence of observation assumption, which assumes that observations on a variable are independent. When data are collected in groups, the common environment and the interactions shared by group members may bias the treatment response. Response within groups may become more homogenous than response between groups, as group members can affect each other's behaviour. For instance, high group cohesion may enhance compliance with treatment, whereas observing members skip sessions could lead to greater absences (Baldwin, Murray, & Shadish, 2005). The intracluster correlation (ICC) measures the degree of dependency among observations taken from members of the same group. The maximal value of the ICC is 1, indicating dependency, or low within-group variability relative to between-group variability. An ICC of zero denotes independence. In instances where the ICC is negative, by convention it is deemed equivalent to zero. The ICC was calculated for each outcome measure at posttreatment and follow-up using the equation (Fleiss, 1981):

$$ICC = \frac{MS_{betweengroup} - MS_{withingroup}}{MS_{betweengroup} + (n-1)MS_{withingroup}}$$

where *MS* values are the mean squares from a nested ANCOVA table when group is a random factor and *n* is the average size of the group. As the size of groups varied, *n* was

substituted for n_0, the harmonic mean, denoted by the equation (Armitage & Berry, 1994):

$$n_0 = \frac{k}{\sum_{i=1}^{m} \frac{1}{n_i}}$$

where k is the number of groups and n is the of the number of children in the 'ith' group, with i ranging from 1 to k. The harmonic mean was 4.054. The following ICCs were determined: CYBOCS at posttreatment (ICC = -.01, p = .44) and follow-up (ICC = .02, p = .38); the NIMH-GOCS at posttreatment (ICC = .-.08, p = .62) and follow-up (ICC = .01, p = .39), the CGIS at posttreatment (ICC = -.04, p = .51) and follow-up (ICC = .13, p = .19); the CDI at posttreatment (ICC = -.17, p = .85) and follow-up (ICC = .17, p = .15); and the COIS-P at posttreatment (ICC = .32, p = .04) and follow-up (ICC = -.07, p = .58). ICCs greater than .1 are considered problematic (2001). As some intragroup dependency was present, ANCOVAs on variables with high ICCs were evaluated using adjusted F values that accounted for inflation due to dependence (Baldwin et al., 2005).

Hypothesis Testing

Descriptive statistics for outcome measures are displayed in Table 9. Statistically significant differences were obtained on the posttreatment CYBOCS [F (1, 19) = 5.26, p = .02, η^2 = .22], posttreatment NIMH-GOCS [F (1, 19) = 9.21, p = .0003, η^2 = .33], posttreatment CGIS [F (1, 19) = 4.98, p = .02, η^2 = .21], follow-up CYBOCS [F (1, 19) = 5.71 , p = .01, η^2 = .23], follow-up NIMH-GOCS [F (1, 19) = 4.16, p = .03, η^2 = .18], follow-up CDI [F (1, 19) = 3.16, p = .04, η^2 = .20], and follow-up COIS-P [F (1, 19) = 6.07, p = .02, η^2 = .24]. Non-significant differences were obtained on the follow-up CGIS [F (1, 19) = 2.76, p = .06, η^2 = .17], posttreatment CDI [F (1, 19) = 2.16, p = .08, η^2 = .10], and posttreatment COIS-P [F (1, 19) = .45, p = .26, η^2 = .05].

Table 9
Descriptive Statistics for Outcome Measures at Pretreatment, Posttreatment and One-Month Follow-Up

Outcome measure	Time	CBT (n = 11)		AMT (n = 11)	
		M	*SD*	*M*	*SD*
CYBOCS	Pre	23.27	7.51	19.36	5.08
	Post	9.00	7.25	15.27	10.50
	Follow-Up	7.18	5.23	13.55	8.03
NIMH-GOCS	Pre	8.00	1.95	6.91	1.51
	Post	4.18	3.09	6.18	2.89
	Follow-Up	4.09	2.66	5.91	3.18
CGIS	Pre	4.36	1.21	3.82	1.08
	Post	2.27	1.42	3.27	1.68
	Follow-Up	2.18	1.17	3.09	1.51
COIS-P	Pre	39.89	23.72	35.27	27.05
	Post	30.55	31.28	19.80	15.04
	Follow-Up	10.61	9.79	26.91	29.42
CDI	Pre	10.55	7.31	8.55	6.61
	Post	6.82	3.52	8.64	5.73
	Follow-Up	4.00	2.32	6.55	5.41

Significant ANCOVAs were followed by 2 (pre; post/follow-up) x 2 (CBT; AMT) mixed model ANOVAs. Significant time x condition interaction effects were obtained in the pre-post ANOVAs on the CYBOCS [F (1, 20) = 7.76, p = .01, η^2 = .28], NIMH-GOCS [F (1, 20) = 9.93, p = .01, η^2 = .33], and CGIS [F (1, 20) = 6.63, p = .02, η^2 = .25], demonstrating an intervention effect. Significant time x condition interactions between pretreatment and follow-up were apparent on the CYBOCS [F (1, 20) = 8.51, p = .000, η^2 = .30], NIMH-GOCS [F (1, 20) = 6.09, p = .02, η^2 = .23], and COIS-P [F (1, 20) = 5.43, p = .03, η^2 = .21]. No interaction was present on the pre-follow-up analysis of the CDI [F (1, 20) = 3.60, p = .07, η^2 = .153].

Significant effects from pretreatment to posttreatment were further analysed using simple main effects analyses for scores within each level of the treatment condition. The simple main effects analysis for the CBT condition yielded a significant effect of pre-post on the CYBOCS [F (1, 10) = 3.60, p = .00, η^2 = .73], NIMH-GOCS [F (1, 10) = 32.87, p = .00, η^2 = .77], and CGIS [F (1, 10) = 16.02, p = .00, η^2 = .62], suggesting that OCD symptoms decreased significantly from the beginning to end of treatment. No significant pre-post change was revealed in the AMT condition on the

CYBOCS [F (1, 10) = 2.83, p = .12, η^2 = .22] or CGIS [F (1, 10) = 2.29, p = .16, η^2 = .19], although a significant change was observed on the NIMH-GOCS [F (1, 10) = 186.18, p = .02, η^2 = .42]. OCD symptom severity did not seem to decrease significantly across this time period. There was a significant time effect on the CDI from the beginning to end of treatment for children that received CBT, F (1, 10) = 5.34, p = .04, η^2 = .35, but not for those that received AMT, F (1, 10) = .002, p = .96, η^2 = .00. No significant differences across time were found on the COIS-P in the CBT [F (1, 10) = .80, p = .39, η^2 = .07] and AMT [F (1, 10) = 2.84, p = .12, η^2 = .22] conditions.

Simple main effects analyses were conducted to investigate the effect of pre-to-follow-up on symptomatology within each condition. A significant reduction on the CYBOCS was observed across time for both conditions [CBT, F (1, 10) = 33.87, p = .00, η^2 = .77; AMT, F (1, 10) = 7.11, p = .02, η^2 = .42]. Reduction in OCD symptomatology on additional OCD severity measures was observed for the CBT condition [NIMH-GOCS, F (1, 10) = 16.02, p = .00, η^2 = .62; CGIS, F (1, 10) = 18.95, p = .00, η^2 = .66], but not the AMT condition [NIMH-GOCS, F (1, 10) = 2.29, p = .16, η^2 = .19; CGIS, F (1, 10) = 2.91, p = .07, η^2 = .29]. The CBT condition showed a significant reduction on the CDI, F (1, 10) = 9.64, p = .01, η^2 = .49. No such effect was found in the AMT condition, F (1, 10) = 3.10, p = .11, η^2 = .24. Lower interference in psychosocial functioning due to OCD was reported across the pre-to-follow-up period by parents of children that participated in CBT [F (1, 10) = 15.11, p = .00, η^2 = .60], but not AMT [F (1, 10) = 2.93, p = .12, η^2 = .23].

Subsidiary Analyses

Effect Size

Effect sizes for each measure are displayed in Table 10. According to Cohen's conventions, large and significant treatment effects at posttreatment were observed on the CYBOCS, NIMH-GOCS, and CGIS. The poisttreatment COIS-P and CDI effect sizes were not significant. CBT had a large and significant effect on all OCD outcome measures at follow-up, and a non-significant effect on the CDI.

Table 10
Effect Size of Group CBT at Posttreatment and Follow-Up on Outcome Measures

Measure	Change in score				Effect size	95% CI (lower, upper)	*p*
	M		*SD*				
	CBT	AMT	CBT	AMT			
CYBOCS							
Posttreatment	-14.27	-4.09	9.05	8.07	1.14	.23, 2.06	<.05
Follow-Up	-16.09	-5.82	9.17	7.24	1.20	.27, 2.12	<.05
NIMH-GOCS							
Posttreatment	-3.82	-.73	2.82	1.62	1.29	.36, 2.23	<.05
Follow-Up	-3.91	-1.00	3.24	2.19	1.01	.11, 1.91	<.05
CGIS							
Posttreatment	-2.09	-.55	1.58	1.21	1.05	.15, 1.96	<.05
Follow-Up	-2.18	-.73	1.66	1.19	.97	.07, 1.86	<.05
COIS-P							
Posttreatment	-9.34	-15.47	34.69	30.43	-.18	-1.02, .66	>.05
Follow-Up	-29.28	-8.36	24.99	16.21	.96	.06, 1.85	<.05
CDI							
Posttreatment	-3.73	.09	5.35	6.35	.63	-.23, 1.49	>.05
Follow-Up	-6.55	-2.00	6.99	3.77	.78	-.09, 1.65	>.05

Clinically Significant Change

The CYBOCS was chosen to assess clinically significant change as it is the gold standard measure of OCD symptomatology in children and has good reliability and construct validity. Data used to calculate statistics are contained in Table 11 and formulae are displayed in Table 12. No normative data for a functional population exists, hence Cutoff *a* was used. The value of Cutoff *a* was 8.19.

Table 11
Data Used to Compute Cutoff a and the Reliable Change Index

Symbol	Definition	Value
M_1	Pretreatment mean of the study sample	21.33
S_1	Standard deviation of the pretreatment mean of the study sample	6.57
X_1	Pretreatment CYBOCS score of an individual	
X_2	Posttreatment CYBOCS score of an individual	
X_3	Follow-up CYBOCS score of an individual	
r_{xx}	Reliability of the CYBOCS[a]	.79
S_E	Standard error of measurement of the CYBOCS	3.01
S_{DIFF}	Standard error of difference between the two test scores	4.26

[a]Test-retest reliability over a mean of 40.76 days (Christiana et al., 2000).

Table 12
Formulae Used to Compute Reliable and Clinically Significant Change

	Cut-off *a*	RCI	S_{DIFF}	S_E
Formula	$M_1 - 2S_1$	$\frac{X_2 - X_1}{S_{diff}}$	$\sqrt{2(S_E)^2}$	$S_1\sqrt{1 - r_{xx}}$

Participants were classified on degree of improvement according to Jacobson's classification system (see Table 13). Children in the CBT condition showed a higher recovery rate than children in the AMT condition at posttreatment and follow-up. At follow-up, children who received CBT were four times more likely to have a recovered status than children who received AMT. At follow-up, less than 10% of children that received CBT showed no reliable improvement, compared to 73% of children that received AMT.

Table 13
Rates of Clinical Improvement from Pretreatment to Posttreatment and Follow-Up (%)

Clinical status	CBT (n = 11)		AMT (n = 11)	
	Pre-post	Pre-follow-up	Pre-post	Pre-follow-up
Recovered, %	54.5	72.7	27.3	18.2
Improved, %	18.2	18.2	0	9.1
Unchanged, %	27.3	9.1	63.6	72.7
Deteriorated, %	0	0	9.1	0

Discussion

This was, to my knowledge, the largest placebo-controlled trial of group CBT conducted to date. Consistent with previous adult and child studies of group CBT (Barrett et al., 2004; Cordioli et al., 2003; McLean et al., 2001), the treatment programme was effective in reducing OCD symptomatology with clinically meaningful outcomes. Children that received CBT had significantly larger reductions in symptoms compared to children that received a psychological placebo. The low response rate of children to AMT is congruent with adult studies of AMT for OCD (Fals-Stewart et al., 1993; Lindsay et al., 1997). Gains made by children in the CBT condition were

maintained at follow-up. The group CBT programme demonstrated a large treatment effect, which was comparable to effects observed in adult studies and existing child studies of individual and group CBT.

This study is the first non-pilot study to demonstrate that group CBT for paediatric OCD accounts for improvement beyond a placebo effect. This indicates that specific factors, which correspond to the intervention strategies derived from the cognitive-behavioural model of OCD, are effective for treating paediatric OCD. In addition to a specific treatment effect, there appeared to be a small nonspecific component to treatment outcome. Although the reduction in symptoms evidenced by children with AMT was not statistically significant over time, one-quarter of AMT-treated children showed clinically significant gains. The AMT condition included all of the nonspecific aspects of treatment, such as time, treatment credibility, and therapist attention, minus the specific treatment ingredients. This research shows that nonspecific factors can lead to some improvement in symptomatology. It is unclear whether the families that agreed to participate in this research study differ in substantive ways from treatment refusers or the population of families of children with OCD. It is possible that sampling bias or confounding factors may have impacted on the results.

Treatment credibility and expectations for change can predict treatment outcome (c.f. Weaver, 1998). In the NIMH Treatment of Depression Collaborative Research Project (Elkin, 1994) participants' expectations for improvement significantly predicted treatment outcome across four treatment conditions (Sotsky et al., 1991). Higher client ratings of treatment credibility generate higher expectancy for improvement, which can influence treatment outcome (Bowers & Clum, 1988). Safren, Heimberg, and Juster (1997) found that initial credibility rating of a CBT programme for social phobia predicted treatment outcome. Lower expectancies for positive outcome were associated with a greater severity of social phobia and depressive symptoms. The passage of time is a non-specific factor that can lead to improvements, because patients often seek help at a time when symptoms are the most severe. It may be that children in the AMT condition showed a degree of placebo response because of some of these factors, even though the improvement was ultimately non-significant. Other non-specific factors deemed important in the literature include the therapeutic relationship, hope, and the opportunity

to discover the "universality of problems" (Yalom, 1995). The notion that children with OCD respond to nonspecific treatment factors is support by the medication literature. The meta-analysis presented in Chapter 3 and a previous medication meta-analysis found a small to moderate placebo response for children with OCD (Abramowitz et al., 2005).

Treatment outcome in health and wellbeing research is often defined as the absence of symptomatology or pathology, yet this definition is narrow. Clinicians' interested in the full scope of the effects of a health care intervention have broadened the definition of clinical outcome to include psychological and social well-being (Gladis, Gosch, Dishuk, & Crits-Christoph, 1999). Clinical trials for paediatric OCD typically focus on the measurement of OCD symptomatology to the exclusion of other important outcomes, like quality of life and psychosocial functioning. Impairment in psychosocial functioning accompanies up to 90% of children with OCD in school, social, and home settings (Piacentini et al., 2003). OCD is associated with school absence, concentration difficulties, social withdrawal, impunctuality to lessons, excusing from class to perform rituals, and homework difficulties (Allsopp & Verduyn, 1990; Piacentini et al., 2003). Children with OCD have greater difficulties maintaining friendships and can experience impairment in engaging in normal peer activities such as sleepovers and play (Allsopp & Verduyn, 1990). Difficulties in home and family functioning are common. This study was the first known controlled CBT trial to assess psychosocial functioning over the duration of paediatric OCD treatment. A recently developed measure by Piacentini and Jaffer (1999) was employed to assess OCD-related impairment in psychosocial functioning across the school, social, and home domains. Children that received CBT showed less impairment in overall psychosocial functioning from pretreatment to follow-up, and significantly lower impairment at follow-up than children treated with placebo. This improvement was not present among children in the comparative condition, suggesting that a significant reduction in OCD symptoms accompanies gains in psychosocial functioning. CBT treatment for paediatric OCD appears to affect broader domains of well-being than just OCD symptomatology. These improvements are noteworthy considering the developmental importance of this age period.

Group CBT showed a positive effect upon level of depressive symptomatology. Depression is frequently comorbid with OCD, and has been reported to affect up to 73% of children with OCD in clinical samples (Barrett et al. 2004; Gellar et al. 1996; Hanna, 1995). The time-consuming nature of OCD symptomatology and the associated impairment in functioning may produce depressive symptoms, even if full clinical criteria are not met. There was a significant decrease in depressive symptomatology among CBT-treated children, but not AMT-treated children. This reduction covaried with the reduction in OCD symptomatology and gain in functioning. Even though the group CBT programme was targeted specifically to OCD symptoms, it may have benefits for secondary clinical symptoms. Future research is needed to understand whether this is because OCD is a causal factor for these symptoms, or whether a third factor such as the serotonergic system comprises a common mechanism of change.

Although there are many benefits that can be derived from group CBT, there may be factors that challenge the organisation and administration of this modality in service settings. Firstly, a significant volume of referrals is necessary to facilitate the formation of developmentally homogenous groups, to reduce wait-list attrition, and to allow a higher intake than desired group size. This is necessary to mitigate the loss of participants immediately prior to group commencement. Second, a fairly large population base that lives within a relatively short distance from the treatment site appears necessary. Third, although group therapy was envisaged to be a treatment modality that could facilitate accessibility to treatment, during the course of recruitment 39% of screened, eligible families declined participation, despite treatment being offered at no cost. A lower number of participants than originally planned were recruited. These difficulties and the high non-participation rate suggest that families may experience barriers that impede access to treatment. Fourth, the effort that therapists have to expend to assemble groups may not make the delivery of this treatment practical in a community setting. Participants and families have many competing school, social, and sporting commitments which makes scheduling a group treatment difficult. Practitioners may have a preference to work with rolling admission, open-ended groups, making the current group therapy model undesirable. The closed-ended, finite timeline may also be a contributing factor in parental reluctance to participate in the treatment modality. A

problem that has manifested for years may be perceived as a problem that cannot be clinically significantly changed in a matter of months.

Limitations

Future studies could improve upon this research by employing larger sample sizes. Although this study was underpowered, significant treatment differences emerged on many outcomes, particularly at follow-up. There may be further differences in outcome that failed to be detected due to low power. This is certainly supported by an inspection of effect size estimates. Despite fewer participants than recommended, it is encouraging that differences between and within groups were detected across study phases. The large confidence intervals surrounding effect sizes suggest that future research with larger samples is needed to increase the reliability of the estimated treatment effect. Due to limited resources, it was not possible to ensure enhanced control with techniques such as blinded raters, independent checks on treatment fidelity, or diagnostic interrater reliability. Efforts were made to mitigate the effects of deviation from control by using standardised instrument delivery, manualised treatment protocols, and the parent version of the most widely accepted diagnostic instrument for child anxiety disorders. Future studies could improve the diagnostic procedure of this study by including the child version of the diagnostic interview. In this study the parent interview was chosen to homogenise methodology and facilitate comparability with the largest published group CBT controlled trial at the commencement of this project (Barrett et al., 2004). This may have produced underidentification of cases as parents may not know the child's obsessional content or the full extent of rituals due to children's embarrassment, lack of disclosure, or lack of insight. Adherence to homework by participants was not measured. If this sample was particularly conscientious about homework completion this could have biased results by inflating the trial outcomes. High completion rates are not likely to be representative of the general treatment-participating OCD population. Alternatively, low adherence to homework could underepresent the effectiveness of treatment, as homework is an integral part of CBT treatment. Future studies should incorporate measures of treatment fidelity.

Future Research

A replication of this study is required to establish generalisability of findings. Future research is needed to investigate treatment efficacy among more complex samples. This would include children with Tourette's syndrome, other tic disorders, an autistic spectrum disorder, and complex comorbidity. Group CBT efficacy evaluations would benefit from transition to effectiveness studies. Lengthier follow-ups in treatment studies are required. A shortcoming of paediatric OCD treatment studies in general, is that with the exception of a few studies, follow-ups are generally absent or very brief. The inclusion of longer follow-ups would allow a much clearer picture of the true efficacy of treatments to emerge. Studies with greater sample sizes and clinical complexity could facilitate the identification of factors that moderate or mediate treatment response. Variables that may benefit from examination include age, sex, duration of OCD, severity of OCD, comorbidity (particularly oppositional and tic disorders), presence or absence of secondary depression, degree of insight, length of treatment, presence of overt rituals, treatment compliance, parental psychopathology, family functioning, cognitive functioning, and psychophysiologic indicators. Future treatment studies should include broader measures of health and well-being in addition to symptomatology measures. The ultimate success of a treatment is contingent not only on efficacy, but upon accessibility. Despite the availability of evidence-based treatments for OCD, there is a significant delay in help-seeking among individuals with OCD and many fail to access care (Pollard, Henderson, Frank, & Margolis, 1989). An understanding of the barriers that contribute to non-participation in paediatric group CBT is critical to developing strategies that encourage children and families to access help. Only a short-follow up could be conducted, future studies should incorporate longer follow-ups.

Clinical Implications

The efficacy of group CBT was investigated for its predicted effectiveness and unique practical and therapeutic advantages. Benefits include savings to therapist time,

increased treatment affordability, and increased treatment accessibility. Few therapists are adequately trained to administer CBT for paediatric OCD, hence group therapy represents an ideal means of maximising accessibility (March et al., 1997). Unique therapeutic advantages accompany the group treatment modality. Children can observe ERP being applied to a spectrum of OCD symptoms, thereby potentially promoting the generalisation of treatment gains. Peer modeling of in-session ERP and homework exercises may enhance treatment compliance. Observing other children perform ERP exercises successfully may alter dysfunctional catastrophic cognitions that impede motivation. The commonality afforded by the group experience may reduce the sense of isolation, embarrassment, and stigmatisation that frequently accompanies anxiety problems (Segee et al., 1999). Although group CBT appears to be a promising treatment modality with many practical and therapeutic benefits, there are serious organizational factors that may undermine practicality of application in community clinical settings. These would need to be given serious consideration prior to any treatment service planning.

Chapter Summary

This chapter presented the results of the largest to-date randomised, placebo-controlled trial of group CBT for paediatric OCD. The most important contribution made by this research is the confirmation of a specific treatment effect for CBT. Children that received CBT improved beyond nonspecific or placebo factors. They experienced a significantly greater reduction in OCD symptomatology compared to children that received placebo, and the improvement was clinically meaningful. Approximately three-quarters of children were recovered at follow-up. Group CBT had a large treatment effect, making results comparable to trials of individual CBT for paediatric OCD and group CBT for adults with OCD. CBT-treated children demonstrated greater improvement in psychosocial functioning and depressive symptoms relative to control at follow-up. A high number of families deemed eligible at screening declined participation in the trial. Individuals with OCD are known to delay-treatment seeking and more understanding of treatment barriers is required. Evidence-

based treatments are only valuable to the extent that they are received and used by the targeted clinical population.

Chapter 6

Study 3: Group Cognitive-Behavioural Therapy for Paediatric Obsessive-Compulsive Disorder: Perceptions and Perceived Barriers to Treatment

Once considered a 'treatment refractory' condition, multiple treatments for OCD have been identified. CBT and the SSRIs are evidence-based treatments for OCD in youth. Despite the high level of burden associated with OCD, and the availability of efficacious treatments, the level of unmet need for treatment is high. Research among adolescent and adult community samples suggest that only a small minority of individuals with OCD access treatment (Kennedy & Schwab, 1997; Shapiro et al., 1984; Whitaker et al., 1990). Individuals with OCD delay seeking professional help by an average 11 years after onset (Simonds & Elliot, 2001). Sufferers are more likely to seek help in the first year of onset, with the rate declining over subsequent years (Thompson, Hunt, & Issakidis, 2004). In an Australian sample, only 28% of adults receiving treatment at a specialist anxiety and mood disorder clinic had sought help within one year of disorder onset (Thompson et al., 2004). Community-based surveys in Canada and USA have found that only 34% to 37% of adults with OCD had disclosed their symptoms to a doctor (Robins, Locke, & Regier, 1991), and only 20% had sought help from a mental health professional (Leon, Portera, & Weissman, 1995). Data from a community-based sample showed that 28% of individuals with OCD had sought professional help, and that less than half of this proportion had seen a mental health professional (Swinson, Anthony, Rachman, & Richter, 1998).

The Senate Select Committee on Mental Health was established by the Australian government to investigate the provision of mental health services in

Australia. The report published by the committee found that among young people "the first and foremost issue is the extent of unmet need" (2006, p. 411). The report stated that only 25% of children who need access to mental health services will receive help. The level of unmet mental health need in children is higher in other countries, such as the United States where it has been estimated as 70% (U.S. Congress Office of Technology Assessment, 1986, 1991).

Many parents are reluctant to initiate treatment for their child. There is a 15% to 35% no show rate to first appointments following parental telephone request for services (Morrissey-Kane & Prinz, 1999). The most common reasons for failing to attend a first appointment are scheduling conflicts, cost of treatment, and a change of attitude to viewing the problem as improved or that help is no longer necessary (Kourany, Garber, & Tornusciolo, 1990). Children with OCD are likely to be particularly vulnerable to failing to access services, due to the shame and embarrassment associated with symptoms. To maximize treatment access, barriers that preclude families of children with OCD from accessing treatment need to be understood.

Overview of Barriers to Treatment

Kazdin and colleagues (2000) proposed the 'barriers-to-treatment' model to account for treatment utilisation. The assumption underlying the 'barriers-to-treatment model' is that for many families seeking help, initiating and attending treatment is a burden. Non-utilisation of mental health services results from practical and attitudinal barriers (Aupperle, Lifchus, & Coyne, 1998; Nada-Raja, Morrison, & Skegg, 2003; Simon, Fleck, Lucas, & Bushnell, 2004; Smith, Highstein, Jaffe, Fisher, & Strunk, 2002). Practical barriers include treatment cost, distance to services, long waiting lists, lack of time, inadequate insurance coverage, and inconvenient operating hours of clinics and practitioners. Practical barriers may be systemic, meaning endemic to and located within the structure of mental health service provision, or patient-based. Owens and colleagues (2002) surveyed 116 parents whose children required, or had recently utilised, mental health services. Approximately 21% of families cited practical barriers as impeding access to services. The most common barriers were lack of knowledge

about where to access help, cost of services, and inconvenience of services. Cornelius and colleagues (2001) found that the number of siblings predicted unmet treatment need in adolescents. Larger family size could present significant dilemmas in terms of cost, time, and scheduling. Flisher and colleagues (1997) examined data from an epidemiological study of the prevalence of psychological disorders among children and adolescents. Approximately 17% of the youth had unmet need and this was significantly associated with financial factors, such as lack of insurance and parental receipt of public benefits. Practical treatment barriers reported by parents in another study were distance from service providers, scheduling difficulties, cost, transportation, child care arrangements, and lack of child care (Kruzich, Jivanjee, Robinson, & Friesen, 2003).

Attitudinal barriers are cognitive impediments to treatment utilisation, such as negative perceptions of a treatment, excessive shame regarding difficulties, and fear of stigmatisation or labeling. Parent and child attitudinal barriers may be responsible for preventing children with OCD from accessing help. In one study, less than 40% of parents reported that they would take a family member, including children, to see a mental health professional in the event of a psychiatric diagnosis. Reasons included stigmatisation related to use of services, skepticism about the utility of services, and reluctance to acknowledge the presence of a serious problem (Eapen & Ghubash, 2004). As many as 80% of parents and children believe that a mental health problem will "get better by itself' (Pavuluri, Luk, & McGee, 1996). OCD is a highly persistent condition, with 40% and 19% of children meeting criteria for clinical and subclinical OCD, respectively, after an average follow-up period of six years (Stewart et al., 2004). Parents' beliefs about the utility of a treatment may affect treatment participation. Nock and colleagues (2007) measured parents' beliefs about treatment credibility and expectancies for child improvement prior to participation in a programme for externalising disorders. Beliefs predicted adherence to treatment and contributed unique variance beyond demographic factors. A study conducted among a community-based sample of adults identified as meeting criteria for OCD, found that approximately 28% did not seek help for OCD because they believed that they could 'handle it on their own' (Goodwin, Koenen, Hellman, Guardino, & Struening, 2002). This attitude may prevail among children and adolescents. One-fifth of the adult sample reported that they did not

seek help because they were afraid of what others might think, 6% reported that they did not think the treatment 'would work', and 5% believed that they did not have an anxiety disorder. Parents and children may not trust mental health professionals, believe that treatment will not be successful due to previous unsuccessful experiences with services, or fear stigmatisation resulting from publicly disclosing symptoms (Flisher et al., 1997; Thompson et al., 2004). One study reported a statistically significant relationship between fear of stigmatisation and longer delays in obtaining treatment (Christiana et al., 2000). It is common for individuals with anxiety problems to experience embarrassment and shame regarding symptoms, and clinical experience suggests that this is characteristics of young people with OCD (Segee et al., 1999). Children with OCD frequently hide their symptoms from others, and relatives often serve as accomplices (Stengler-Wenzke, Trosbach, Dietrich, & Angermeyer, 2004). Jorm (2000) used the term 'poor mental health literacy' to describe a priori attitudes held by some individuals that mental health problems will improve with time and that psychological and medical treatments were ineffective.

Barriers to Participation in Group CBT for Paediatric OCD

Group CBT has demonstrated favorable outcomes in a number of studies. (Asbahr et al., 2005; Barrett et al., 2004; Fischer et al., 1998; Himle, 2003; Thienemann et al., 2001). Individual therapy is the gold standard for CBT delivery, however group therapy offers unique advantages. Group CBT is time- and cost-efficient and has many potential therapeutic benefits. Benefits include the normalisation of symptoms, peer reinforcement of compliance with treatment techniques, development of informative support networks, and reduction in isolation for children and families. Although it is an efficacious treatment, it is unknown whether attitudinal factors negatively affect treatment participation and the types of perceptions families hold about group therapy. A limited amount of research has examined child and parent perceptions of group therapy in general. Some reports have suggested that children may experience discomfort participating in group treatment. Mishna and Muskat (2004) reported the case of a 15-year old boy who stated that he felt nervous and "weird" about attending

group therapy. Children may be fearful that if they enter group therapy it means that they are crazy. Gunther and colleagues (1998) reported that children, and particularly adolescents, may worry about encountering someone that they know and the resultant stigmatisation. A proportion of adolescents receiving individual and group therapy for clinical issues reported preferring individual therapy because it allowed them to more openly discuss issues, however other adolescents preferred group therapy because they did not have to be the sole focus of attention and it was less personally intrusive (White, Godley, & Passetti, 2004). Some children may deny the seriousness of their difficulties. This perception could lead them to refuse participation in the group. Adolescents are often suspicious of anything recommended by their parents or other adults, which may comprise an additional source of resistance.

Parents may hold attitudes that contribute to nonutilisation of services. Despite receiving a diagnosis of a mental health difficulty in their child, many parents deny or minimise the severity of a problem (Pavuluri et al., 1996). Parents may think that the problem will attenuate over time, or attribute the difficulties to pubertal changes. It is commonly believed that group therapy is a "watered-down" version of individual therapy, and hence, less effective (Pollock & Kymissis, 2001). Parents may have catastrophic cognitions that their child will be placed in a group with children with severe mental health problems, and that this may trigger similar difficulties in their own child.

No studies have examined barriers to group CBT treatment among children with OCD, nor investigated perceptions about group therapy. The aim of this study was to explore the treatment-related barriers and perceptions (positive and negative) evidenced by families with an OCD-affected child. This knowledge could inform the viability of disseminating group CBT to community settings. Knowledge of barriers to and perceptions of group CBT for childhood OCD can contribute to the development of strategies to enhance service utilisation.

Method

Participants

Families that met study criteria but declined participation in a RCT of group CBT for paediatric OCD were identified from a screening database (see Figure 4). Ten parents and one child consented to participate in the study. To enhance validity, only parent data was included as views held by the child were unlikely to be generalisable. The low participation rate of children was due to lack of parental permission (e.g., due to the young age of child, parental anxiety about causing the child undue stress) or child refusal.

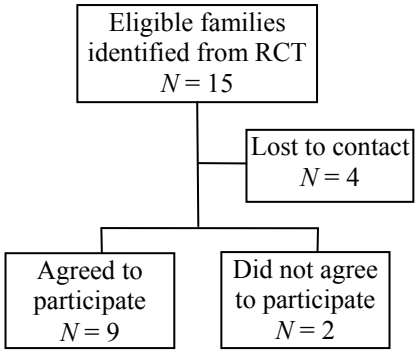


Figure 5. Flowchart diagram of recruitment from families that met study criteria, but declined participation in a RCT of group CBT for paediatric OCD.

Descriptive information for participants is provided in Table 14. The average length of time between programme contact and participation in this study was 1 year and 4 months (*SD* = 3 months; range = 10 months to 1 year and 8 months). The mean age of children was 14.95 (*SD* = 2.67). The mean age of onset of OCD symptomatology was 10.64 (*SD* = 3.41).

Table 14
Descriptive Characteristics of Study 3 Sample

Participant	Parent	Child sex	Child age (yrs)	Age at onset (yrs)	Symptoms
1	father	male	12.92	-	contamination, arranging
2	mother	male	16.75	7	Contamination
3	mother	male	16.67	14.5	Contamination
4	mother	female	14.08	11	checking, arranging, repeating
5	mother	male	14.42	14	arranging, symmetry
6	mother	male	15.50	12.5	contamination, aggressive
7	mother	male	13.67	10	Contamination
8	mother	female	8.67	5.5	contamination, repeating, touching
9	mother	male	8.83	-	Arranging

Procedure

This research was approved by the Curtin University Human Research Ethics Committee. Parents of families identified as eligible for participation were phoned and asked if they would participate in a study about factors influencing the decision not to participate in group therapy for childhood OCD. Participants gave informed consent to participate (participant information sheets and consent forms are contained in Appendix E). Families agreeing to participate were visited and interviewed using a semi-structured format. The interview schedule examined the reasons families did not participate in treatment (e.g., "*Could you tell me about some of the reasons for not participating?", "Who decided that your child would not join the therapy group?"*). Issues explored included parent's expectations of treatment, thoughts and feelings about having one's child participate (e.g., "*What were your thoughts about having your child start the therapy?", "What would be some of the most negative things about your child starting group therapy?",* "*What would be some of the most positive things about your child joining the group?*), and perceptions of the relative advantages and disadvantages compared to individual therapy (e.g., '*Are there any benefits of group therapy compared to individual therapy*?"). It was deemed important to elucidate perceptions of group therapy in relation to individual therapy, as the latter comprises the gold standard for CBT delivery. A full copy of the interview schedule is contained in Appendix F.

Duration of interviews was approximately 30 to 60 minutes. Interviews were audiotaped and transcribed.

Data Analysis

The methodological framework adopted was a qualitative, phenomenological approach known as thematic analysis. Qualitative methodology is appropriate when the subject of research is previously unexplored. Qualitative research designs are inductive, allowing for the development of theory, and for description and exploration of meaning. Quantitative designs are deductive, and are generally used to test theories or to establish relationship or causation. As there is minimal research on family barriers implicated in the treatment of paediatric OCD, qualitative methodology is the most appropriate research strategy.

A phenomenological approach is suited to addressing the study's aim. Phenomenological analysis seeks to capture as closely as possible how a phenomenon is experienced within the context in which the experience takes place (Giorgi & Giorgi, 2003). Thematic analysis is a type of phenomenological analysis that focuses on identifying recurrent themes within a data set. It is highly inductive, as themes emerge from the data and are always located within the context of the data. The thematic analysis procedure specified by Smith and Osborn (2003) was employed. Analysis begins with a single transcript, which is analysed to identify emergent themes. An initial list of themes is generated and inspected to determine connections between themes, then themes are clustered together. As the clustering of themes occurs, it is checked against the transcript to verify that the connections are representative of the primary source material. These procedures are iterative and involve a close association between reader and text. Once analysis of the first transcript is complete, analysis extends to other cases. Data are scanned and analysed for documented themes and new themes. Once all transcripts have been analysed, a list of superordinate themes (and supporting quotations from primary source material) is constructed.

Results

Barriers to Accessing Treatment

Practical and attitudinal barriers precluded access to treatment. Attitudinal barriers more frequently impeded access than practical barriers. Approximately 67% of parents reported the presence of an attitudinal barrier, 56% reported a practical barrier, and 22% reported both types of barriers. The types of barriers reported are summarised in Table 15. The most common practical barrier was a lack of time, and the most common attitudinal barriers were the child's belief that therapy would not work and embarrassment associated with symptoms. In one case, a child's OCD symptoms and anxiety levels were so severe that he was house-bound. One parent reported that the structure of the group was a barrier, referring to the finite time-frame, lack of opportunity for follow-up by the therapists, and the interaction of therapy course with her child's separation anxiety symptoms.

Table 15
Types of Practical and Attitudinal/Psychological Barriers Precluding Access to Therapy

Barriers	*N*
Practical	
Lack of time/scheduling difficulties	4 (44%)
Distance	1 (11%)
OCD was too severe	1 (11%)
Financial (cost of travel)	1 (11%)
Child physical health	1 (11%)
Attitudinal	
Embarrassment associated with symptoms	3 (33%)
Child did not think the therapy was going to work	3 (33%)
Fear of social aspect of group	2 (22%)
Lack of previous success with psychology	2 (22%)
Lack of trust in strangers	2 (22%)
Parent concern about structure of the group	1 (11%)
Child and family 'not ready for it'	1 (11%)
Child did not view difficulties as a serious problem	1 (11%)

Note. Percentages do not equal 100 as parents were not limited in the number of barriers they identified.

Six parents reported that it was the child's decision not to participate in therapy, one parent reported that the decision was made by parents, and two parents reported that it was a joint decision. To exclude the possibility that parents did not participate in therapy because the therapy was part of a research project, attitudes on this topic were elucidated. All parents reported being supportive of the research project, and no parent identified the issue of participating in a research study as a barrier.

Negative Perceptions of Group Therapy for Paediatric OCD

Parents identified several possible disadvantages of group therapy. These were categorised into four themes; (1) greater child discomfort compared to individual therapy; (2) reduced effectiveness compared to individual therapy; (3) problems related to the structure of group therapy; and (4) greater likelihood of risk to the child compared to individual therapy.

Greater Child Discomfort in Group Therapy Compared to Individual Therapy

Parents identified the group context as providing a higher level of discomfort for their child, in terms of heightened social anxiety, fear, and embarrassment. Some parents appeared resistant to group therapy because of the guilt associated with the perception of potentially causing their child anxiety that could have been avoided. Individual therapy was viewed as less-anxiety provoking and more agreeable to the child.

Reduced Effectiveness of Group Therapy Compared to Individual Therapy

Parents voiced concerns that group therapy would be less effective than individual therapy, and proposed reasons to account for this. A recurring theme was the possible heterogeneity in symptom profiles among children, due to the diverse presentation of OCD. Many parents felt that the techniques delivered would be too generic for their child, and would not specifically address their child's symptoms. Some parents thought that group therapy may alienate some group members, whose symptoms were not adequately represented in the group:

> "I think you probably learn a lot more strategies [in individual therapy], because it's actually, with OCD, as you know, there is many, many things that these children have and for someone like my son his would be totally different to another person's so at least they'd deal with his particular issues" (Participant 3)
> "I mean like, some of the strategies would be perhaps applicable to the whole group, they'd be more generic in the group, whereas if you're dealing with just one person he would then tailor them perhaps just for you, and maybe perhaps target the problem better. Whereas, in a group they'd be more generic" (Participant 5)

Parents thought that the heterogeneity of symptoms would lead to the application of more generic techniques, which would reduce the helpfulness of the intervention. Many parents thought that therapy was simply the product of children sharing management strategies with one another or the catharsis associated with emotional disclosure. They expressed concern that their child would receive fewer techniques compared to individual therapy:

> "[In individual therapy] You might get more professional feedback, you know, like from someone who's a doctor, you actually get some feedback, whereas in a group I don't know how the feedback situation operates, whether it was just from the group experience or whether there is someone going to be overseeing the group and actually saying, "You can do this yourself", you know, that it would be more individual" (Participant 5)

Parents thought that group therapy may be less effective because the degree of openness is constrained. Parents believed that it would be harder to speak about difficulties in the group situation, due to the personal nature of some difficulties and the greater risk of embarrassment. One parent spoke about her daughter's participation in individual therapy:

> "Because for her, it was a big secret, and she didn't want anyone to know. And being able to talk to someone outside of the family that kind of knew what she was going through, made her realise, "Oh, I can talk about it to other people". And so she was then more comfortable talking to like, my husband and the family as well. Yeah, it allowed her to open up and I think that if she was put into a

> group situation first of all she wouldn't have opened up" (Participant 8)
>
> "There's lots of things that I mean, I still don't know all of them, but I know there's lots that he's got that he still manages to hide, but I think he talks to them, the psychiatrist, and he may not talk in the group situation about some of the things, because they're probably a bit more personal " (Participant 3)
>
> "I would think that it [group therapy] doesn't quite get to the nitty-gritty as much as individual therapy can" (Participant 5)

Individual therapy was seen as a superior method of facilitating disclosure, because trust was being invested in a single person and there was minimal risk that information would be distributed to external, 'unsafe' parties. It was also suggested that it may be easier for a child to ask questions in individual therapy.

There was a view that children would not participate actively in the group due to excessive social anxiety. Parents thought that the group may not be as beneficial as individual therapy because the child could not form as close a relationship with the therapist, and they perceived it as less time-efficient. They demonstrated concern that because the child was not the sole focus of attention, the child could take on an observer role in therapy rather than an active agent of change. Receiving the sole attention of the therapist was seen as an important strength of individual therapy. Symptoms could be treated faster, the child's problem could be targeted with greater specificity, and there was greater opportunity to learn more management strategies. Individual therapy was also seen as a superior means of becoming familiar with the child's character and problems.

Group Therapy Has More Risk Involved - It Could Make My Child Worse

A salient theme was that group therapy was more unpredictable, had more risks involved and could worsen problems for the child. One parent remarked, "I think the risks are spread out more in a group situation" (Participant 5). There was a concern that children may adopt more OCD symptoms by being exposed to a greater range of

symptoms and subtypes of OCD. While discussing their anxieties about having their child start group therapy, parents commented:

> "Just perhaps really coming away with having more worries in his head, listening to some of the other problems" (Participant 6)

> "[Will group therapy] make the OCD worse for him, or will it make him worry more because some of them are going to have different problems to what he had. Some of them are going to have order problems or, and his particular problem was germs, and I suppose I was a little bit concerned that maybe he'd hear about the order problems and that might become another issue for him" (Participant 3)

There was a view that group therapy was more likely to burden the child with an "OCD identity", by making the problem more concrete and real, thereby, negatively impacting the child's self-concept.

> "I didn't want him to sort of start befriending other kids with the same thing, particularly. I'd rather he, you know, I didn't want him labeled" (Participant 3)

> "But I think she would maybe see herself as being different. Because at the moment, she knows that it's different to other kids, but she doesn't see herself as different" (Participant 8)

In group therapy it was thought that children may be confronted more often with "OCD the label". There was the idea that in individual therapy, the 'label' would reside more in the background and not foreground:

> "If you sort of walk in and say well, you know, you have got obsessive compulsive and this is how we going to deal with it and you say it every time they're going to start to believe it, you know. Once he was told he was dumb and now he thinks he's dumb, and I have spent my whole life trying to convince him he's not dumb…. One-on-one, with OCD, I suppose, you would slowly bring it round to working all the tools in and making him realise that you know, that's how he is" (Participant 9)

Individual therapy was seen as a gentler means of addressing the negative link that can form between OCD and identity, thereby minimising any deleterious impact on the child's self-esteem.

Parents perceived a child could be negatively impacted if the child had the most severe case of OCD in the group:

> "That possibly his case was an extreme case. That he would feel, that he would see it along a continuum where perhaps he was at one end of it. And although I didn't perhaps think so, that was perhaps a risk that he took that he would think, "I'm really bad here, I'm worse than anybody", and maybe that would have some impact on his self esteem" (Participant 5)

There was a perceived risk that interaction with other children with OCD could result in more problems than gains. Not only could it result in greater labeling, but there may be negative corollaries from peer interaction. Children may befriend children from family backgrounds or family circumstances that parents did not wish their child to be exposed to.

The Group Structure is Problematic

The finite course of group therapy was viewed as a limitation of group therapy. There was concern that a child may need more help at the end of the therapy course, but that it would not be available. Greater possibility of extension of therapy or scheduling of follow-up sessions was perceived for individual therapy. Group therapy was perceived as problematic for children with comorbid separation anxiety issues. Termination of therapy may be difficult in terms of having to part with multiple therapists and peers, whom bonds had been formed with. The collection of different age groups within the therapy group was viewed as problematic. Groups comprised children aged 7 to 12 years or 13 to 17 years. Parents thought that the differences in maturity, self-expression, and emotional development may be too great within these age brackets. A recurring theme was the possibility of younger children being exposed to developmentally inappropriate information.

> "I still see her as a young 8-year old that hasn't reached that preadolescent age yet and so for a 12 year old who might be dealing with a lot of different issues, to be talking about that in a group with my 8-year old who hasn't come to that point in her life yet, it may be information that she gets that I'm not happy for her to receive yet" (Participant 8)

There was the view that older children may have obsessions or compulsions that could be shocking to younger children, and resultant parental reluctance to expose children to group therapy.

Positive Perceptions of Group Therapy for Paediatric OCD

Four themes describing advantages of group CBT were salient; (1) unique group therapeutic benefits; (2) enhanced peer and parental support; (3) non-OCD therapeutic benefits; and (4) contextual factors that may increase the agreeableness of therapy to the child.

Group Therapy May Help My Child Deal With OCD

Children with OCD often think that they are strange or abnormal. They may see themselves as being different from other children, and are often ashamed and embarrassed by their OCD-related thoughts and behaviours. All parents identified group therapy as a powerful means of normalising and destigmatising OCD. They saw it as reducing the psychological burden on the child, and alleviating the sense of being alone:

> "I hoped that he would understand, again, that he wasn't some sort of freak" (Participant 3)

> "…meet other people that have the same and he can see other people that are the same as him that he is not, you know, a freak as he gets told by his peers and his brother" (Participant 9)

> "But I just hoped that he would be with people of his own age that he wouldn't feel that he was unusual, or completely unusual anyway, that there were a lot of other people out there having similar problems. That it wasn't something he had to be ashamed of and that he could get help for" (Participant 5)

> "To actually learn that he wasn't alone because he puts himself down as being weird, different, odd. So to actually meet other people who have the same issues and had a normal conversation that didn't contain OCD as well, somebody else's hobby, for instance, you know, just chatting about that, would maybe take that off of him a bit. It is a label OCD, but he's a person as well and to learn that because he just felt for a long time that OCD is him. And that's it locked, and that there is no personality other than that" (Participant 6)

Another therapeutic benefit of group therapy identified by parents was the knowledge and strategies that children may be able to share with each other.

> "You also benefit from hearing other people's experiences. Sometimes they've picked up strategies which, you know, they can share and you can adopt" (Participant 7)

Parents saw children participating with each other as a means of instilling hope, and of improving compliance with treatment. They saw enhanced compliance as resulting from instilled hope, peer modeling of techniques, and normalisation of the use of management techniques:

> "Because he sees that it's worked for them and their anxiety levels might have been a 10 like his are a majority of the time and yet they were able to do it. Okay, they're still breathing, and they're actually maybe smiling about it. So he is seeing that and I think he'd benefit from that" (Participant 6)

One parent discussed how her child did not practice the strategies she had learnt in individual therapy outside the therapy room. The mother said that no one else in the family used the techniques, so her child was not compelled to use them:

> "I think it would make her do them more because it would be part of the norm, not just a thing that no one else in the family did" (Participant 4)

An advantage of group therapy perceived by parents was that knowledge could be obtained from peers, and peers may offer greater credibility than therapists. Parents reported that children may not have faith that health professionals can help them, because the professional has not personally experienced OCD. They may have "read a couple of books" on OCD, as one parent commented, but they are not credible "helpers". Group therapy could facilitate the adoption of beneficial strategies. Group therapy may motivate children to utilise techniques. It was suggested that children may see someone with more severe symptoms, realise how the condition could escalate, and be more motivated to engage in treatment. Alternatively, they may see someone at a greater stage of recovery, which may instill hope and greater compliance:

> "Everybody has different issues that has OCD, and each person's overcome it in various ways, and learnt management skills and that kind of thing and they're all at different levels of recovery if you like. So for him to see the whole group of people at different levels, that there's hope for him" (Participant 6)

It was suggested by one parent that group therapy may offer a more time-efficient treatment method than individual therapy, because of the sharing of techniques.

Children and Parents Can Gain Support

A strong theme of enhanced support emerged in the context of discussions of group therapy. Parents perceived the group as important for their children. It could enable their child to meet other children with OCD, make friends, receive support during therapy and following therapy completion, and to have the repository of support from people facing similar issues. Parents could also obtain a source of support for themselves:

> "Making connections with other families and people that are in the same boat. Yeah, because like I've said, there's no one that we can ring up and say, "Oh, I'm having a bad day". So that would be a really good thing to come out of it" (Participant 8)

> *Participant 6:* I was hopeful he would go and actually just give it a try. So for me, as well, to get some support, because I was very

> isolated at the same time, you know. I'd maybe speak to one person every second week, you know, or see one person every second week.
> *Interviewer:* Because you were home so much?
> *Participant 6:* Yes, home-based - couldn't go out the door. He wouldn't allow it because there could be a crash or all sorts of things.

Group Therapy May Feel Less Like "Therapy"

Some parents reported that contextual aspects of the group therapy environment may make therapy more agreeable to the child compared to individual therapy. Attention would be divided among members of the group, making it less confronting for the child. Children would be interacting with people their own age, and it may feel more like a classroom environment; "They might just think it's more like school rather than going to a psychiatrist or something" (Participant 5).

Group Therapy May Benefit My Child in Non-OCD Areas

Parents reported that the group may be beneficial in reducing other difficulties experienced by their child or by providing the child with adaptive skills. Parents reported that it could help to reduce social anxiety in group situations and separation anxiety. It could also teach a child how to effectively work in a group.

Preference for Type of Therapy

Parents were asked whether they would have preferred their child to undergo individual or group therapy. Two parents indicated a preference for individual therapy, two indicated a preference for group therapy, four reported that they would have liked their child to undergo both types, and one parent responded "either".

Receipt of Treatment Following Contact with the Group CBT Programme

Following non-participation in the group CBT programme, five children had not received any treatment (56%), one had received individual therapy with a psychologist

(11%), one had received SSRI treatment (11%), and two (22%) had received a combination of individual therapy with a psychologist and SSRI medication.

Discussion

Practical and attitudinal barriers precluded access to treatment, and attitudinal were more common. This finding is consistent with previous studies of parent-identified mental health barriers (Thompson et al., 2004). The most frequent practical barrier reported was a lack of time or scheduling constraints. This barrier is likely to be more pronounced for group CBT compared to individual therapy. Establishing a group requires considerable energy expenditure and negotiation of logistical difficulties on the part of therapists (Pollock & Kymissis, 2001). Therapists need to be available during out-of-school hours and external commitments of children, parents, and other siblings means that families may be unable to attend the allocated therapy time-slot. In individual therapy, there is greater flexibility in appointment scheduling and therapy can be tailored around family holidays or sickness. Other practical barriers discussed by parents included severity of OCD and child physical health. These difficulties accounted for non-participation in 22% of families, and may indicate the need for availability of home-based CBT therapy services or medication treatment. Treatment for paediatric OCD must be flexible, and investigation of multiple treatment modalities (e.g., medication, CBT) and delivery formats (e.g., individual, group, weekly, intensive, home-based, bibliotherapy) is necessary to increase accessibility.

Common attitudinal barriers were child embarrassment associated with symptoms, children believing that therapy would not work, anxiety associated with the social aspects of the group, a lack of previous success with psychological treatments, and a lack of trust in strangers. Embarrassment regarding mental health issues is largely an artifact of stigmatisation and prevailing community attitudes towards mental health. Stigma is a leading barrier to mental health treatment-seeking. Recent research efforts have begun to examine the construct of stigma and the malleability of stigmatic attitudes. Strategies for reducing stigma include community awareness campaigns, school education programmes, education of targeted groups (e.g., police officers,

government workers, journalists), protest against stigmatic public content, and media-watch organisations (Pinfold et al., 2003; Rüsch, Angermeyer, & Corrigan, 2005; Warner, 2005). More research is needed to investigate the effectiveness of stigma-reduction programs and to understand the active mechanisms of these programs. Subsequent dissemination of strategies to increase acceptance of mental health difficulties among youth is necessary. These campaigns could also be used to increase 'mental health literacy' and the perceived value of mental health services. Altering public attitudes toward mental illness and associated services may reduce barriers to care for youth.

Perceptions of group CBT held by families that declined participation in a group CBT programme were investigated. Parents held many anxieties and concerns about the potential experience their child could have in the group. A recurrent theme was the discomfort children may experience in the group. Parents were worried that group therapy would exacerbate anxiety, discomfort, and embarrassment for their child, relative to individual therapy. Parents perceived group therapy as a less helpful form of treatment than individual therapy. They believed that the heterogeneity of symptoms would lead to the application of more generic techniques, which would reduce the helpfulness of the intervention. This is contrary to actual practice in CBT programs for childhood OCD, where treatment is tailored to children individually according to the exposure hierarchy constructed by the therapists and child. Parents thought that it may take longer to treat a child in group therapy compared to individual therapy, and that children may be less likely to participate in treatment because there was less pressure to. Many parents thought that effectiveness would be decreased because the child's ability to be open would be constrained in the group, due to the perceived social risks. Contrary to parents' beliefs, group CBT has demonstrated equivalent effectiveness to individual therapy, and children who receive group therapy have shown higher rates of symptom remission at treatment termination and three-year follow-up than children that receive individual therapy (Barrett, Farrell, Dadds, & Boulter, submitted). These gains have been achieved using identical treatment hours and duration. It is likely that children will be less inclined to disclose the full picture of their OCD difficulties in a group environment, due to the shame and embarrassment involved. This is especially

conceivable in an adolescent group, where there is a developmental motivation to project a peer-accepted identity and status. Although studies show that individual and group therapy have equivalent efficacy, it may be useful to examine the relationship between OCD subtype and symptom improvement. A young person who experiences sexual, harm-related, or socially unusual obsessions may experience more benefit from individual therapy than group therapy.

The perception that children may not actively participate in group CBT was a concern held by parents. Children may choose not to engage in any treatment offered to them. Within a group CBT programme, each child participates in treatment via construction of an exposure hierarchy and in-session exposures. It is acceptable if children are not verbally active during group sessions, as children have different levels of extraversion and respond to group contexts differently. The important issues are that children have an understanding of treatment principles and engage in the core components of treatment. Introversion and social anxiety are unlikely to predict poor group treatment outcome, as outcome is based on completion of exposure exercises and utilisation of cognitive techniques. Children who lack general engagement and motivation in group therapy would most likely lack that engagement in individual therapy. The concern that group therapy would unilaterally promote non-engagement in treatment is unsubstantiated by clinical observation.

Parents perceived group therapy as being associated with more risks than individual therapy. There was concern that children would "pick up" other children's worries, within the same OCD subtype or across different subtypes. It would be highly unlikely for children to adopt a new subtype of OCD as a result of interacting with OCD peers, although it is conceivable that two children with contamination concerns may provide each other with new material to ponder. Whether this is an adverse happening, however, is debatable. Exposure to further anxiety-provoking information in a CBT context may actually be beneficial, promoting habituation to a greater range of trigger stimuli.

The structure of group therapy was perceived as a problem among some parents. The finite duration of therapy could potentially restrict a child's treatment trajectory. There would not be the same opportunity for extension or follow-up as with individual

therapy. This is a limitation of group therapy. Although children who receive a standard 14-week course of group therapy show equivalent improvement levels to children receiving individual therapy, it is not unusual for these children to evidence mild or even moderate symptoms at treatment completion. Many avenues are available for addressing this issue. Research to address gaps in knowledge of paediatric OCD and treatment (e.g., cognitive mechanisms of treatment, variables that moderate treatment response) could be used to enhance the effect size of treatment. The addition of optional periodic booster sessions for clients may also be beneficial, or perhaps more severe cases might benefit from initial individual CBT so that duration of treatment has greater flexibility.

A strong theme that emerged was the difference in developmental maturity among group members. It was suggested that group therapy would be more beneficial if children were matched on age and gender. This may not be possible in clinical settings due to insufficient referrals and the need to disseminate help to treatment-seeking families as soon as possible. If groups comprise children or adolescents of a heterogeneity of ages, then therapists supervising the group should be sensitive to the content of the material discussed, and the parameters for discussion. If adequate structure is provided, it is not difficult to manage the potential manifestation of age differences in conversation. A behavioural management programme can be implemented to reward positive behaviour, such as speaking politely and being "on-task". This is useful for promoting compliance with session tasks. The risk of younger children being exposed to developmentally inappropriate information can be minimised to approximate the risk in everyday life. This is a parental concern that can be addressed, so need not be viewed by parents as an influential factor in the decision to participate in treatment. Interestingly, this concern by parents may be suggestive of the presence of an over-protective parenting style, which has been hypothesised to be implicated in child OCD development (Turgeon, O'Connor, Marchand, & Freeston, 2002).

Parents identified positive factors unique to group CBT. They suggested that it can be an important means of normalising and destigmatising OCD in children. It could enhance the support network of children and families. Children may experience enhanced hope for improvement, by seeing other children improve in therapy, children with similar difficulties functioning well externally, and children successfully applying

ERP strategies, despite the anxiety-provoking nature of the strategies. Participating in treatment with other children was seen as a means of enhancing compliance with treatment through the establishment of norms for the use of management techniques. Parents reported no differences in preference for individual or group therapy, suggesting that group CBT is a potentially viable treatment for dissemination in community mental health settings. The reluctance of some families to participate in group CBT may not represent a specific bias against this type of therapy, but may be indicative of broader barriers to treatment participation in this population.

Study Limitations and Future Research

Future research could improve this study by recruiting a larger sample size and sufficient numbers of child and adolescent helpseekers. The small sample size in this study means that it is unlikely that saturation of themes took place. Further barriers to treatment and attitudes about group therapy are likely to exist. The sample underrepresented parents of children relative to parents of adolescents. Future research could examine whether attitudes are homogenous across these age groups. Lack of resources meant that interrater agreement of themes could not be ascertained, and caution is warranted when interpreting the findings of this study. Further research is needed to assess the validity and generalisability of the observed themes. The assessment of OCD was performed using a screening instrument, rather than a structured diagnostic interview. To enhance the validity of the screening procedure the telephone interview was *DSM-IV*-structured. Further investigations should include a standardised diagnostic procedure to replicate these findings. The interview required parents to recall perceptions in retrospect, between three months and nearly two years after initial contact with the treatment study. This would have biased the reliability and validity of the study findings downwards (Schwarz & Sudman, 1993). It may be important to investigate whether there is a relationship between symptomatology (e.g., sexual obsessions, bizarre compulsions) and reluctance to obtain help. This would assist in the development of strategies used to target the at-risk groups. Lastly, it was noted that parents and youth were reluctant for youth to participate in interviews, hence only

parent-identified barriers and perceptions were obtained. Generalisations about child-identified barriers and perceptions cannot be made from this research. Future studies should aim to incorporate youths' views. A less invasive method that would likely facilitate data obtainment from children and adolescents might be to devise open or closed-response questionnaires for children to complete.

Clinical Implications

Some barriers that preclude treatment participation are difficult to negotiate, and can indicate that alternative treatment modes are preferable. For example, medication or home-based therapy may be preferable when OCD is extremely severe or regular attendance at therapy is compromised. These findings highlight the importance of flexibility in mental health treatment options.

When attitudinal barriers are present in presenting families, they must be explored and addressed. Attitudinal barriers are best addressed at the point of contact with a service. When parents are seeking information about group therapy, it is important to elucidate concerns held by parents or children. These concerns may be the difference between accepting or declining treatment. Concerns parents hold may not be supported by fact, so it is important to provide corrective information. Parents' perceptions about group CBT can be addressed prior to treatment participation. The view that group therapy might not be effective or that children may acquire other children's symptoms can be corrected. Parents concern about their child's discomfort in therapy can be attenuated by informing them that it is normal for children to be anxious about attending the group. The anxiety can be likened to the anxiety children feel when they start a new year at school and are adjusting to a new teacher and peer formation. Although more discomfort and embarrassment may be felt in a group CBT situation, the anxiety is not harmful to children, dissipates over time, and the benefits of the group far outweigh the negatives. Children frequently come to enjoy the group environment for the peer interaction and light-hearted moments that group members provide for one another. Parent and child myths about group therapy can be dispelled and potential positive aspects could be emphasised. Positive parent attitudes towards a treatment

approach can significantly enhance child treatment participation and retention (Ewalt, Cohen, & Harmatz, 1972; Pekarik & Stephenson, 1988; Singh, Janes, & Schechtman, 1982; Viale-Val, Rosenthal, Curtiss, & Marohn, 1984). Preparation for treatment positively affects parental cognitions. Day and Reznikoff (1980) used a videotape preparation procedure to educate parents and children attending a child psychiatric clinic. The videotape increased correct expectations for treatment, which was related to fewer appointment cancellations and retention in treatment. Interventions used to promote treatment participation or engagement have included an orientation letter, family orientation meeting, telephone contact, brochure, and preparation video (Holmes & Urie, 1975; Kourany et al., 1990; Lown & Britton, 1991; McKay, McCadam, & Gonzales, 1996; Shuman & Shapiro, 2002; Wenning & King, 1995)

According to parents' reports, it was primarily the children who decided not to participate in treatment. It is important to elucidate children's concerns from parents, and to provide corrective information that parents can communicate to children. In circumstances where children are ambivalent about attending therapy, children and parents should be informed that it is acceptable to attend one or two sessions to develop a sense of the experience, and that withdrawing is acceptable. This may provide children that catastrophise the group CBT experience with the opportunity to have maladaptive assumptions disconfirmed, and thus promote participation and retention.

Alarmingly, 56% of the children in this study did not receive any treatment for OCD symptomatology following initial parental telephone interest in the group CBT programme. Families that decline participation in treatment are at risk of not pursuing further help for their child. Attitudinal and practical barriers frequently prevent children from accessing necessary treatment, and unmet mental health need is a major issue in mental health (Senate Select Committee on Mental Health, 2006; U. S. Congress Office of Technology Assessment, 1986, 1991). It is important to encourage help-seeking and to provide adequate referral advice and information if families do not choose to utilise a particular mode of treatment offered by a service. OCD can be a persistent and disabling condition when left untreated (Wewertzer et al. 2001). The study indicates that further research exploring barriers to alternative treatment modalities, such as medication and individual CBT, may also benefit from exploration.

Chapter Summary

This is the first study to examine barriers to help-seeking for children with OCD. Thematic analysis methodology was used to examine parental responses to reasons for non-participation in a group CBT programme. Non-participation was predicted by attitudinal and practical barriers. The most common attitudinal barriers comprised child embarrassment about symptoms and child belief that the therapy would not be effective in alleviating symptoms. Scheduling difficulties or a lack of time comprised the most common practical barrier encountered by families. Perceptions of group CBT revealed that parents viewed it as a treatment modality that offered both benefits and disadvantages compared to individual therapy. Some of the disadvantages cited by parents are not supported by evidence – such as the suggested decreased effectiveness and increased risk relative to individual therapy. Knowledge of barriers and perceptions of treatment can inform initiatives to promote participation. Reinforcing positive perceptions, addressing practical barriers, and providing information that accurately addresses attitudinal barriers and negative perceptions is an important future step to encouraging treatment participation.

Chapter 7

Conclusions

OCD in childhood can be a difficult and debilitating condition. The research reviewed in this thesis discussed the significant interference in functioning across the school, social, and family domains that often accompanies the disorder. It is a distressing and time-consuming problem, and is associated with significant adult morbidity if untreated.

The programme of research described in this thesis used a mixed-methodological approach to explore issues pertinent to paediatric OCD treatment. Contributions were made to knowledge of evidence-based treatments and the barriers that impede treatment participation in group CBT. Key results, fundamental issues, and areas for future research, are highlighted in this chapter.

Restatement of Results

Study 1
Meta-Analysis of Randomised, Controlled Treatment Trials for Paediatric Obsessive-Compulsive Disorder

This research contributed to the understanding of efficacious treatments for paediatric OCD. It was found that of the numerous treatments available for paediatric OCD, only CBT and pharmacotherapy (fluvoxamine, fluoxetine, paroxetine, sertraline, clomipramine) have been examined using randomised, controlled methodology. RCTs are the gold standard of scientific evidence, because they control for all factors that

affect treatment response. Given appropriate statistical power and overall quality in methodology, these trials can illuminate the clinical efficacy of a treatment.

Although individual studies provide important information about treatment effect, the reliability of findings is enhanced when consistent findings are obtained across treatment trials. One method to examine the magnitude and reliability of a treatment effect is to pool results from multiple trials in a procedure called meta-analysis. Meta-analysis derives the "average" effect of a treatment across multiple studies. The results have greater generalisability than results from individual trials, because numerous samples with variability in patient, therapist, treatment site, and geographical characteristics are included. Meta-analysis standardises treatment effect, allowing a common metric with which to compare effectiveness among treatments.

Including only RCTs in a meta-analysis offers several advantages. Methodological quality of the included studies is higher, leading to less bias in outcomes. Greater control has been exerted over confounding factors, so there is more confidence that the 'treatment effect' is due to the actual treatment. This reduced bias raises the validity of indirect comparisons made among treatments based on effect sizes. Effect sizes are spuriously inflated in non-controlled trials, as the variance in outcome attributable to non-specific treatment factors (e.g., regression to the mean, attention from a therapist, expectations for change) is not partialled out in the computation of effect size. Pooling of these effect sizes reproduces this anomaly. Limiting inclusion of studies to RCTs in a meta-analysis results in more accurate and valid estimations of the effect of a treatment on a particular outcome.

Several key findings emerged in the meta-analytic study. Synonymous with practice guidelines, pharmacotherapy (clomipramine, sertraline, paroxetine, fluoxetine, fluvoxamine) and CBT were the only two treatments supported by empirical evidence. The overall effect of CBT on OCD symptoms was large (d = 1.45, 95% CI = 0.68 to 2.22) and pharmacotherapy had a medium treatment effect (d = 0.48, 95% CI = 0.36 to 0.61). Consistent with the POTS (2004) comparison of CBT and pharmacotherapy, CBT showed a higher effect size. There was some heterogeneity in the CBT meta-analysis, most likely related to methodological differences between studies. Some studies used wait-list controls whereas others used placebo controls. When subgroup analyses were

performed on the wait-list and placebo-controlled trials, both analyses replicated the earlier significant and large treatment effect, though the effect was attenuated among placebo-controlled trials. CBT still showed a larger effect than medication. The confidence interval surrounding the pooled effect was large for CBT and narrow for pharmacotherapy, suggested that pharmacotherapy predicts treatment outcome with greater precision and reliability than CBT. There appeared to be more heterogeneity in CBT trials and sources need to be explored in future research. Moderator variable reporting rates in the extant literature were described, and a recommendation for future RCTs to include descriptive statistics that facilitate extraction and statistical analysis of moderator variables was made. The findings provided important insight into the composition of the pharmacotherapy effect, suggesting it comprises specific and non-specific treatment effects.

The meta-analytic study has advanced knowledge of paediatric OCD in psychiatry and psychology. Findings provide a clear contribution to knowledge of evidence-based treatments, composition of treatment effect, and moderator variable identification. Current treatment practice guidelines for paediatric OCD are based on extrapolations from the adult OCD treatment literature. These treatment guidelines are currently being revised and republication is expected in the near future. The programme of research described in this thesis capitalises on the acute interest and demand for evidence-based treatments for these children. No equivalent meta-analysis has previously been conducted.

Study 2

A Randomised, Placebo-Controlled Trial of Cognitive-Behavioural Group Therapy for Paediatric Obsessive-Compulsive Disorder

The meta-analysis in Study 1 demonstrated that CBT is an evidence-based treatment for paediatric OCD which has the capacity to deliver strong treatment results. Although CBT in the paediatric population is well-researched, studies have primarily comprised open, uncontrolled trials of the standard CBT package. This standard package involves weekly, one-hour, individual sessions delivered across 8 to 14 weeks.

Innovations in treatment delivery have been appearing in the treatment literature, with bibliotherapy, intensive therapy, and group treatment comprising ready examples. The potential benefits of these approaches have been extolled and each has the common goal of increasing treatment accessibility. Child clientele with OCD can be a challenging population to treat. Family schedules, school hours, and extracurricular commitments such as sports practice, restrict available time for therapy attendance. Moreover, the amount of clinicians adequately trained in the use of CBT for paediatric OCD is less than sufficient. The value of having other treatment delivery formats available besides the standard package is significant.

Group treatment for adults with OCD is a successful and evidence-based treatment with many conferrable benefits. Benefits include savings in time for therapists and costs for clients, and numerous non-specific treatment factors unique to the group milieu. Only two controlled studies of group CBT exist in the paediatric literature. One, comparing group CBT to a wait-list and individual therapy, and another, that randomly assigned 10 subjects to group CBT or a placebo control condition. The most superior method for establishing treatment efficacy of a non-validated treatment is to compare the treatment to a credible placebo control. Although wait-list control conditions control for many threats to validity and non-specific factors, there are some non-specific factors that they do not rule out. These include expectations for treatment change, hope, and cognitive justification of effort exerted, as examples. These are all part of the placebo response which is separate to the treatment response. There was a clear deficit in the literature of randomised, placebo-controlled trials for group CBT. This methodology is a prerequisite for establishing treatment efficacy.

Study 2 of this thesis was the largest placebo-controlled trial of group CBT for paediatric OCD that has been conducted to date. Twenty-two children were randomly assigned to group CBT and a credible group placebo control. The placebo condition was employed to ensure that nonspecific treatment factors, such as time, contact with a therapist, attention, expectations for improvement, regression to the mean, peer group interaction, symptom normalisation, destigmatisation, and other nonspecific and confounding variables, were kept constant between conditions. Any differences in improvement between the groups would therefore be attributable to specific treatment

factors. Results showed that children that received group CBT demonstrated significantly greater improvement in OCD severity at the end of therapy and 1-month follow-up compared to children that received group AMT. Group CBT demonstrated a large treatment effect of 1.14 at posttreatment and 1.20 at 1-month follow-up on the primary OCD outcome measure. Clinical significance analysis demonstrated meaningful clinical outcomes. Using Jacobson and Truax's criteria, 73% of the CBT-treated sample were recovered or improved at posttreatment. This increased to 91% at follow-up. The majority of children that received AMT were classified as "unchanged" at posttreatment and follow-up. The results of the study support the efficacy of group CBT beyond placebo or non-specific treatment factors. Results showed that child psychosocial functioning improved with the CBT treatment, but not the placebo treatment. This study has made a valuable and original contribution to the paediatric OCD field.

Study 3

Group Cognitive-Behavioural Therapy for Paediatric Obsessive-Compulsive Disorder: Perceptions and Perceived Barriers to Treatment

The third study was borne from observations made while conducting Study 2. A high rate of families deemed eligible at screening (approximately 39%) declined participation in the clinical trial. This was concerning because; (1) OCD can lead to significant impairment in a child's life; (2) untreated OCD increases risk for psychological and social problems in adulthood; (3) parents were contacting the trial *in order* to receive help for their child. If families declined participation, why did they decline? And did they receive help elsewhere? And; (4) group CBT is envisaged as a potential means of promoting treatment accessibility due to decreased wait-list times and treatment of multiple individuals simultaneously. For it to perform this function in community clinics, it needs to be an acceptable treatment to families.

The final study of this thesis explored families' reasons for non-participation in the treatment program. Examination of the literature revealed that no previous study known to myself had investigated barriers to treatment among children with OCD. A qualitative methodological approach was adopted due to the exploratory nature of the

research. Families were interviewed regarding reasons for non-participation, and thoughts about the relative merits and disadvantages of group and individual therapy were elicited. Data were analysed using thematic analysis. The study addressed several important questions, such as: Was non-participation a result of practical barriers? Was non-participation due to attitudinal barriers? How is group CBT perceived? What do parents view as the positive aspects of group CBT? What disadvantages or concerns do parents hold? Would they prefer individual or group therapy for their child? Was non-participation attributable to the treatment being part of a research trial? Following non-participation, did these children receive help? The findings were numerous and informative.

Nine parents consented to be interviewed. The mean age of parents' children was 15, ranging between 8 and 18 years. The interviews took place an average 16 months after non-participation (range = 10 to 20 months). Attitudinal barriers impeded access to treatment in 67% of cases. Most commonly, children thought that therapy would not work, or they were too embarrassed about their difficulties to attend. Practical barriers impeded access for 56% of families. Lack of time or scheduling difficulties was the most common practical barrier cited. Parents had many positive perceptions of group therapy. Emergent themes included its unique capacity to destigmatise symptoms and reduce alienation, to provide peer support for children and parents, to help children deal with comorbid social and separation anxiety, and increased acceptability to children as it may feel "less like therapy". Parents raised concerns about the treatment, which were categorised into four emergent themes. They worried that group CBT could make their children worse, through acquiring other children's worries and compulsions or by negatively influencing the child's self-concept. They saw disadvantages in the structure of group therapy, in terms of being able to devote time to each child's symptoms and the time-limited nature of the programme. They tended to believe that it would be less effective than individual therapy, as it might not adequately address children's symptoms, children could possibly 'get away' with not participating adequately, and group CBT might not be able to deal adequately with the heterogeneity in symptom presentation. They perceived that children would experience more discomfort in the group in the form of anxiety, embarrassment, and fear. Parents had mixed preferences

when asked to nominate whether they would prefer individual or group therapy for their child, and no one modality was favored. A concerning finding was that 56% of these children had not received help for their difficulties. The remaining children had received individual therapy with a psychologist, an SSRI medication, or their combination.

The findings of this exploratory study have important implications for addressing the barriers that lead to non-participation. Previous clinical literature has articulated that children with OCD may be more reluctant to seek help than children with other difficulties, due to heightened shame, stigma, and embarrassment. Despite the availability of evidence-based treatments, it may be that a significant proportion of children with clinical OCD do not access them.

Key Issues

From Evidence-Based Treatment to Evidence-Based Practice

The health and medical fields strongly advocate evidence-based practice. Evidence-based practice is the integration of best research evidence with clinical practice in order to raise outcomes for patients (APA Task Force on Evidence Based Practice, 2006). The discipline of psychology actively adheres to this approach, training clinicians in the 'scientist-practitioner model' and encouraging constituents to adopt a dual clinician-researcher role. Evidence-based treatments are a core feature within the domain of evidence-based practice.

Evidence-based treatments are developed and evaluated to inform practice, yet identification does not necessarily lead to automatic integration into practice. Rebate systems may only allow a fixed number of sessions, usually fewer than the number in standardised treatment trials. Clinics and practitioners may have preferred methods for treating problems, lack sufficient knowledge regarding treatment implementation, or may not adhere to the treatment program, thereby reduce the integrity of the treatment.

When laxness in implementation is present, the specific components of a treatment may be "diluted". In the context of group CBT, it is unclear what effect this might have on patient outcomes, except to speculate that outcome is likely to be

attenuated. An important line of research involves establishing the size of the treatment effect when the program is implemented in community settings. This would allow appropriate treatment benchmarking. Incorporation of measures of treatment adherence in studies would provide information on the relationship between treatment integrity and outcome.

Future treatment literature could enhance treatment integrity by illuminating the treatment process. Efficacy publications are written to present scientific evidence of treatment efficacy or non-efficacy. They rarely provide sufficient information to elucidate the process and programme of treatment. Deficient information about a treatment is problematic if a high level of technical skill and clinician confidence is required to disseminate treatment, and when the modality of the treatment is more challenging than competing modalities. Clinicians are often hesitant to run group therapy, and perhaps even more reluctant to run a group with young children or adolescents (Leader, 1991). Reluctance to implement a therapy can arise from an informed decision based on a clinician's self-perceived knowledge of and skill in a treatment (Markus & Abernethy, 2001). Process and content literature may remedy these deficiencies. To date, there is no published treatment manual available for group CBT, and only one individual CBT treatment manual, despite present evidence that these are efficacious and specific treatments. This is likely to impede the integration of evidence-based treatments into clinical practice. More media to illuminate the process of treatment, such as reports with clinical vignettes, treatment manuals, treatment workshops, and guides that troubleshoot challenging group therapy scenarios, is recommended. Greater accessibility to this information could increase uptake of the treatment in community clinical settings, to confer benefit to the intended population. The above recommendations are consistent with the evidence-based practice model.

Treatment Accessibility

Developments in psychiatry and clinical psychology, and increased societal demands for accountability, have raised emphasis on identifying specific treatments for specific disorders. This is primarily achieved through efficacy studies, which determine

whether a treatment has a specific effect upon a particular outcome. This thesis has provided evidence that group CBT is more effective than placebo in treating paediatric OCD. The ultimate reason for evidence-based treatment research is to inform the quality and outcomes of evidence-based practice. However, what if an efficacious treatment has been identified, is integrated in clinical settings, but the targeted population *fails to access it* or *clinicians do not implement it*? The inherent value of a treatment is in its real-world success.

The group therapy model for paediatric OCD is associated with organizational challenges that may impede clinicians' use of this model. A large population base is required to assemble groups in a timely manner, prevent waitlist attrition, and arrange developmentally homogenous groups. Group leaders may need to exert considerable effort organizing and assembling groups, which may not be possible in a busy practice. The high rate of non-participation despite willingness of some families to consider the treatment modality and undertake screening may ultimately lead to time inefficiency and administrative penalities. Some practitioners may decide that the closed-ended model of treatment does not suit their clinical practice. These are important and significant barriers to implementation that would need to be considered prior to application of the treatment in community clinical settings.

Lack of uptake of a treatment by the intended population is an important treatment accessibility issue. Many children in the community with diagnosable clinical problems do not receive help (U.S. Congress Office of Technology Assessment, 1986, 1991). Families are likely to encounter more problems accessing services due to scheduling conflicts, financial impediments, competing activities, and child care arrangements. Clinical reports suggest that children with OCD may be more vulnerable to failing to access care due to the stigma, secrecy, shame, and embarrassment that accompanies OCD. Despite many parents initiating contact about the group therapy program and meeting preliminary eligibility criteria, a significant proportion declined participation. When followed up an average year or so later many of these children had not received professional help.

It is necessary to explore the reasons for non-service utilisation and to generate strategies that counter this phenomenon. No research currently exists on the barriers that

inhibit utilisation of pharmacological treatment for OCD, or parents' decision-making processes when seeking help for their children. An understanding of treatment barriers is essential to promoting accessibility to treatment. Identification of evidence-based treatments must be supplemented by dissemination to service settings and strategies to improve treatment accessibility, in order to confer benefit to as many children as possible.

Recommendations for Future Research

Placebo-Controlled CBT Trials

More placebo-controlled trials of CBT are required to determine the composition of the CBT treatment effect. Non-specific factors such as expectations for change and placebo effects are not controlled for in wait-list controlled trials, which can inflate the apparent effectiveness of a treatment. For discourse to claim that a treatment truly has a specific treatment effect, evidence via placebo-controlled trials is required.

Effectiveness Trials

This research provided evidence of a specific treatment effect of group CBT for paediatric OCD. Group CBT appears to be more effective than placebo. This finding is consistent with previous trials of group CBT among children and research with adults. Applicability of this treatment to more heterogeneous samples is required to evaluate the generalisability of this finding. As the group CBT trial was an efficacy study, exclusion criteria were employed. It is unclear whether the results would generalise to individuals outside those included in the study. Most individual CBT trials have likewise included strict inclusion criteria. Effectiveness trials of these treatment modalities are required.

Longer Follow-Ups

Follow-ups in the paediatric OCD treatment literature are scarce. Although they can be challenging to conduct, they are essential in order to examine the durability of treatment effects. Longer follow-ups are required for pharmacotherapy and CBT studies.

Moderator Variables

Two controlled group CBT studies, and one pilot controlled study, have supported the efficacy of group CBT. Future research should explore the factors that positively and negatively affect treatment response. For instance, it has been suggested that children with obsessions only, without overt compulsions, or who have particularly bizarre or sexually referent symptoms, may not benefit as much from group therapy compared to other children with OCD. Comorbidity, such as ADHD or oppositional defiant disorder, could conceivably affect treatment outcome by impairing information processing and treatment compliance. Depression may affect concentration and motivation, and social anxiety may impair the ability to discuss symptoms, process information, and seek advice from therapists and peers. Patient characteristics, such as duration of symptomatology and age could affect treatment outcome in CBT. Factors that moderate treatment response need to be more clearly understood.

Treatment Barriers

Barriers to treatment can significantly impede access to treatment. Some of the barriers to group CBT use identified in Study 3 were attitudinal, and represent views which may be modifiable. For example, parents and children had doubts about the efficacy of group CBT, with some parents believing that it may even make their child worse. Group CBT is an effective treatment modality, as demonstrated in Study 2, and there is evidence to indicate that treatment effects are durable up to three years (Barrett et al., 2005). It is unclear what barriers affect participation in pharmacotherapy treatment, and what strategies are effective in ameliorating barriers for families. More

research investigating treatment barriers in paediatric OCD treatment is required and strategies that seek to ameliorate barriers require evaluation and dissemination.

Combination Studies

There are two-evidence based treatments for paediatric OCD – CBT and pharmacotherapy. Each modality postulates a different theoretical model of maintenance and mechanism of change. CBT using ERP assumes that improvement results from physiological habituation to anxiety-provoking stimuli, correction of unhelpful thinking styles, removal of negative reinforcement associated with performance of a compulsion, and removal of family accommodation of symptoms. The theoretical model underlying pharmacotherapy posits that alleviation in symptoms occurs following restoration of normal functioning of the serotonergic neurotransmitter system. Affecting change across multiple mechanisms is likely to produce greater improvement in the individual, (assuming that multiple mechanisms maintain pathology). The POTS trial compared combination treatment to control, pharmacotherapy, and CBT, and found that those that were administered combination therapy showed significantly more improvement in symptomatology compared to children in all other conditions. Approximately five other combination reports have been published, examining CBT with pharmacotherapy or multiple pharmacotherapies. More controlled studies incorporating comparisons with monotherapies are needed.

Closing Words

Let us return for a moment to Janet's 1903 description of a child with OCD: "No reassuring satisfies: the patient must be forever verifying his honesty, cleanliness, sanity, perceptions, and what he did last", and let me ask you, *why forever*? Evidence-based treatments proven to significantly reduce OCD symptomatology have been identified in clinical trials. The programme of research described in this thesis has broadened the scope of paediatric OCD treatment research and enhanced knowledge of the efficacy of these treatments. The significant contributions afforded from this research represent a

small piece of the overall puzzle of treating paediatric OCD. Significant gains in the field of psychology and psychiatry have made it possible to improve the lives of many children and future developments in research and clinical practice will only advance current efforts. As researchers, clinicians, and consumers of treatment, let us dispel with the entity 'forever', and continue our united objective to improve the lives of these children.

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Appendixes

Appendix A

Credibility/Expectancy Questionnaire

THERAPY EVALUATION FORM – PARENT

We would like you to indicate how much you believe, *right now*, that the therapy your child is receiving will help to reduce your child's anxiety. Belief usually has two aspects to it: (1) What one *thinks* will happen and (2) what one *feels* will happen. Sometimes these are similar; sometimes these are different. Please answer the questions below. In the first set, answer in terms of what you *think*. In the second set answer in terms of what you really and truly *feel*. Please give honest answers.

SET I

1. At this point, how logical does the therapy offered to your child seem?

1 2 3 4 5 6 7 8 9
not at all logical somewhat logical very logical

2. At this point, how successful do you think this treatment will be in reducing your child's symptoms?

1 2 3 4 5 6 7 8 9
not at all useful somewhat useful very useful

3. How confident would you be in recommending this treatment to a friend who experiences similar problems?

1 2 3 4 5 6 7 8 9
not at all confident somewhat confident very confident

4. By the end of the therapy period, how much improvement in your child's symptoms do you think will occur?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

SET II

For this set, close your eyes for a few moments, and try to identify what you really *feel* about the therapy and its likely success for your child. Then answer the following questions.

1. At this point, how much do you really *feel* that therapy will help your child to reduce his/her symptoms?

1 2 3 4 5 6 7 8 9
not at all somewhat very much

2. By the end of the therapy period, how much improvement in your child's symptoms do you really *feel* will occur?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Appendix B

Group CBT Programme: Session-by-Session Outline

Session	Content
1	• Psychoeducation • Introduction to OCD • Establishing a neurobehavioural framework • Externalising OCD • Goals of therapy • Introduce the tool-kit
2	• Begin mapping OCD • Introduce the fear thermometer • Begin generating a fear thermometer hierarchy

3	• The 'talking back strategies' (introduction and practice)
	  • Unhelpful self-talk
	  • Practicing self-talk that is on 'your' side
	  • Talking back to OCD
	  • The four-statement tool
	• More fear thermometer hierarchy work

4	• More fear thermometer hierarchy work • Choose an ERP target and in-session practice (one for each child)
5	• Update hierarchy (e.g., add rituals not on list, refine or revise SUDS ratings) • OCD and family involvement in rituals • Adding rituals family members do to the hierarchy • In-session ERP
6	• Update hierarchy • In-session ERP • Toolkit review
7	• Families and OCD • Map OCD territory with families • Update the hierarchy • Toolkit review for family • Review of group member progress (positives) • Outlining positive parental roles
8	• Update hierarchy • In-session ERP
9	• Update hierarchy • In-session ERP
10	• Update hierarchy

	• In-session ERP
11	• Update hierarchy • In-session ERP
12	• Review of toolkit • Relapse prevention activities • Presentation of certificates and celebration party

Group AMT Programme: Session-by-Session Outline

Session	Content
1	• Introduction • Nature of anxiety • Relationship between stress and anxiety • Overview of anxiety management principles and techniques
2	• Introduction to relaxation • Body harmony • Body awareness • One's own space • Progressive muscle relaxation
3	• Body clues • Recognising body clues with focus on anxious body clues • Brainstorm of anxiety-provoking situations • Progressive muscle relaxation • Brief deep breathing exercise
4	• Introduction to feelings • Discussion about feelings, jellybean feeling game • Feeling worksheet activities
5	• Feelings review • Dr. Calm me Down • Identifying pleasant events
6	• Dicussion about breathing • Breathing activities (breath control game, breath flow game) • Deep breathing
7	• Family activity (case study, identify ways to decrease stress and anxiety) • Review of tool-kit • Jellybean feeling game • Parent interview (child interviews parent about stressful/anxious situation) • Pass-the-parcel review game (quiz questions and prizes in parcel)
8	• Introduction to problem-solving • Problem-solving practice • Visualisation
9	• Progressive muscle relaxation • Introduction to imagery and visualisation • Problem-solving practice
10	• Progressive muscle relaxation • Introduction to imagery and visualisation • Problem-solving practice

11	• Progressive muscle relaxation • Goal-setting • Mountain of dreams game
12	• Ways To Calm Yourself Down activity (programme review) • Visualisation acitivity • Scenario (case study, parents and child work together to problem-solve) • Pass-the-parcel review game • Presentation of certificates and celebration party

Appendix C

Telephone Screening Questionnaire

Childhood OCD Research

INITIAL TELEPHONE SCREENING QUESTIONNAIRE

Adult's Name _____ Date of Inquiry _____

Child Gender M F Date of Contact _____

Child/Adolescent's Name _____

Date of Birth _____ Age _____ yrs _____ mths

Address _____

_____

Phone (Home) _____ (Work) _____

Best Times to Call _____ Leave Message □ Yes □ No

Referral Source_____

Interviewer's Name_____

Let me briefly tell you about our study. This study is about the treatment of childhood OCD. Our goal is to learn more about OCD and treatments for children who have OCD. To do this we are seeking volunteers to participate in a research program. This study has three phases: an assessment phase, a 12-week therapy phase, and a follow-up one month later. We are evaluating two different therapy programs. They are both unique because therapy is administered in a group format, which means that children meet with other children that have similar types of difficulties. Because we are evaluating these therapies we cannot guarantee improvement.

1. Please describe your child's symptoms

_____

_____

_____

2. How long has she/he been experiencing these symptoms?

_____

3. About how much time each day is your child preoccupied with these thoughts and rituals? (prompt: would you say it is more or less than an hour?)

_____

4. Do the symptoms cause your child a lot of distress?

_____

_____

5. Do the symptoms get in the way of school?

_____

_____

6. Do the symptoms get in the way of family activities?

_____

_____

7. Do the symptoms interfere with friendships or peer relationships?

_____

8. How would you describe his/her mood? (depressed, anxious)?

_____

8a. Would you say your child is depressed? □ Yes □ No

If yes, which is worse - □ OCD or □ Depression

9. Has your child ever received a formal diagnosis of OCD?

□ Yes □ No

9a. If yes, by whom? _____

9b. Is yes, how long ago? _____

10. Has your child ever experienced other problems, besides OCD?

□ Yes □ No

If yes, what?

_____

_____

11. Would you say that OCD is the problem that is causing the most trouble?

□ Yes □ No

12. Is your child currently suicidal? (Some children can feel so sad or bad that they may have thoughts about doing something really bad, like hurting themselves)

□ Yes □ No

13. Has your child been suicidal in the past (thoughts or actions)?

□ Yes □ No

13a. If yes, how old were they then? _____

OCD TREATMENT HISTORY

14. Is your child currently receiving, or has she/he ever received, treatment for OCD?

Past □ Yes □ No

Current □ Yes □ No

14a. If yes, what type of treatment was it?

□ CBT

□ Medication

□ Supportive

□ Other – Describe _____

14b. If yes, how long was she/he in treatment for? _____

14c. If yes, how often did she/he attend treatment sessions? _____

14d. If yes, who or what agency provided treatment? _____

_____

14e. If CBT: in treatment did your child make a step plan of his/her symptoms and then learn to control them one by one, beginning with the easiest?

□ Yes □ No

14f. If yes, was this treatment successful? □ Yes □ No

14g. If not, why? _____

15. Is your child currently taking, or have they ever taken, any medication for OCD?

□ Yes □ No

15a. If yes, what? _____

15b. If yes, what dosage? _____

15c. If yes, for how long? _____

15d. If yes, have there been any undesirable side effects? □ Yes □ No

Describe _____

15e. Has the dosage been constant for 3 months or longer?

□ Yes □ No

16. Does your child have any medical problems that might make it difficult to be in a treatment program for OCD? □ Yes □ No

Describe _____

17. Has your child ever received a diagnosis of:

	Past	Current
Schizophrenia	□ Yes □ No	□ Yes □ No
Tourette's disorder	□ Yes □ No	□ Yes □ No
A substance-related disorder	□ Yes □ No	□ Yes □ No
An intellectual disability	□ Yes □ No	□ Yes □ No
An autistic spectrum disorder such as autism or Asperger's syndrome?	□ Yes □ No	□ Yes □ No

18. Do you have any concerns regarding participation in this study?

_____

_____

STUDY CRITERIA

Inclusion

• Between 7 and 17 years	YES	NO
• Primary *DSM-IV* diagnosis of OCD	YES	NO
• No medication OR medication stabilisation for 3 months	YES	NO
• Willing to undergo psychological treatmSent	YES	NO
• At least one parent able to attend weekly sessions	YES	NO

Exclusion

• Concurrent therapy for OCD (non-stabilised medication or psychotherapy)	YES	NO
• Current suicide risk	YES	NO
• *DSM-IV* diagnosis of:		
Schizophrenia	YES	NO
Tourette's disorder	YES	NO
Substance-related disorders	YES	NO
Intellectual disability	YES	NO
Delirium, dementia, and amnestic and other cognitive disorders	YES	NO

Ineligible – if circled 'no' to any inclusion criteria items

Ineligible - if circled 'yes' to any exclusion criteria items (may be wait-listed if medication non-stabilised)

Outcome of Screening

☐ Appears eligible for the study and will be contacted for assessment.

☐ Eligibility questionable. Consult with clinician/supervisor and call back.

☐ Not eligible due to _____

☐ Not interested in study because _____

☐ Repeated attempts to contact without success

Appendix D

Parent Information Sheet: Study 2

CURTIN OCD PEDIATRIC STUDY
SCHOOL OF PSYCHOLOGY

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UNIVERSITY OF TECHNOLOGY

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Information Sheet for Parents

Project Coordinator: **Hunna Watson (Ph. 9266 3523)**

Project Supervisor: **Dr. Clare Rees (Ph. 9266 3039)**

Study Aim

You have been invited to take part in a research program designed to evaluate ways of treating childhood obsessive-compulsive disorder. This research will improve current knowledge of effective therapies for childhood obsessive-compulsive disorder, which could potentially benefit many children in the future.

Procedures Involved

Participating families will be invited to attend a separate parent and child interview at Curtin University Psychology Clinic and to fill in some questionnaires prior to commencement of therapy. Children will then be randomly allocated into one of the following therapies:

1.) group cognitive-behavioural therapy; or
2.) group anxiety management training

Each therapy program will last for three months. Participants will be invited to attend weekly 1 ½ hour therapy sessions for 12 weeks at a cost of $15 per session. At week 12 parents will be interviewed again and children and parents will fill in the same questionnaires that they filled out before therapy. The questionnaires will be readministered at the one-month follow-up. The purpose of the interview and questionnaires is to determine the effectiveness of the therapies. You may also be contacted sometime in the future to conduct further follow-up questionnaires.

Benefits

Children in the study may show improvements in their symptoms, although this is not guaranteed. However, any children that still have obsessive-compulsive disorder at the end of the 16 weeks will be offered further therapy. This therapy will consist of 12 weekly group sessions.

Risks

Some children may become upset or bothered when filling in questionnaires. This state is likely to be brief and will be handled appropriately by the clinician administering the questionnaires. Some aspects of the therapy may cause children to feel distressed while learning to deal with obsessive-compulsive disorder. However, the ultimate aim of the therapies is to reduce the distress experienced by the child and the family.

Rights of Participants

Participants may withdraw from the research at any stage. Withdrawal will not affect the rights of the participants or the responsibilities of the researcher.

Confidentiality

All records will be kept confidential. Number codes in the place of names will be used to identify participants on questionnaire forms. Name-number codes will be stored separately in a computer file accessible only to the researcher. Published or

unpublished data from the study will not contain any identifying details. Anonymity of families cannot be guaranteed, as all therapy offered as a part of this research is group therapy. However, all participants will be reminded that privacy of others' information is important. Sessions are videotaped for supervision and quality control purposes. The videotapes will only be accessible to program staff and will be wiped at the end of the project.

Further Information

You are encouraged to discuss any concerns about the research with the Project Coordinator or the Project Supervisor. They can be contacted on the numbers provided above. Alternatively, if you wish to speak to someone not directly involved with the research (for example, about the information you have received, the conduct of the study, your rights as a participant, or to lodge a complaint) you may contact the Curtin University Human Research Ethics Committee Secretariat on 9266 2784.

Thank you for your interest in this research and the well-being of young people.

Hunna Watson
Project Coordinator

Adolescent Information Sheet: Study 2

CURTIN OCD PEDIATRIC STUDY
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Participant Information Sheet

What is this research about?

Some young people experience repeated, annoying thoughts that make them feel upset or worried. To get rid of this worry they may have to do something in a certain way (e.g., check over and over to see if the door is locked, wash hands a lot to get rid of germs, touch objects a certain way). These thoughts and actions can make teenagers feel unhappy and stressed. They can also take up a lot of time that could be spent doing things that are more fun.

You have been invited to join a research program that seeks to help young people get rid of these annoying thoughts and actions. This research may help many more kids in the future.

Okay, now I know what this project is about, what would my family and I be doing?

Families that accept to take part in this project will be asked to come to an interview at Curtin University and fill in some forms at home. You will then be randomly allocated to one of two programs. You will meet with other teenagers in a group for 1 ½ hours per week for 12 weeks.

Hmm...what should I do?

Whether or not you would like to join this project is up to you. If you do join, and later change your mind and don't want to participate anymore, that is okay. The results of this project may be published, however, no names or identifying details will be included.

If you have any questions about this project please phone the coordinator, Hunna Watson, on 9266 3523.

_____
Hunna Watson (Project Coordinator)

Child Information Sheet: Study 2

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CRICOS Provider Code 00301J

Child Information Sheet

Some children have nasty, yucky thoughts that come into their mind *over* and *over* and make them feel sad or afraid. Examples of these thoughts include worrying about catching germs or a disease, having to do things in a special way, or worrying that something bad might happen to them or someone else. They may try to get rid of these thoughts or make things better by doing the same thing *over* and *over* again, like counting to a special number, washing their hands, touching objects in a certain order, or checking to see if the door is locked.

I am inviting some children to come and join a program that aims to help children get rid of these nasty thoughts so that they can feel happier in their lives. It will involve meeting with a group of other children and talking about ways to help get rid of these thoughts. The group will meet once a week for 12 weeks. If you decide to join, but later change your mind and do not want to take part, that is okay.

If you would like to know more about this program you can talk to your parents or contact Hunna Watson, the project coordinator, on 9266 3523.

Parent Consent Form: Study 2

CURTIN OCD PEDIATRIC STUDY
SCHOOL OF PSYCHOLOGY

Participant Consent Form - Parents

I, _____

agree to the procedures of this research as outlined to me. I have been given the opportunity to ask questions about this research and to discuss my concerns.

I acknowledge that the nature and purpose of this research, as well as the possible benefits and risks, have been explained to my satisfaction.

I have read and received a copy of the Participant Information Sheet.

I understand that my family's involvement in this research is voluntary and that I may withdraw from the research at any stage without affecting the rights of my family.

I understand that my family will not be identified in any published material.

_____ _____
Signature Date

Adolescent Consent Form: Study 2

CURTIN OCD PEDIATRIC STUDY
SCHOOL OF PSYCHOLOGY

Participant Consent Form – Adolescent

I, _____

agree to take part in this project, as outlined to me. I have been given the opportunity to ask questions about this research and to discuss my concerns.

I have read and received a copy of the Participant Information Sheet.

I understand that my participation is voluntary and that I may withdraw from the research at any stage.

I understand that my family will not be identified in any published material.

_____ _____
Signature Date

Appendix E

Parent Information Sheet: Study 3

CURTIN OCD PEDIATRIC STUDY
SCHOOL OF PSYCHOLOGY

Curtin
UNIVERSITY OF TECHNOLOGY

GPO Box U1987
Western Australia 6845
TELEPHONE +61 8 9266 7279/7984
FACSIMILE +61 8 9266 2464
CRICOS Provider Code 00301J

Information Sheet for Parents

Project Coordinator: **Hunna Watson (Ph. 9266 3523)**

Project Supervisor: **Dr. Clare Rees (Ph. 9266 3039)**

Study Aim
This study seeks to understand the views parents and children hold about group therapy for children with obsessive-compulsive disorder. A further aim is to understand the types of barriers that can make it difficult, or prevent families from taking part in a group therapy program. This information will help service providers understand and address these barriers, in order to encourage children to gain help. The information will also help to decide whether a group therapy program is a feasible therapy to have in the community.

Procedures Involved
One parent and child from participating families will be interviewed on the above topics. Interviews will last approximately 30 minutes to 1 hour, and will be tape-recorded. Audiotapes will be transcribed and then erased. Transcripts will be coded so that no identifying information appears on them. Name-number codes will be stored in a password-protected computer file.

Benefits
Although no direct benefit may be derived, the information will be useful to evaluating treatments for children with OCD.

Risks
Some children may become upset or bothered when discussing therapy for OCD. This state is likely to be brief and will be handled appropriately by the clinician conducting the interview.

Rights of Participants
Participants may withdraw from the research at any stage. Withdrawal will not affect the rights of the participants or the responsibilities of the researcher.

Confidentiality
All identifying information will be kept confidential. Published or unpublished data from the study will not contain any identifying details.

Further Information
You are encouraged to discuss any concerns about the research with the Project Coordinator or the Project Supervisor. They can be contacted on the numbers provided above. Alternatively, if you wish to speak to someone not directly involved with the research (for example, about the information you have received, the conduct of the study, your rights as a participant, or to lodge a complaint) you may contact the Curtin University Human Research Ethics Committee Secretariat on 9266 2784.

Thank you for your interest in this research and the well-being of young people.

Hunna Watson
Project Coordinator

Adolescent Information Sheet: Study 3

CURTIN OCD PEDIATRIC STUDY
SCHOOL OF PSYCHOLOGY

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CRICOS Provider Code 00301J

Information Sheet

Project Coordinator: **Hunna Watson (Ph. 9266 3523)**

Project Supervisor: **Dr. Clare Rees (Ph. 9266 3039)**

Purpose of Study

This study seeks to understand the views young people and parents hold about group therapy for young people with obsessive-compulsive disorder. A further aim is to understand the types of barriers that can make it difficult, or prevent families from taking part in a group therapy program. This information will help service providers understand and address these barriers, in order to encourage young people to gain help. The information will also help to decide whether a group therapy program is a feasible therapy to have in the community.

What's Involved?

You and one of your parents will be interviewed on the above topics. Interviews will last approximately 30 minutes to 1 hour, and will be tape-recorded. Audiotapes will be transcribed and then erased. Transcripts will be coded so that no identifying information appears on them. Name-number codes will be stored in a password-protected computer file.

Benefits

Although you may not experience a direct benefit, the information will be useful to help us to evaluate treatments for young people with OCD.

Risks

Some young people find it difficult to talk about topics related to OCD, so may become upset. This distress is likely to pass soon after the interview. You will be encouraged to tell the interviewer if the discussion is upsetting you, so that a time-out taken, or the interview stopped.

Your Rights

You may withdraw from the research at any stage. Withdrawal will not affect your rights or the responsibilities of the researcher.

Privacy of Information

All identifying information will be kept confidential. Published or unpublished information from the research will not contain any identifying details. The only exception to privacy, is if you told the interviewer that you were having emotional difficulties and/or asked for help in dealing with these. In this case, what you say may be discussed with your parents, although you would be told that this would happen first.

Questions or Concerns?

You are encouraged to discuss any concerns about the research with the Project Coordinator or the Project Supervisor. They can be contacted on the numbers provided above. Alternatively, if you wish to speak to someone not directly involved with the research (for example, about the information you have received, the conduct of the study, your rights as a participant, or to lodge a complaint) you may contact the Curtin University Human Research Ethics Committee Secretariat on 9266 2784.

Thank you for your interest in this research and the well-being of young people.

Humna Watson
Project Coordinator

Child Information Sheet: Study 3

CURTIN OCD PEDIATRIC STUDY
SCHOOL OF PSYCHOLOGY

Curtin
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Information Sheet

I would like to find out what children think about a group therapy program for children that worry a lot and/or feel like they have to do things a certain way over and over. I would like to ask you some questions for about 30 minutes on this topic. I will also be asking your parents similar questions.

Our conversation will be recorded on a tape. I would like to tell other people about the things you say in our talk, and what your parents say. Your name will never be mentioned, so no one, except me, will ever know it is you who have made those comments.

Hunna Watson
Phone Number: 9266 3523

Parent Consent Form: Study 3

CURTIN OCD PEDIATRIC STUDY
SCHOOL OF PSYCHOLOGY
-QUALITATIVE STUDY -

Participant Consent Form - Parents

I, _____

agree to the procedures of this research as outlined to me. I have been given the opportunity to ask questions about this research and to discuss my concerns.

I acknowledge that the nature and purpose of this research, as well as the possible benefits and risks, have been explained to my satisfaction.

I have read and received a copy of the Participant Information Sheet.

I understand that my family's involvement in this research is voluntary and that I may withdraw from the research at any stage without affecting the rights of my family.

I understand that my family will not be identified in any published material.

_____ _____
Signature Date

Adolescent Consent Form: Study 3

CURTIN OCD PEDIATRIC STUDY
SCHOOL OF PSYCHOLOGY

Participant Consent Form – Adolescent

I, _____

agree to take part in this project, as outlined to me. I have been given the opportunity to ask questions about this research and to discuss my concerns.

I have read and received a copy of the Participant Information Sheet.

I understand that my participation is voluntary and that I may withdraw from the research at any stage.

I understand that my family will not be identified in any published material.

_____ _____
Signature Date

Appendix F

Interview Schedule for Study 3

Can you tell me what you heard about the therapy program being offered at Curtin?

What were your thoughts about starting the therapy?
- *Probe: Was there anything you were anxious/worried about?*
- *Probe: What did you picture that it would be like?*
- *Probe: Good things/bad things*

The group was part of a research project. What were your thoughts about participating in research?

What did you expect the group would be like?

How did you feel about having your child starting the therapy program?

Did you want your child to go in the therapy group when you were told about it?
- *Probe: What led to you deciding that?*
- *Probe: What were some of the reasons you did/didn't want your son/daughter to participate*

Could you tell me about some of the reasons for not participating?

Who decided that your child would not join the therapy group?
- *Probe: You? Your child? Other parent?*

What would be some of the most positive things about your child joining the group?

What would some of the most negative things?
- *Probe: How did these things affect your decision?*

What would you have preferred for your child– individual (one-on-one) therapy or group therapy?

Are there any benefits of group therapy compared to individual therapy? Elaborate…

Are there any benefits of individual therapy compared to group therapy? Elaborate…

What did you think about participating in a research project? Did that influence your decision not to participate?

Did you end up seeking help for the problem? What reasons made you choose this help?

What OCD problems (symptoms) did your child have?

Had the child received a diagnosis of OCD?

What made you think that your child had OCD?

Who did you take your child to see? (GP, psych etc) Did the person confirm that is what the problem was? What suggestions did the person give?