

Running head: PARENT KNOWLEDGE and FUNCTION-BASED CBT

Investigating Changes in Parent Knowledge about Obsessive Compulsive Behaviour
Following Group Function-Based Cognitive Behavioural Therapy for Children with High
Functioning Autism

Rachel Koffman

The Centre for Applied Disability Studies

Submitted in partial fulfillment of the requirements for the degree of

Masters of Arts

Centre for Applied Disability Studies, Brock University

St.Catharines, Ontario

©2013

Abstract

This study investigated improvements in parent knowledge of effective intervention strategies following participation in a group function-based CBT treatment (GFbCBT) package for children with comorbid OCD and ASD. Nineteen parents of children ages 7-12 years with High Functioning Autism (HFA) participated in the 9-week treatment program. Key components of treatment included psychoeducation and mapping, cognitive-behavioural skills training, function-based interventions and exposure and response prevention (ERP). Treatment sessions also included direct parent education, which followed a behavioural skills training model (Miltenberger, 2008). Parent knowledge (N = 19) was measured pre and post treatment using a vignette about a child demonstrating obsessive-compulsive behaviour. Results of a one-tailed pairwise t-test indicated statistically significant changes ($p=.036$) in overall parent knowledge following participation in treatment. Statistically significant changes were also found in parents' ability to generate ERP and function-based intervention strategies. These results provide preliminary evidence that parents benefit from active involvement in the GFbCBT treatment package.

Acknowledgements

I would like to thank the many people who have made my thesis possible. Foremost, I would like to thank my supervisor, Dr. Tricia Vause. You have been an amazing mentor throughout my graduate experience and without your expertise, patience, and guidance this thesis would not have been possible. I have learned a lot over the last several years, and over the last several months in particular and I have you to thank. I would also like to express my gratitude to the other members of my committee, Dr. Maurice Feldman, and Dr. Rebecca Ward for the feedback and encouragement they provided throughout this research project. I would also like to thank Heather Yates and Naomi Johnson whose tireless contributions made this study possible and Dr. Jan Frijters for his time and assistance. I am grateful to the parents and children who participated in this research project and their tireless efforts in taking charge of OCB. I would thank my husband, Marc Shiffman, who has supported me through the entire graduate experience.

This research would not have been possible without financial support from Brock University Graduate Studies, a Frederick Banting and Charles Best Canada Graduate Scholarship from the Canadian Institutes of Health Research, and a New Investigator Fellowship from the Ontario Mental Health Foundation and the Ministry of Health and Long-Term Care.

Table of Contents

List of Tables	5
List of Figures	6
Introduction.....	7
Repetitive Behaviours in Children with OCD and ASD.....	9
Treatment of Paediatric OCD	10
Parent Involvement in Treatment of Paediatric Anxiety.....	11
Treatment of OCD in Children with an Autism Spectrum Disorder	14
Preliminary Findings on Group Function-Based CBT for Children with OCD and HFA	18
Purpose.....	19
Research Questions and Hypotheses	20
Method	21
Participants	21
Setting	22
Materials.....	22
Functional assessment.....	23
Ben and Sally Test.....	24
Sally vignette Coding System.....	24
Procedure.....	25
Parent Knowledge Assessment	28
Scoring Guidelines Development.....	29
Treatment Integrity	31
Results	32
Changes in Parent Knowledge According to Category.....	32
Changes in Parent Knowledge According to Frequency.....	33
Discussion	34
Importance of Parent Involvement in Treatment	35
Changes in Parent Knowledge within Intervention Categories	37
Limitations.....	40
Implications	42
References	44
Appendix A.....	61
Sally vignette.....	61
Appendix B	62
Scoring Guidelines from Sofronoff et al., 2005	62
Appendix C	63
Scoring Guidelines	63

List of Tables

Table 1: Changes in parent knowledge by category.....32
Table 2: Changes in the number of responses by category.....35

List of Figures

Figure 1: Change in parent knowledge by category.....34
Figure 2: Changes in the number of responses by category.....36

Investigating Changes in Parent Knowledge about Obsessive Compulsive Behaviour
Following Group Function-Based Cognitive Behavioural Therapy for Children with High
Functioning Autism

Introduction

Autism Spectrum Disorder

An autism spectrum disorder (ASD) is a neurological disorder that is characterized by qualitative impairments in the areas of social interaction and communication and by restricted and repetitive behaviours (*DSM-IV-TR*, American Psychiatric Association [APA], 2000). A recent prevalence study estimated that ASD occurs in approximately 1 in every 88 children (Centre for Disease Control and Prevention, 2012).

In addition to the core features, individuals with ASD commonly exhibit comorbid disorders such as intellectual disability, attention deficit/hyperactivity disorder, tic disorders and anxiety disorders (Gadow, 2004). Estimates suggest that approximately 70-75% of individuals with ASD have a comorbid mental health diagnosis (Simonoff et al., 2008). In a recent meta-analysis, van Steensel, Bogels and Perrin (2011) conducted a systematic review of the literature and identified 31 studies involving 2,121 children and adolescents (aged <18 years) with ASD, where the presence of an anxiety disorder was assessed using standardized questionnaires or a diagnostic interview. This investigation found that across studies, 39.6% of participants with ASD had at least one comorbid *DSM-IV-TR* (APA, 2000) anxiety disorder and 17% of these participants met criterion for Obsessive Compulsive Disorder (OCD). The relative frequency of anxiety disorders in

children with ASD suggests that anxiety may be a focus of treatment for many children on the autism spectrum (Volkmar & Klin, 2000).

Obsessive-compulsive Disorder

Obsessive-compulsive disorder is an anxiety disorder characterized by intrusive thoughts, images and worries (i.e. obsessions) and/or repetitive, nonfunctional behaviours that emerge in an effort to suppress anxiety (i.e. compulsions) (*DSM-IV-TR*; APA, 2000). Obsessions are defined as recurrent and persistent thoughts, images or impulses that are ego-dystonic (behaviours that are in conflict with an individual's ideal self-image), intrusive and may be acknowledged by the individual as senseless. Compulsions are characterized as repetitive, avoidant or mental behaviours that the individual feels driven to perform in response to an obsession. These behaviours are aimed at reducing the individual's anxiety or preventing some dreaded event from occurring but are not connected in any realistic way to the obsession they are designed to neutralize. In addition, obsessions and/or compulsions are time consuming (take more than 1 hour a day) and significantly interfere with the person's normal routine, occupational (or academic) functioning, or usual social activities or relationships (APA, 2000).

ASD and OCD

Recent epidemiological studies have begun to suggest a strong correlation between OCD and ASD. For instance, Dekker and Koot (2003) found children with ASD were 14 times more likely to meet criteria for OCD than children without ASD. In order to further examine this, Leyfer et al. (2006) assessed the presence of co-morbid psychiatric conditions in individuals with ASD using a modified version of the Kiddie Schedule for Affective Disorders and Schizophrenia (KSADS) (Ambrosini, 2000;

Chambers et al., 1985; Kaufman et al., 1997) and determined that 37% of children with autism in their sample met *DSM-IV-TR* (APA, 2000) criteria for OCD.

Repetitive Behaviours in Children with OCD and ASD

Common to both OCD and ASD are repetitive behaviours – a term referring to an array of behaviours that often occurs in an invariant manner and may be nonfunctional or atypical (Turner, 1997). Researchers (e.g., Fischer-Terworth & Probst, 2009) have begun to distinguish between what has been termed Autism-related obsessive-compulsive phenomena (AOCP) and more traditional obsessive-compulsive (OC) behaviours. AOCP may include excessive preoccupation with a narrow range of special interests, engagement in compulsive rituals, stereotyped motor movements and an insistence on sameness. One fundamental difference between AOCP and OCD, as suggested by Baron-Cohen and Wheelwright (1999), is that AOCP are generally ego-syntonic (i.e. behaviours that are consistent with one's self-image), as the individual generally does not experience them as intrusive. In fact, Jorgensen (1994) suggests that obsessional interests in individuals with ASD may be accompanied by feelings of euphoria. Nevertheless, other rituals in autism may in fact closely resemble the compulsions of OCD as they are carried out to reduce anxiety or prevent events the individual perceives as threatening (Fischer-Terworth & Probst, 2009.) In particular, compulsive, ritualistic behaviors (e.g., needing to use the same plate and utensils at every meal) and sameness (e.g. ensuring household items remain in the same place) in children with ASD are highly associated with traditional OC behaviours (e.g. excessive washing/cleaning) and these behaviours have been found to be qualitatively different from other forms of repetitive behaviour common in children with autism (i.e. self-injury and stereotypic behaviour) (Mirenda et al., 2010).

For example, insistence on sameness behaviour (e.g. using the same plate and bowl at every meal) can easily be compared to “just right” behaviours typically seen in OCD while repetition of words, phrases or motor movements can be compared to behaviours maintained by the avoidance of a perceived threat. Thus, it is reasonable to presume that some children with ASD pursue their circumscribed interest in an obsessional manner in response to anxiety; however, impairments in communication and introspection often make this difficult to assess. Given the aforementioned difficulties in distinguishing between OCD and AOCP, the present study will use the term Obsessive Compulsive Behaviour (OCB) to represent both phenomena.

Treatment of Paediatric OCD

Expert Consensus Guidelines (March, Frances, Carpenter & Kahn, 1997) recommend Cognitive Behavioral Therapy (CBT) as the frontline treatment of choice for children with OCD. CBT for children and adolescents with OCD generally involves psychoeducation, cognitive training, mapping OCD, exposure and response prevention (ERP) and relapse prevention (March & Franklin, 2004; March & Mulle, 1998). Psychoeducation involves the provision of information concerning the nature, causes and maintenance of OCD. This may cover differences between ‘healthy’ and ‘unhealthy’ thoughts and behaviours, cognitive and behavioural aspects of OCD and how they will be addressed by different components of treatment. Cognitive training is defined as training in cognitive tactics for resisting OCD and aims to increase the child’s sense of self-efficacy (March & Mulle, 1998). During phase three (mapping OCD), the child maps his/her experience of OCD (including specific obsessions, compulsions, triggers, avoidance behaviours and consequences) and generates a stimulus hierarchy. Finally,

graded exposure and response prevention refers to the core elements of CBT for anxiety disorders (Barrett, Farrell, Pina, Peris & Piacentini, 2008) and involves gradual exposure, in vivo when possible, to feared stimuli and situations based on a hierarchy of the individual's fears and refraining from compensatory rituals during the exposure (Kozak and Foa, 1997; Storch et al., 2005).

Watson and Rees (2008) conducted a meta-analysis of randomized controlled treatment (RCT) trials for pediatric OCD in typically developing children and identified 13 RCTs containing ten pharmacotherapy to control comparisons ($N=1016$) and five individual CBT to control comparisons ($N=161$). Results from this investigation found both CBT ($ES=1.45$, $95\% CI=.68$ to 2.22 , $p = .002$) and pharmacotherapy ($ES=.48$, $95\% CI=0.36$ to $.61$, $p<0.001$) to be the only treatments effective in alleviating OCD symptoms. However, CBT showed a more robust effect size. As a result, CBT currently meets criteria to be designated as a *probably efficacious* intervention for children with OCD (Chambless & Hollon, 1998).

Parent Involvement in Treatment of Paediatric Anxiety

Although CBT can be said to be efficacious for anxious children and youth 19 years or under (Watson & Rees, 2008), the variability in success rates reported across studies suggests the need to consider factors that may further optimize its success. One potential moderator that has been recommended by many experts in the field of child anxiety is the inclusion of parents in treatment (e.g. Chorpita, 2007; Kendall et al., 2010; Kendall & Hedtke, 2006; Silva, Gallagher, & Minami, 2006). Including parents in treatment is thought to have numerous benefits. It provides the opportunity for parents to ask questions, gain additional information about their child's treatment, and to provide

useful information about the child to the therapist. It can also provide an opportunity for the therapists to educate parents on parenting issues that may be influencing their child's anxiety (Albano & Kendall, 2002; Ginsberg & Kingery, 2007). Additionally, by enlisting parents as "co-therapists" who can extend the work of therapy outside of sessions, parent involvement can both facilitate generalization of treatment gains while also addressing time and resource limitations of therapists (Mahoney et al., 1999).

Empirical studies have found that parental satisfaction with treatment is significantly higher when parents are directly involved, thus suggesting that parent involvement may increase parental support, motivation and compliance with treatment as well as child attendance (Nauta, Scholling, Emmelkamp & Minderaa, 2003). Studies have also identified a significant relationship between increased parental knowledge and parent empowerment, which in turn is found to be related to increased help-giving practices such as actively supporting the development of child competencies, creating opportunities for joint decision making, providing empathy and active listening (Dempsey & Dunst, 2004; Mahoney et al., 1999). Such help-giving behaviours may well be vital to parents' role in helping children to master techniques learned in treatment as well as to provide them with the emotional support needed to face anxiety provoking situations.

Collectively, these empirical findings along with the purported benefits noted above and the recommendation among experts who have developed CBT programs for anxious children provide a strong argument for involving parents in treatment.

In many ways, parents are ideally positioned to participate in and contribute to treatment. Parents are helpful consultants in that they are typically broadly present in their young children's lives and primarily responsible for their care (Rapee, Abbott &

Lyneham, 2006). As a result, they can be valuable sources of information regarding their child's past development and current functioning as well as possible maladaptive patterns they may have in relating to their children (Kendall & Choudury, 2003; Suveg et al., 2006). As collaborators, parents actively participate in the treatment and its related activities (Kendall & Choudury, 2003), control reinforcers that can be used to motivate the child to practice target skills and face feared stimuli and can be valuable sources of support for implementing exposure tasks (Pahl & Barrett, 2010; Suveg et al., 2006).

In practice, the nature of parent involvement in CBT treatment ranges along a broad continuum. Minimal parental involvement may include occasional parent meetings in order to obtain additional information, inform parents of their child's progress and answer any questions they may have (Kendall & Hedtke, 2006). Slightly greater parent involvement may include regular brief parent meetings (e.g. following each child session; Chorpita, 2007) in which parents may learn simple parenting strategies to assist their child in managing anxious behaviours and reaching treatment goals (Mahoney et al., 1999). In some cases, parents may be involved directly in the treatment through family or group therapy (e.g. Cobham, Dadds & Spence, 1998; Howard & Kendall, 1996). In such cases, parents receive the same psychoeducation as in other levels of involvement but also play an active role in treatment as they participate in learning and applying treatment targets along with the child. Finally, maximal involvement of parents in treatment may entail parent-implemented treatment, where the parent delivers the treatment while the therapist provides occasional support over the phone or via email (Lyneham & Rapee, 2006; Rapee, Spence, Cobham & Wignall, 2000).

In contrast to the aforementioned studies that identified benefits related to variables such as parent satisfaction and empowerment, results of studies examining whether parent involvement actually translates into improved outcomes for the child have been mixed. While some studies have found that parent involvement is more helpful in reducing anxiety to clinically non-significant levels than individual child treatment (Barrett et al., 1996; Howard & Kendall, 1996; Silverman et al., 1999), others have found no difference between individual and family-involvement treatment (e.g. Barrett et al., 2001; Nauta et al., 2003; Silverman et al., 2003). As such, further research is needed in order to determine whether or not involving parents in the CBT program for their anxious child results in improved treatment outcomes.

Treatment of OCD in Children with an Autism Spectrum Disorder

While CBT has demonstrated improvements in OCD severity among typically developing children, there is a paucity of research investigating the efficacy of CBT in children with comorbid ASDs. Research has demonstrated that children with High Functioning Autism (HFA; those who are verbally fluent and possess an IQ >70) are more vulnerable to developing OCD when compared to typically developing children and those with Low Functioning Autism (Gadow et al., 2005). This may be in part due to higher cognitive and linguistic abilities that lend to verbalizing obsessions, thoughts, or beliefs required for the diagnosis of ASD (Fischer-Terwerth & Probst, 2009).

To date, only three case studies (Lehmkuhl, Storch, Bodfish, & Geffkin, 2008; Reaven & Hepburn, 2003; Sze & Wood, 2007) have evaluated CBT for OCD; however, these studies all suggested improvements in symptoms as a result of CBT. Lehmkuhl et al. (2008) and Reaven and Hepburn (2003) adapted March and Mulle's (1998) CBT

protocol for children between 7 and 12 years of age. Treatment included graded exposure to feared situations using a stimulus hierarchy; identifying and monitoring anxious thoughts, feelings, and OCD behaviours; developing and practicing coping statements and strategies in session and between sessions as homework; and parent involvement. Both studies rated the severity and pervasiveness of anxiety symptoms using the Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS) (Goodman et al., 1998) and measured the change in scores pre and post-treatment. CY-BOCS (Goodman et al., 1998) scores dropped from 23 (moderate) to 8 (sub-clinical; Reaven & Hepburn, 2003) and from 18 (moderate) to sub-clinical levels (Lehmkuhl et al., 2008). The authors reported that OCD symptoms remained well controlled at follow-up. The third study (Sze & Wood, 2007) involved an 11-year-old girl with HFA, OCD, and co-morbid anxiety disorders. This treatment included similar components to the above studies, with the inclusion of components targeting social skills and self-help skills. After 16 sessions, the participant no longer met criteria for targeted anxiety disorders (including OCD) on the Anxiety Disorders Interview Schedule-Child and Parent Version (ADIS; Albano & Silverman, 1996), and her parents reported improvements in multiple areas of functioning at home, socially and at school.

To date, five randomized controlled trials have investigated the efficacy of CBT for anxiety in children and youth with an HFA (Chalfant, Rapee & Carroll, 2007; McNally Keehn, Lincoln, Brown & Chavira, 2013; Reaven, Blakeley-Smith, Culhane-Shelburne & Hepburn, 2012; Sofronoff, Attwood & Hinton, 2005; Wood et al, 2009), but no study has focused on the exclusive treatment of OCD.

McNally Keehn et al. (2013) and Reaven et al. (2012) evaluated manualized CBT treatment programs (*Coping Cat* [Kendall & Hedtke, 2006] and *Facing Your Fears* [Facing Your Fears: Group Therapy for Managing Anxiety in Children with High-Functioning ASD; Reaven, Blakeley-Smith, Nichols & Hepburn, 2011] respectively) with children with ASD and a co-morbid anxiety disorder. Both studies found over 50% of participants (as compared to waitlist controls) no longer met criteria for their primary anxiety diagnosis following at post-test and follow-up.

Chalfant et al., (2007) compared a family-based CBT treatment to a waitlist condition for 47 children with comorbid anxiety disorders and HFA. Treatment involved 12 weekly group sessions that were adapted from the Macquarie University, “Cool Kids” program (Lyneham, Abbott, Wignall & Rapee, 2003.) Following treatment, 71.4% of the treated participants no longer met diagnostic criteria for an anxiety disorder and comparisons between treatment and waitlist groups indicated significant reductions in anxiety symptoms (as measured by self-report, parent report and teacher report.)

Wood et al., (2009) investigated the efficacy of a modified CBT treatment manual with children with ASD (*Building Confidence* CBT program (Wood & McLeod, 2008)). Forty children (7-11 years old) were randomly assigned to 16 weekly CBT treatment sessions or a 3-month waitlist. Response to treatment was measured using the Clinical Global Impression (CGI) – Improvement Scale (Wood et al., 2006) (a scale that provides a global rating of improvement in anxiety symptoms ranging from 1 (*completely recovered*) to 8 (*very much worse*)) and found that 78.5% of participants in the experimental condition met CGI criteria for a positive treatment response, compared to only 8.7% in the waitlist condition. Treatment gains were maintained at follow-up.

In order to assess the effect of CBT intervention for anxiety in children with Asperger's Syndrome (AS) as well as the effect of parent involvement on treatment outcomes, Sofronoff et al. (2005) randomly assigned participants to one of three conditions: intervention for child only, intervention for child and parent or wait-list control. In the *child only intervention*, parents received no training but after each session met briefly with therapists to access feedback about their child's participation in group and be told about weekly homework assignments. In the *parent-child intervention group*, parents were trained to work as co-therapists in all components of the intervention. They were asked to encourage and coach the use of strategies in different situations and assist with the completion of weekly homework assignments. Treatment outcomes were assessed using two parent-report measures - the Spence Child Anxiety Scale - Parent (SCAS, Nauta et al., 2004) and the Social Worries Questionnaire - Parent (Spence, 1995). In addition, a child measure - 'James and the Maths Test', (Attwood, 2002) - required each child generate strategies for 'James' (the fictional character in the story) to cope with anxiety in the situation outlined. This measure was scored by allocating 1 point for each positive strategy the child generated and scoring was checked for inter-rater reliability using independent raters blind to the child's intervention condition (see Appendix A for the measure and scoring guidelines used.) Results of the total score SCAS-P showed a significant Time x Group interaction $F(4, 158) = 9.16, p < .0001$, while post-hoc comparison effects showed a significant difference between the two intervention groups at Time 3 ($p < 0.25$) with the combined parent + child intervention group showing greater improvement. Results of 'James and the Maths Test' (Attwood, 2002) demonstrated a significant difference between each of the intervention groups and

the wait-list group at Time 2 ($p < .0001$) and at Time 3 ($p < .0001$). There was also a significant difference between the child only intervention group and the combined child and parent group at both Time 2 ($p < .01$) and Time 3 ($p < .0001$), with the combined group generating significantly more positive coping strategies.

Results of these case examples (Lehmkuhl et al., 2008; Reaven & Hepburn, 2003; Sze & Wood, 2007) and controlled studies (Chalfant et al., 2007; Sofronoff et al., 2005; Wood et al, 2009) lend additional evidence to the effectiveness of CBT in reducing anxiety symptoms in children with HFA. Additionally, these results indicate that superior treatment outcomes are achieved with active parental participation in the CBT intervention and that the most compelling differences between the two intervention groups were found on the child measure 'James and the Maths Test' (Attwood, 2002). Sofronoff et al. (2005) suggest that in the combined group, the therapist was able to provide more reinforcement to parents in their efforts to promote the use of strategies by their children. As well, in the combined group, parents had an opportunity each week to problem-solve challenges they were having with the group, to brainstorm with the therapist and other group members' ways to support their child and to encourage the use of skills learned during group sessions. These results provide additional support for the active involvement of parents in CBT treatment for children with ASD and co-morbid OCD.

Preliminary Findings on Group Function-Based CBT for Children with OCD and HFA

As part of an ongoing randomized controlled trial by Drs. Vause and Feldman at Brock University, Neil (2011) conducted a preliminary study to analyze the effectiveness

of a manualized group function-based CBT program (GFbCBT) for 4 children with ASD and co-morbid OCD as well as to isolate function(s) that OC behaviours serve, and address them using antecedent and consequent manipulation. Neil (2011) employed a treatment manual (entitled "*I believe in ME, not OCD!*" (Vause, Neil & Feldman, 2010), that included the standard aspects of CBT for OCD (e.g., March and Mulle, 1998) as well as functional behavioural assessment and social skills training activities in order to address deficits unique to ASD. Traditional CBT techniques were used to address anxiety related functions (i.e. exposure and response prevention, development of positive coping statements, etc.) while other potential functions (escape and attention) were addressed using behaviour analytic techniques such as differential reinforcement and escape extinction (Cooper et al., 2007). Participants in Neil et al. (2011) ($N=4$) completed the CYBOCS pre and post treatment. Scores on this measure decreased an average of 23% (range = 15% - 34%). Across all participants, scores on the Child Obsessive Compulsive Impact Scale – Revised (COIS-R; Piacentini et al. 2007) – a tool that assesses the extent to which OC symptoms impact specific areas of psychosocial functioning - decreased an average of 27% and scores on the Repetitive Behaviour Scale-Revised (RBS-R) – a rating scale for measuring the presence and severity of repetitive behaviours – decreased an average of 53%. Taken together, these results provide encouraging preliminary evidence for the effectiveness of a function-based group CBT treatment package for children with ASD and co-morbid OCD.

Purpose

As part of an ongoing randomized controlled trial (Vause, Neil & Feldman, in progress), the present study is a preliminary analysis that will assess the relative

differences, pre and post treatment, in parent's ability to generate effective strategies for dealing with an obsessive-compulsive behaviour, as measured by the Sally vignette. This study will also attempt to identify patterns in the various strategies generated by parents (i.e. do parents generate more awareness strategies than cognitive strategies?)

Research Questions and Hypotheses

Based on the findings from previous studies investigating individual and group CBT for children with comorbid ASD and OCD, this study will attempt to answer the following research questions:

- Using the Sally vignette – a parent measure of ability to generate effective strategies to deal with an obsessive-compulsive behaviour – do participants employ more intervention strategies following participation in the GFbCBT treatment as compared to the number of intervention strategies generated prior to treatment? It is hypothesized that following participation in GFbCBT, parents will report significantly more effective intervention strategies on the Sally vignette.
- Using the Sally vignette - do parents show a preference for employing certain taught intervention strategies (e.g., cognitive strategies versus exposure-based strategies versus function-based strategies)? It is hypothesized that following participation in treatment, parents will generate more psychoeducation and mapping and exposure and response prevention (ERP) strategies than cognitive and function-based strategies, given that parents/caregivers spend a great deal of time observing therapists and then obtaining hands-on practice using these strategies during group sessions.

Method

Participants

Participants initially consisted of 24 parents of children with HFA and obsessive-compulsive behaviour living in the Toronto and Niagara region, ages 7-12 at the time of assessment. Five of the parents initially included in this study were a second parent participant (i.e. two parents participated in the study and completed the Sally measure) and were not independent observers (a violation of the assumptions of statistical analyses [Kruksal, 1988]). As such, these data were not included in the statistical analyses of the results, yielding a sample size of 19.

Prior to participant enrollment, this study received ethical clearance from the Brock University Research Ethics Board (clearance number 09-066). Families were recruited from numerous agencies in Southern Ontario and the GTA including Geneva Centre for Autism, Bethesda Autism Services, various school boards, non-profit organizations such as Autism Ontario and professionals in the field of children's mental health and developmental disabilities.

Child participants in this study received a diagnosis of ASD by a qualified psychologist, psychiatrist or developmental pediatrician and met the following inclusion criteria: (1) ASD diagnosis was confirmed using the Autism Diagnostic Interview Revised (ADI-R; Lord, Rutter, & Couteur, 1994), which was independently administered by a trained and reliable Master's level student, (2) diagnosis of OCD according to the ADIS (Albano & Silverman, 1996) and CY-BOCS (Scahill et al., 1997), (3) not be involved in any active treatment for an anxiety disorder/repetitive behavior (including OCD) during the course of assessment and treatment, (4) be taking no psychotropic

medication or taking a stable dose of medication throughout the course of treatment and (5) not receiving intensive behavioural intervention.

Participants were included in this study if they demonstrated a full-scale estimated IQ of 70 or greater on the Wechsler Intelligence Scale for Children-IV (WISC) (short form; Weschler, 2004) as determined by an independent evaluator during the eligibility assessment.

Setting

This study took place at three sites (a) the Jack and Nora Walker Lifespan Development Research Centre located at Brock University in St. Catharines, (b) the Geneva Centre for Autism in Toronto and (c) the Etobicoke Children's Centre in Toronto. Two therapists, including one Master's level student and a 4th year undergraduate or Master's level student, ran treatment groups consisting of 3 to 4 children and at least 1 parent. All treatment sessions were videotaped. Dr. Vause, an Associate Professor with a Ph.D. in Clinical Psychology, provided supervision to group facilitators on a weekly basis.

Materials

Anxiety Disorders Interview Schedule-Parent for DSM-IV-OCD Module (ADIS-P). The OCD module of the Anxiety Disorders Interview Schedule-Parent for DSM-IV (ADIS-P; Albano & Silverman, 1996) was used to determine if participants met diagnostic criteria for OCD. The ADIS is a semi-structured interview schedule that is consistent with the DSM-IV criteria for diagnosis of childhood anxiety disorders. Child and parent versions of the ADIS (ADIS-C/P) have demonstrated good inter-rater and

retest reliability (Piacentini & Bergman, 2000). The ADIS-C/P has demonstrated good sensitivity to treatment effects in both childhood anxiety research (Barrett, Dadds, & Rapee, 1996) and childhood OCD research (Knox, Albano, & Barlow, 1996). The ADIS-P has also been used in other investigations CBT for anxiety in children with an ASD (Chalfant et al., 2006; Sze & Wood, 2007).

Child Yale-Brown Obsessive Compulsive Scale (CYBOCS). The CYBOCS (Goodman et al., 1986) is a commonly used, psychometrically sound clinician-rated instrument used to assess the severity of OCD symptomatology experienced during a 7-day period. The 10-item, semi-structured interview rates the severity of both obsessions and compulsions across five scales: (1) time occupied by symptoms, (2) interference caused by symptoms, (3) distress related to symptoms, (4) resistance of symptoms, and (5) degrees of control over symptoms. The CY-BOCS (Goodman et al., 1986) also provides a total severity score. The CY-BOCS Total Score has high internal consistency (Scahill et al., 1997; Storch et al., 2004) and obsession and compulsion severity scores (Storch et al., 2004); and convergent and divergent validity (Scahill et al., 1997; Storch et al., 2004). For the purposes of this study, examples of each item in the Obsessions and Compulsions Checklist, adapted from Piacentini, Langley and Roblek (2007) were added and additional prompts to aid in scoring the items in the Questions about Obsessions and Compulsions were included.

Functional assessment.

Questions about Behaviour Function (QABF). The QABF (Matson & Vollmer, 1995) is an indirect assessment of behavioural function that consists of 25 items designed for the functional assessment of behaviour problems in persons with

developmental disabilities. Parents/caretakers familiar with the individual rate each item. The instrument yields five categories reflecting the behavioural functions of Attention, Escape, Physical, Tangible, and Non-social Reinforcement. Each question is scored along a four point Likert-type scale anchored with frequency descriptors of *Never*, *Rarely*, *Some*, and *Often*. Inter-rater agreement on the of the QABF has been found to range between .96 to .98, with test-retest reliability on the six function factors ranging from .86 to .99 for individuals in this population (Singh et al., 2006).

Functional Assessment Interview. After administering the QABF, a behavioural interview was completed with parents using questions from Woods and Miltenberger (2006.) In the interview, parents were asked questions about the antecedents and consequences of their children's OCB's in order to gather further detail on the functions of each behaviour, as identified by the QABF.

Sally Test

The 'Sally Test' was adapted from Attwood (2002) by Dr. Tricia Vause for this study and used as a quantitative measure of the number of coping strategies employed by parents during treatment. Parents read the vignettes (see Appendix A) describing Sally – a child who displays compulsions in the form of repetitive hand-washing and worries about germs and contamination. They were then asked to write down how they might support this child in dealing with thoughts and corresponding behaviour.

Sally vignette Coding System

In order to analyze parent responses on the Sally vignette this author, under the supervision of Dr. Vause, developed comprehensive scoring guidelines. Initially, this

author consulted the scoring system used by Sofronoff, Attwood and Hinton (2005) (See Appendix B); however, a multi-point scoring system (i.e. 0, 1, 2) was employed over the single-point system (i.e. 0, 1) used by Sofronoff et al. (2005) in order to differentiate between responses that represent a complete understanding of the intervention strategy and responses which demonstrate only a partial understanding of the intervention strategy. These scoring guidelines were modeled after the Weschler Intelligence Scale for Children – Fourth Edition (WISC-IV; Weschler, 2004) in order to ensure that the scoring of responses was an objective process that called for little, if any, interpretation of scoring criteria (Weschler, 2004) (See Appendix C.)

In addition, the scoring guidelines were divided into 5 subsections (psychoeducation and mapping strategies, cognitive strategies, ERP strategies, function-based strategies, and other/miscellaneous strategies), which correspond to each phase of treatment. Sample responses listed in the scoring guidelines were generated by referring to all components of the treatment package, including the participant workbook "*I believe in ME, not OCD!*" (Vause et al., 2010b), the clinician manual, a treatment integrity checklist developed by Dr. Vause (2010a), functional behaviour assessment plans participants received weekly during treatment and the author's clinical experience.

Procedure

Treatment Package. The GFbCBT intervention was guided by a manualized treatment protocol developed by Vause et al. (2010a) and an accompanying workbook entitled "*I believe in ME, not OCD!*" developed by Vause et al. (2010b). Treatment involved nine weekly sessions each lasting 2 hours and included group activities, separate parent and child group meetings, and work in parent-child dyads. The groups consisted

of two therapists, up to four children, and at least one parent accompanying each child. Concepts outlined in the manual were based on mainstream cognitive-behavioural approaches discussed by well-known researchers for the general pediatric population (e.g., Attwood, 2004; Freeman & Garcia, 2009; March & Mulle, 1998; Piacentini et al., 2007). These concepts and techniques were modified to meet the cognitive, linguistic, and social needs of children with HFA. A functional behavioural assessment and intervention (FBAI) component was also incorporated into treatment to address all functions other than escape from anxiety for each of the children's OCBs. The FBAIs aimed at deriving the possible antecedents and consequences maintaining the targeted behaviours and all identified functions were addressed in FBAIs.

Psychoeducation and Mapping. The initial two treatment sessions focused on introducing group expectations, rapport building, and an introduction to OCB with an emphasis on relating OCB to specific child behaviours. During these sessions, to promote awareness of compulsions and obsessions based on definitions outlined in workbook, each child created a concrete list of obsessions and compulsions that were to be tackled in treatment and mapped out his/her OCBs with the assistance of a therapist.

Participants created a fear thermometer and used this to "rate their fears" or let therapists know how distressed they would feel if they could not engage in their compulsions. After rating these behaviours, the children mapped their OCB behaviours on a hierarchy modified into three concrete sections for this population, which represented children's distress and resistance in performing OCBs.

CBT Skills Training. CBT skills training involved teaching children coping statements, which could consist of: (a) externalizing statements (which are covered

generally which psychoeducation but expanded upon using cognitive strategies) (e.g., "I don't have to listen to you OCB"), (b) positive self-statements (e.g. "I can do it. I'm not going to let OCB beat me"), and (c) concrete statements to challenge faulty assumptions (e.g. "sorry is not a bad word, people like it when I say sorry.") Children were taught imagery, ignoring, and distraction (talking about other things or doing other things) to cope with physical reactions to anxiety and to provide them with replacement behaviours for their compulsions.

Exposure and Response Prevention (ERP). The exposure phase of ERP involved a child (with assistance from the therapist and parent) creating a plan for gradual exposure to a thought (often associated with a feared object or situation) and loose blocking of the compulsion. For example, a child may developed a plan that limits the number of times he/she can erase and rewrite letters during homework, gradually decreasing the amount of times throughout the week. When possible, participants were encouraged to bring stimuli from home, used to role-play CBT techniques. ERP exercises were practiced in the treatment session and in the home, where over the course of time, the child was exposed to the anxiety provoking thought, more often and for longer durations of time without performing their OCBs.

Function Based Intervention. One week prior to beginning ERP for each OCB, the QABF (Matson & Vollmer, 1995) and the functional assessment interview was administered to a parent. Any function identified on either the QABF or the functional assessment interview was considered a hypothesized function. Functions were addressed with differential reinforcement of alternative or low rates of behaviours, and for some behaviours extinction (Cooper et al., 2007). This process of administering the QABF,

providing the parent with differential reinforcement/extinction strategies for additional functions, and ERP, was repeated for each of the OCBs targeted throughout the remaining weeks.

Parent Training. During each group treatment session, parents were encouraged and directly taught how to act as their child's coach or co-therapist. During initial treatment sessions the group therapists worked more directly with the parent-child dyads to develop an ERP plan for target behaviours. However, therapists gradually faded their direct involvement, encouraging the parent and child to complete their ERP plans independently. In addition, parents also received direct parent education during every group session, conducted by one of the group therapists. Topics include: etiology of OCD, components of CBT, functional assessment of behaviour, parent accommodation of OCB, reinforcement and relapse prevention. During the parent education component of each group session, modeling and role-play was also used by the therapist to provide multiple opportunities for parents to create ERP plans, identify possible functions of behaviour through hypothetical scenarios, deliver appropriate and contingent reinforcement and support their child in generating adaptive coping strategies.

Parent Knowledge Assessment

The Sally vignettes was administered to parents by the group therapist during sessions 1 and 9. Parents were instructed to read the vignette carefully and write how they might support the child in coping with his/her thoughts and corresponding behaviours. If two parents were present for treatment sessions, each parent was asked to complete the assessment individually. This vignette was adapted from a similar assessment measure used by Attwood (2002) titled 'James and the Maths Test.' The measure developed by

Attwood (2002) describes generalized anxiety and was presented to child participants while the Sally vignette describes a specific OC behaviours and was developed for use with parent/caregiver participants.

Post-hoc Power Analysis

Given that this study is part of an ongoing RCT, a post-hoc power analysis was completed. In order to detect a moderate effect size with a dependent groups t-test, a sample of 33 cases would be required; however, given the exploratory nature of this study, data from the first 2 phases of the RCT ($N=19$) was analyzed. Additionally, studies exploring the effect of CBT for children with OCD and comorbid ASD have also used comparably small samples (e.g. Wood et al., 2009; Sofronoff et al., 2005) and found large effects.

Scoring Guidelines Development

Representativeness. In order to determine whether scoring guidelines developed by this author were representative of the responses typically generated by parents on the Sally vignette a 4th year undergraduate research assistant compared the sample responses in the coding system to those given by a subset of 10 completed Sally vignettes. The independent assessor was kept blind to whether the Sally vignette was completed pre or post treatment and this assessor anecdotally reported that she was not able to decipher which tests were completed pre treatment and post treatment. The assessor provided feedback to this author about discrepancies between completed measures and the scoring guidelines but did not provide specific information about responses that were given in completed measures. Minor changes and additions to the scoring guidelines based on this feedback included the insertion of more generic sample responses (i.e. “set goals for

Sally” “tell Sally she worries too much,” “Sally’s hand washing is out of control” and “Sally spends too much time washing her hands.”) Some sample responses, particularly in the function-based strategies category were also modified to include the incorporation of lay terms (i.e. “rewards” instead of “reinforcement.”)

Scorer Training. Prior to coding completed Sally vignettes, this author conducted training with the 4th year undergraduate research assistant (same as above) using multiple instance general case instruction (Sprague & Horner, 1984). Specifically, this author generated a series of sample response items that were chosen to illustrate the span of response variations possible in Sally vignettes completed by study participants (“tell Sally to stop hand washing,” “give Sally a reward if doesn’t wash her hands after someone sneezes,” “Sally should ignore OCB”). This writer and the research assistant scored two sets of 10 general case items independently. Agreement on the first set of 10 sample items was 70% while agreement on the second set of sample responses was at 90% ($M=80%$) at which point scoring of the Sally Tests commenced.

Scoring. Prior to scoring, an independent master’s level student removed all identifying information from completed tests, gave each test a unique identification number and randomized the order of coding using a computer-generated randomization table. For the purposes of training and reliability measures, pre and posttests were counted as individual measures.

Reliability

Initially, this author and the research assistant scored 3 measures independently but simultaneously (i.e. at the same time but in separate rooms). Reliability on these initial measures was 50%, 80% and 60% ($M=63%$.) Given this low rate of reliability,

disagreements were analyzed and it was determined that this author and the research assistant were treating the end of one response and the start of another differently. As a result, a minor modification to the scoring guidelines was made, namely that sentences that were separated by periods (regardless of whether or not they were grammatically correct periods) would each be scored separately. Following this modification, reliability on subsequent measures was 93% (range 70%-100%).

The first author served as the primary coder for 91% of the Sally vignettes completed for this study. The 4th year undergraduate research assistant served as the primary coder for 9% of the measures (N=5) as this author had administered these measures during treatment and would not have been blind to the identity of the parent. Percentage agreement was calculated for by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100% (Cooper et al., 2007). The mean percentage agreement between this author and the second coder was 89% (range 50%-100%).

Treatment Integrity

All treatment sessions were videotaped. A treatment checklist for each session was created based on the primary goals of the treatment according to the Vause et al. (2010a) manual and fidelity checks were conducted by a trained observer viewing the videotapes of sessions in random order and complete checklists to ensure treatment components were carried out in session. Agreement on treatment components was calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100 (Cooper et al., 2007). Mean treatment integrity was 100%.

Results

Preliminary analyses revealed that all data were normally distributed and homogenous.

Overall Changes in Parent Knowledge

Potential improvement in parent knowledge as measured by the Sally vignette, administered pre and post participation in GFbCBT, was assessed using a one-tailed paired samples *t*-test ($N=19$.) Changes in parent knowledge from pretest ($M=5.32$, $SD=3.25$) to posttest ($M=6.95$, $SD=3.46$) were statistically significant $t(18)=-1.91$, $p=.036$, $d=-.440$ ¹. Specifically, 68% (13/19 participants) improved the number and/or quality of strategies generated on the Sally test following treatment.

Changes in Parent Knowledge According to Category

Changes in parent knowledge were also assessed according to the five categories of treatment strategies used: psychoeducation and mapping strategies, cognitive strategies, ERP strategies, function-based strategies and miscellaneous strategies. A one-tailed paired samples *t*-test was conducted to compare changes in parent knowledge from pre-test to post-test in each of the treatment strategy categories. A significant difference was found in the ERP strategies category ($M=-1.63$, $SD=2.87$); $t=-2.47$, $p=.01$ and in the function-based strategies category ($M=-.63$, $SD=2.87$); $t=-1.94$, $p=.035$ (See Table 1.)

Table 1

Paired samples t-test of scores from each treatment category on the Sally vignette

¹ Given the small sample size, a non-parametric test was performed as well (the Wilcoxon signed ranks test) and comparable results in overall scores and in scores by category and frequency were found.

	Mean and SD	<i>t</i>	<i>p</i>
Psychoeducation	-.26	-.55	.295
and Mapping	(2.08)		
Cognitive Strategies	.47	.92	.185
	(2.25)		
ERP Strategies	-1.63	-2.48	.01
	(2.87)		
Function-based	-.63	-1.94	.035
Strategies	(1.42)		
Other Strategies	.05	.27	.395
	(.85)		

Note: Standard deviations appear in parentheses below means.

Changes in Parent Knowledge According to Frequency

The mean number of strategies in each of the intervention categories was also analyzed in order to determine whether there was a difference between participants score in each category and the number of strategies generated in each category. A one-tailed paired samples *t*-test was conducted, finding a significant difference in the number of ERP strategies from ($M=-.89, SD=1.8$); $t=-2.18, p=.02$ and in the number of function-based strategies ($M=-.42, SD=1.02$); $t=-1.8, p=.045$ (See Table 1.) These results were comparable to those found in the analysis of changes in scores on the Sally vignette.

Table 2

Paired samples t-test of number of responses from each treatment category on the Sally vignette

	Mean and SD	<i>t</i>	<i>p</i>
Psychoeducation and Mapping	-.16 (1.07)	-.65	.265
Cognitive Strategies	.21 (1.4)	.66	.26
ERP Strategies	-.89 (1.8)	-2.18	.02
Function-based Strategies	-.42 (1.02)	-1.8	.045
Other Strategies	.00 (.47)	.00	.05

Note: Standard deviations appear in parentheses below means.

Discussion

As part of an ongoing randomized controlled trial, this study was a preliminary analysis conducted to investigate whether parent involvement in a GFbCBT program for children with ASD and co-morbid OC behaviours improved parents' ability to generate effective strategies for a child dealing with an obsessive-compulsive behaviour. Although Sofronoff et al. (2005) used a test resembling the Sally vignette to assess the effect of active parent involvement on parent knowledge (via child participants), no published studies have attempted to investigate changes in parent knowledge in the pediatric OCD population in parent participants themselves. Given that parent participation in treatment is considered to have numerous benefits (e.g. Kendall & Choudhury, 2003) including potentially improving treatment outcomes (e.g. Barrett et al., 1996; Howard & Kendall,

1996; Silverman et al., 1999), an analysis of changes in parent knowledge following participation in GFbCBT is necessary.

A scoring system developed by this author was used to measure presence or absence of these changes pre and post treatment. This study found statistically significant changes in overall scores on the Sally vignette, suggesting that meaningful gains in knowledge of effective intervention strategies were made for many parents. Given that statistically significant results were found in a sample size of only 19 participants, it is reasonable to suggest that improvements in parent knowledge on the Sally vignette may be attributed to participation in treatment.

Furthermore, when specific intervention categories were isolated, statistically significant improvements in parent knowledge were found in both the ERP and function-based domains.

Importance of Parent Involvement in Treatment

Although the body of literature investigating parent knowledge in pediatric OCD is limited, Sofronoff et al. (2005) reported several indicators of the benefits of active parent involvement in treatment, with the most compelling results found on 'James and the Maths Test.' In the present study, similar improvements in parent knowledge suggest that by participating in GFbCBT treatment, parents develop knowledge of effective intervention strategies to help their child deal with an obsessive-compulsive behaviour.

Research has shown that behavioral interventions for children with ASD are more effective when parents/caregivers are involved in treatment, rather than specialists alone (Buschbacher et al., 2004; Girolametto & Tannock, 1994; Horner et al., 2002; Ingersoll & Dvortcak, 2006.) By including parents as active participants in treatment, they can

continue to teach their child with ASD skills in the home environment, which has been shown to enhance parent-child interactions and increase the amount of intervention the child receives (Girolametto & Tannock, 1994.) Other advantages to including parents in treatment with this population include potential for enhanced generalization of skills, economical and less resource intensive interventions and greater potential for maintenance of treatment gains (Matson et al., 2009.) For the reasons described above, the improvements in parent knowledge demonstrated in this study provide encouraging evidence for value of including parents in GFbCBT.

Many of the advantages of including parents in treatment for pediatric OCD resemble those described in behavioural treatments for children with ASD, namely enhanced opportunities for maintenance and generalization of skills (Mahoney et al., 1999.) Moreover, although the literature on treatment response in pediatric OCD is overwhelmingly positive (e.g. Watson & Rees, 2008), few longitudinal studies are available. A recent meta-analysis (Stewart et al., 2004) found the persistence of full OCD symptoms in child-onset OCD was 41% while the persistence of full and sub threshold OCD was 60%. It is also widely acknowledge that OCD can have a fluctuating or episodic course, and relapse may occur even after successful treatment (Stewart et al., 2004.) Given that children are unlikely to be able to participate in ongoing, long-term treatment for OCD and that relapse or the persistence of symptoms is common, the inclusion of parents in treatment would give parents knowledge and skills that would allow them to support their child in addressing obsessive-compulsive behaviours long after a formal treatment program has concluded.

Changes in Parent Knowledge within Intervention Categories

The scoring guidelines developed by this author to analyze results from the Sally vignette provided an overall score as well as scores and frequency of responses in five categories: psychoeducation and mapping strategies, cognitive strategies, function-based strategies, ERP strategies and other/miscellaneous strategies. These phases are consistent with the treatment manual used in this intervention (*I Believe in Me, Not OCB* (Vause et al., 2010) as well as literature in the field (e.g. March and Mulle, 1998). Both scores and the number of strategies generated within each category on the Sally vignette were analyzed in order to identify differences; however, results were similar.

Interestingly, these analyses found statistically significant changes in parent knowledge in the ERP and function-based categories (both score and frequency). Although this author hypothesized that statistically significant changes would be identified in the psychoeducation and mapping category (in addition to ERP), this was not the case. Only modest changes were seen in the psychoeducation and mapping category while a small decrease in both total score and frequency was seen in the cognitive category. There are several possible reasons why this could be the case. Firstly, the treatment manual, as well as the literature (e.g. March and Mulle, 1998; Piacentini et al., 2011) places a sizeable emphasis on the use of ERP strategies and the development of ERP plans. Much of the treatment group sessions are spent working initially with the therapist and then in parent-child dyads developing weekly ERP treatment plans. Weekly didactic parent training sessions also place a strong emphasis on the use of ERP strategies and problem-solving parent-reported difficulties in implementing ERP plans. Although the mechanisms through which ERP works are not entirely clear (i.e. by extinction,

habituation or reappraisal of the initial trigger; Bolton & Perrin, 2008) research and clinical practice guidelines agree that ERP is the main active ingredient in CBT treatment for pediatric OCD (e.g. AACAP, 1998, March, 1995, Bolton and Perrin, 2008.) The presence of statistically significant results with such a small sample size in the ERP category supports the potential efficacy the GFbCBT and suggests that parent knowledge is improving in what is consider to be the most crucial aspect of treatment.

There are a number of reasons why function-based strategies may have also been made salient to parents. Starting on the third week of treatment, parents completed the QABF (Matson & Vollmer, 1995) via telephone with a group therapist for any target behaviours being introduced. This may have served as priming, making them more aware of possible functions of targeted OC behaviours. Additionally, by the fourth week of treatment, parents began receiving direct instruction from group therapists about the functions (in addition to anxiety) maintaining specific OC behaviours. Parents also received written behaviour intervention plans, providing them with explicit strategies for assisting their child with ERP tasks based on the function of the targeted behaviour (i.e. “provide positive attention (i.e. praise) when your child has refrained from engaging in hand washing,” “ensure your child finishes his math homework, even after doing his tapping routine,” “provide a reward if your child doesn’t check the locks before the leaving the house.”)

Psychoeducation and mapping make up a large part of the first two sessions, which supports the moderate increase in parent-reported strategies in this category. These strategies are used intermittently throughout subsequent sessions, particularly when new

OC behaviours are being introduced into ERP; however, following the initial sessions, direct teaching shifts to other strategies.

Surprisingly, the quality and number of cognitive strategies reported decreased following treatment. There are several reasons why this could be the case. Firstly, the cognitive training component of treatment was often protracted due to deficits in the child's ability to identify emotions and cognitions in both themselves and others (i.e. Theory of Mind (ToM) impairment; Baron-Cohen, 2001). Cognitive therapy relies on the child's ability to infer their own emotional states and thoughts in order to shift their cognitive style and in turn, their OC behaviour (Beck, 1976). While it is certainly not the case that all children participating in this study demonstrated ToM impairments, these challenges were frequently observed. In fact, many participants were able to identify compulsive behaviours but could not articulate an obsession associated with the behaviour. In addition, the importance of individual's chronological and developmental ages in relation to the use of cognitive strategies cannot be overstated. In their CBT treatment manual, March and Mulle (1998) emphasize that cognitive interventions must be adjusted for younger (both chronologically or developmentally) children participating in treatment. They explain that although children as young as 5 may be able to participate in cognitive interventions, these will likely be simple and concrete in nature. They also state that cognitive interventions will likely be more effective for mature adolescents. Given that the participants in this study ranged in age from 7-11 years, it is likely that when parents and group therapists in treatment used cognitive strategies, they were brief and concrete. Finally, the case scenario presented in the Sally Test (i.e. contamination fears and compulsive hand washing) also appeared to elicit responses from parents that were

cognitive in nature, specifically regarding challenging faulty assumptions (i.e. “explain to Sally that she doesn’t need to wash her hands so much to protect from germs,” “tell Sally that germs don’t work that way and washing her hands too much might make her sicker.”) This may have been a bias of the scoring guidelines or of the Sally vignette itself. Specifically, the use of a contamination-related OC behaviour may have elicited responses in the pre-test that were deemed as cognitive strategies but were fairly common interventions used by parents (i.e. explaining to Sally why washing her hands too much is not a good thing.) Following participation in treatment, parents who reported cognitive strategies of this nature still demonstrated knowledge of these strategies; however, it appears that many reported strategies with which they had more hands on practice with in treatment, namely ERP, function-based and psychoeducation and mapping strategies. Future studies should analyze additional vignettes presenting topographically different behaviours in order to identify similar patterns in parent responding.

Limitations

This research presents several limitations. First, results obtained in this study have limited generalizability as the study consisted of only 19 participants. However, this study was part of an ongoing RCT, which assesses the efficacy of this function-based CBT protocol in a group format of three to four parent-child dyads. As the third phase of the RCT begins, additional data, including 9 Sally vignettes will be analyzed.

This study also piloted an assessment measure and scoring guidelines developed by the principle investigator (Dr. Vause) and this author. Although the Sally vignette (Vause) was inspired by a similar measure by Attwood (2002), the psychometric properties of the test have not been analyzed. As well, the scoring guidelines for the Sally

vignette have only been used by members of the RCT research team (namely Dr. Vause, this author and the 4th undergraduate research assistant) and therefore have not been tested for internal and external validity. Although reliability was established between this author and the research assistant, it is unclear whether this would be maintained with additional raters, particularly those less familiar with the treatment itself.

For the purpose of this study, data were analyzed according to 5 treatment categories (psychoeducation and mapping, cognitive strategies, ERP, function-based interventions and other/miscellaneous interventions) that corresponded with the phases of the GFbCBT treatment. Although each of the categories is considered to have unique or defining features, it is also possible that certain components of psychoeducation and mapping and cognitive strategies and ERP and function-based interventions overlap. For example, some psychoeducation and mapping tasks – such as identifying thoughts and feelings that occur prior to performing a compulsion - are inherently cognitive in nature (March & Mulle, 1998). When coding completed measures, this author and the research assistant used the sample responses provided in the scoring guidelines to place parent responses in the most appropriate category and these responses were only scored once. However, future studies should investigate the reliability of the categorization of parent responses and add to the existing samples responses in order to develop as exhaustive a list as possible.

Although this study employed a multi-point scoring system (0, 1, 2), the ceiling score of 2 for an individual sample response may have underrepresented responses of higher quality. Future studies should consider whether there would be merit to increasing

the scoring ceiling in order to further analyze the potential improvement in parent scores from pre to post test.

Finally, this study did not include a control group with which to compare the outcomes of GFbCBT treatment. In addition, although multiple pairwise t-tests were performed, the Bonferroni correction was not applied. Although Bonferroni corrections are applied to reduce Type I errors when multiple tests are being conducted, there is no formal consensus for when Bonferroni procedures should be applied, even among statisticians (Perneger, 1998.) Given that Bonferroni procedures reduce statistical power and increase the likelihood of Type II error, they were not used in this study.

Implications

The current study adds to the limited body of literature that exists for treatment of children with comorbid OCD and ASD. More specifically, this study informs researchers and clinicians about improvements in parent knowledge following participation in GFbCBT treatment. Wood et al. (2009) and Sofronoff et al. (2005) demonstrated significant treatment responses in a similarly small sample size and Sofronoff et al. (2005) showed improved treatment outcomes for children whose parents were active participants in group treatment. As such, these results suggest that parents who generate more effective intervention strategies following participation in GFbCBT will be more likely to generalize these strategies to the natural environment and thus support their child in addressing obsessive compulsive behaviours. The patterns in specific intervention strategies reported by parents will also inform research and clinical practice. The statistically significant results demonstrated in the ERP and function-based categories suggest that what are considered to be most crucial components of the GFbCBT treatment

(Bolton and Perrin, 2008) are being made salient to parents. Given the exploratory nature of this study, future research should continue to investigate the impact of parent/caregiver knowledge by correlating improvements in knowledge with child outcomes (i.e. CYBOCS scores.)

Conclusions

The present study demonstrated improvements in parent's ability to generate effective strategies for a child dealing an obsessive-compulsive behaviour. Significant improvements in parents' ability to generate ERP and function-based intervention strategies were identified following participation in GFbCBT. While this data is promising, it is preliminary in nature and further analyses on improvement in parent knowledge should be conducted after the final phase of the RCT is completed. Nevertheless, results from this study support the active participation of parents in CBT treatment for children with OCD and comorbid ASD and provides initial evidence for changes in parent knowledge following participation in treatment.

References

- AACAP. (1998). Practice parameters for the assessment and treatment of children and adolescents with obsessive compulsive disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, 37(Suppl. 10), 27S-45S.
- Albano, A.M., & Kendall, P.C. (2002). Cognitive behavioural therapy for children and adolescents and anxiety disorders: Clinical research advances. *International Review of Psychiatry*, 14, 129-134.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders (4th ed.)*. Fourth Edition, Text Revision. Washington, DC: American Psychiatric Association.
- Asbahr, F. R., Catillo, A. R., Ito, L. M., Latorre, M., Moreira, M. N., & Lotufo-Neto, F. L. (2005). Group cognitive-behavioural therapy versus sertraline for the treatment of children and adolescents with obsessive-compulsive disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 44, 1128-1136.
- Attwood, T. (2004). *Exploring feelings: Cognitive behaviour therapy to manage anxiety*. Arlington, TX: Future Horizons.
- Barmish, A. J., Kendall, P.C. (2005). Should parents be co-clients in cognitive-behaviour therapy for anxious youth? *Journal of Clinical Child and Adolescent Psychology*, (34), 3, 569-581.
- Barrett, P. M., Dadds, M. R., & Rapee, R. M. (1996). Family treatment of childhood anxiety: A controlled trial. *Journal of Consulting and Clinical Psychology* 64:333-342.

- Barret, P. M., Farrell, L., Pina, A. A., Peris, T. S., & Piacentini, J. (2008). Evidence-based psychosocial treatments for child and adolescent obsessive-compulsive disorder. *Journal of Clinical Child and Adolescent Psychology, 37*, 131-155.
- Barrett, P., Healy-Farrell, L., & March, J. (2004). Cognitive-behavioral family treatment of childhood obsessive-compulsive disorder: a controlled trial. *Journal of the American Academy of Child & Adolescent Psychiatry, 43*, 46-62.
- Baron-Cohen, S., & Wheelwright, S. (1999). Obsessions in children with autism or Asperger Syndrome: a content analysis in terms of core domains of cognition. *British Journal of Psychiatry, 175*, 484-490.
- Baron-Cohen, S. (2001). Theory of mind in normal development and autism. *Prisme, 34*, 174-183.
- Beck, A.T. (1976). *Cognitive therapy and emotional disorders*. New York: International Universities Press.
- Bodfish, J. W., Symons, F. J., & Lewis, M. H. (1999). *The Repetitive Behavior Scale: Test manual*. Morganton: Western Carolina Center Research Reports.
- Bolton, D., & Perrin, S. (2008). Evaluation of exposure with response-prevention for obsessive compulsive disorder in childhood and adolescence. *Journal of Behavior Therapy and Experimental Psychiatry, 39*, 11-22.
- Buschbacher, P., Fox, L., & Clarke, S. (2004). Recapturing desired family routine: A parent-professional behavioural collaboration. *Research and Practice for Persons with Severe Disabilities, 29*, 25-39.
- Cautela, J., & Groden, J. (1978) *Relaxation: A Comprehensive Manual for Adults, Children and Children with Special Needs*. Champaign, IL: Research Press.

- Centre for Disease Control and Prevention. (2012). Prevalence of Autism Spectrum Disorders – Autism and Developmental Disabilities Monitoring Network, 14 sites, United States, 2008. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/ss6103a1.htm?s_cid=ss6103a1_w
- Chalfant, A., Rapee, R., & Carroll, L. (2006). Treating anxiety disorders in children with high-functioning autism spectrum disorders: A controlled trial. *Journal of Autism and Developmental Disorders*, 37, 1842-1857.
- Chambless, D.L., & Hollon, S. D. (1998). Defining empirically supported therapies. *Journal of Consulting and Clinical Psychology*, 66(1), 7-18.
- Chorpita, B.F. (2007). *Modular cognitive-behavioural therapy for childhood anxiety disorders*. New York, NY: Guilford Press.
- Cobham, V.E., Dadds, M.R., & Spence, S.H. (1998). The role of parental anxiety in the treatment of childhood anxiety. *Journal of Consulting and Clinical Psychology*, 66(6), 893-905.
- Compton, S.N., March, J.S., Brent, D., Albano, A.M., Weersing, R. & Curry, J. (2004). Cognitive-Behavioral Psychotherapy for Anxiety and Depressive Disorders in Children and Adolescents: An Evidence-Based Medicine Review. *Journal of the American Academy of Child & Adolescent Psychiatry*, 43(8), 930-959.
- Constantino, J.N. & Gruber, C.P. (2005). *The social responsiveness scale*. Los Angeles: Western Psychological Services
- Constantino, J. N., & Todd, R. D., (2003) Autistic traits in the general population: A twin study. *Archives of General Psychiatry*, 60, 524-530.

- Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied Behavior Analysis* (2nd ed.). New Jersey, NY: Pearson Education Inc.
- Dempsey, I., & Dunst, C.J. (2004). Helping styles and parent empowerment in families with a young child with a disability. *Journal of Intellectual & Developmental Disability*, 29(1), 40-51.
- Dekker, M. C., & Koot, H. M. (2003). DSM-IV disorders in children with borderline to moderate intellectual disability. I: Prevalence and impact. *Journal of American Academy of Child Adolescent Psychiatry*, 42, 915–922.
- Eagle, R., Romanczyk, R. G., & Lenzenweger, M. (2010). Classification of children with Autism Spectrum Disorders: A finite mixture modeling approach to heterogeneity. *Research in Autism Spectrum Disorders*, Volume 4, Issue 4, October-December 2010, Pages 772-781.
- Essau, C. A., Muris, P., and Ederer, E. E. (2002). Reliability and validity of the Spence Children's Anxiety Scale and the Screen for Child Anxiety Related Emotional Disorders in German children. *Journal of Behavior Therapy and Experimental Psychiatry*, 33, 1-18.
- Feldman, M., Condillac, R., Tough, S., Hunt, S., & Griffiths, D. (2002). Effectiveness of community positive behavioral intervention for persons with developmental disabilities and severe behavior disorders. *Behavior Therapy*, 33, 377-398.
- Fischer, D. J., Himle, J. A., & Hanna, G. L. (1998). Group behavioural therapy for adolescents with obsessive-compulsive disorder: Preliminary outcomes. *Research on Social Work Practice*, 8, 629-636.

- Fischer-Terworth, C., & Probst, P. (2009). Obsessive-compulsive phenomena and symptoms in Asperger's disorder and High-functioning Autism: An evaluative literature review. *Life Span and Disability*, 7, 5-27.
- Flannery-Schroeder, E. C., & Kendall, P. C. (2000). Group and individual cognitive-behavioral treatments for youth with anxiety-disorders: A randomized clinical trial. *Cognitive Therapy and Research*, 24(3), 251-278.
- Fombonne, E., Zakarian, R., Bennett, A., Meng, L., & McLean-Heywood, D. (2006). Pervasive developmental disorders in Montreal, Quebec, Canada: prevalence and links with immunizations. *Pediatrics*, 118(1), 139-150.
- Franklin et al., (2011). Cognitive behaviour therapy augmentation of pharmacotherapy in pediatric obsessive-compulsive disorder: the Pediatric OCD Treatment Study II (POTS II) randomized controlled trial. *Journal of the American Medical Association*; 11, 1224-32.
- Freeman, J., Garcia, A., Coyne, L., Ale, C., Przeworski, A., Himle, M., Leonard, H.L. (2008). Early childhood OCD: Preliminary findings from a family-based cognitive-behavioral approach. *Journal of the American Academy of Child & Adolescent Psychiatry*, 47, 593-602.
- Girolametto, L., & Tannock, R. (1994). Correlates of directiveness in the interactions of fathers and mothers of children with developmental delays. *Journal of Speech and Hearing Research* 37(5).
- Goodman, W. K., Price, L. H., Rasmussen, S. A., Riddle, M. A. & Rapoport, J. L. (1986). Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS). National Institutes of Mental Health (public domain).

- Green J, Gilchrist A, Burton D, Cox A. (2000). Social and Psychiatric Functioning in Adolescents with Asperger Syndrome Compared with Conduct Disorders. *Journal of Autism and Developmental Disorders*, 30 (4), 279-293.
- Guy, W. (1976). Clinical Global Impressions. In ECDEU Assessment Manual for Psychopharmacology, revised (DHEW Publ No ADM 76-338),(pp. 218-222). Rockville, MD: National Institute of Mental Health.
- Happe, F., & Frith, U. (2006). The weak central coherence account: detail focused cognitive style in autism spectrum disorders. *Journal of Autism and Developmental Disorders*, (36)1; 5-25.
- Harris, N.S., Courchesne, E., Townsend, J., Carper, R.A. and Lord, C. Neuroanatomic contributions to slowed orienting of attention in children with autism. *Cognitive Brain Research*, 8:61-71, 1999.
- Himle, J. A., Fischer, D. J., Van Etten, M. L., Janeck, A. S., & Hanna, G. L. (2003). Group behavioral therapy for adolescents with tic-related and non tic-related obsessive-compulsive disorder. *Depression and Anxiety*, 17, 73-77.
- Horner, R.H., Carr, E.G., Strain, P.S., Todd, A., W., & Reed, H.K. (2002). Problem behaviour interventions for young children with autism: A research synthesis. *Journal of Autism and Developmental Disorders*, 32, 423-446.
- Howard, B.L., & Kendall, P.C. (1996). Cognitive-behavioural family therapy for anxiety-disordered children: A multiple baseline evaluation. *Cognitive Therapy and Research*, 20(5), 423-443.

- Ingersoll, B., & Dvortcsak, A. (2006). Including parent training in the early childhood special education curriculum for children with autism spectrum disorders. *Journal of Positive Behavioural Interventions*, 8, 79-87.
- Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous child*, 2; 217-50.
- Kasari, C., & Rotheram-Fuller, E. (2005). Current trends in psychological research on children with high-functioning autism and Asperger disorder. *Current Opinions in Psychiatry*, 18(5), 497-501.
- Kendall, P.C., & Choudhury, M.S. (2003). Children and adolescents in cognitive-behavioural therapy: Some past efforts and current advances and the challenges in our future. *Cognitive Therapy and Research*, 27(1), 89-104.
- Kendall, P.C., Furr, J.M., & Podell, J.L. (2010). Child-focused treatment of anxiety. In Kazdin, A.E., & Weisz, J.R. (Eds.), *Evidence-based psychotherapies for children and adolescents*, 2nd edition (pp. 45-60). New York, NY: Guilford Press.
- Kendall, P.C., & Hedtke, K.A. (2006a). *Cognitive-behavioural therapy for anxious children: Therapist manual*. Ardmore, PA: Workbook Publishing.
- Kendall, P.C., & Hedtke, K. (2006). *Coping cat workbook* (2nd edn). Ardmore, PA: Workbook Publishing.
- Kern, L., Dunlap, G., Clarke, S., & Childs, K. E. (1994). Student-assisted functional assessment interview. *Diagnostique*, 19, 29–39.
- Kim, J., Szatmari, P., Bryson, S., Streiner, D., & Wilson, F. (2000). The prevalence of anxiety and mood problems among children with autism and Asperger syndrome. *Autism*, 4, 117.

- Knox, L. S., Albano, A. M., & Barlow, D. H., (1996). Parental involvement in the treatment of childhood obsessive compulsive disorder: A multiple baseline examination incorporating parents. *Behavior Therapy*, 27, 93-115.
- Kozak, M., & Foa, E. (1997). *Mastery of obsessive-compulsive disorder: A cognitive-behavioral approach*. San Antonio: Psychological Corp.
- Kruskal, W. (1988). Miracles and Statistics: The Casual Assumptions of Independence. *Journal of the American Statistical Association*, 404; 929-940.
- Lam, K. S. L., Aman, M. G. (2007). The Repetitive Behavior Scale - Revised: Independent validation in individuals with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 37, 855-866.
- Lehmkuhl, H., Storch, E., Bodfish, J., & Geffken, G. (2008). Brief report: Exposure and response prevention for obsessive compulsive disorder in a 12-year-old with autism. *Journal of Autism and Developmental Disorders*, 38, 977-981.
- Leyfer, O., Folstein, S., Bacalman, S., Davis, N., Dinh, E., Morgan, J., Lainhart, J.E. (2006). Comorbid psychiatric disorders in children with autism: interview development and rates of disorders. *Journal of Autism and Developmental Disorders*, 36(7), 849-861.
- Lord, C., Rutter, M., & Couteur, A.L. (1994). Autism Diagnostic Interview-Revised: A revised version of the diagnostic interview for caregivers of individuals with possible pervasive developmental disorders. *Journal of Autism and Developmental Disorders*, 24, 659- 685.
- Lord, C., Rutter, M., DiLavore, P.C., & Risi, S. (1999). *Autism Diagnostic Observation Schedule*. Los Angeles, CA: Western Psychological Services.

- Lyneham, H.J., & Rapee, R.M. (2006). Evaluation of therapist-supported parent-implemented CBT for anxiety disorders in rural children. *Behaviour Research and Therapy*, 44, 151-157.
- Mahoney, G., Kaiser, A., Girolametto, L., MacDonald, J., Robinson, C., Safford, P., & Spiker, D. (1999). Parent education in early intervention: A call for a renewed focus. *Topics in Early Childhood Special Education*, 19(3), 131-140.
- Manassis, K., Mendlowitz, S.L., Scapillato, D., Avery, D., Fiksenbaum, L., Freire, M., et al. (2002). Group and individual cognitive-behavioral therapy for childhood anxiety disorders: A randomized trial. *Journal of the American Academy of Child and Adolescent Psychiatry*, 41, 1423–1430.
- March, J.S. (1995). Cognitive-behavioural psychotherapy for children and adolescents with obsessive-compulsive disorder: A review and recommendations for treatment. *Journal of the American Academy of Child & Adolescent Psychiatry*, 34, 7-18.
- March, J. S., & Mulle, K. (1998). *OCD in Children and Adolescents: A Cognitive-Behavioral Treatment Manual*. New York, NY: The Guilford Press.
- March, J.S., Frances, A., Carpenter, D., & Kahn, D. (1997). Treatment of obsessive compulsive disorder: The Expert Consensus Panel for obsessive compulsive disorder. *Journal of Clinical Psychiatry*, 58 (suppl), 1-72.
- Martin, J. L., & Thienemann, M. (2005). Group cognitive-behavior therapy with family involvement for middle-school-age children with obsessive-compulsive disorder: A pilot study. *Child psychiatry and human development*, 36, 113-127.

- Matson, M.L., Mahan, S., Matson, J.L. (2009). Parent training: A review of methods for children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, 3, 868-875.
- Matson, J. L., & Vollmer, T. R. (1995). *User's Guide: Questions About Behavioral Function (QABF)*. Baton Rouge, LA: Scientific Publishers, Inc.
- McCambridge, S. (2009). Using function-based CBT with parent involvement to treat OCD in two school-age children with high-functioning autism (Unpublished master's thesis). Brock University, St. Catharines, ON.
- McNally Keehn, R.H., Lincoln, A.J., Brown, M.Z., & Chavira, D.A. (2013). The coping cat program for children with anxiety and autism spectrum disorder: A pilot randomized controlled trial. *Journal of Autism and Developmental Disorders*; 43, 57-67.
- Mendlowitz SL, Manassis K, Bradley S, Scapillato D, Mieztis S, Shaw BF (1999), Cognitive-behavioral group treatments in childhood anxiety disorders: the role of parental involvement. *J Am Acad Child Adolesc Psychiatry* 38:1223–1229.
- Merlo, L.J., Lehmkuhl, H.D., Geffken, G.R., Storch, E.A. (2009). Decreased family accommodation associated with improved therapy outcome in pediatric obsessive-compulsive disorder. *Journal of Consulting and Clinical Psychology*. 77(2); 355-360.
- Miltenberger, R.G. (2008). Behavioural skills training procedures. In *Behaviour Modification: Principles and Procedures*. Thomson Higher Education, Belmont, CA, 251-265.

- Minshew, N.J., Turner, C.A., & Goldstein, G. (2005). The application of short forms of the Weschler Intelligence Scales in adults and children with high functioning autism. *Journal of Autism and Developmental Disorders*, 35, 45-52.
- Mirenda, P., Smith, I., Vaillancourt, T., Duku, E., Georgiades, S., Szatmari, P., Bryson, S., Fombonne, E., Roberts, W., Smith, I., Volden, J., Waddell, C., Zwaigenbaum, L., & the Pathways in ASD Study Team. (2010). Validating the Repetitive Behavior Scale-Revised in young children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 40, 1521-1530.
- Nauta, M.H., Scholing, A., Emmelkamp, P.M.G., & Minderaa, R.B. (2003). Cognitive-behavioural therapy for children with anxiety disorders in clinical settings: No additional effect of a cognitive parent training. *Journal of American Academy of Child and Adolescent Psychiatry*, 42(11), 1270-1278.
- Nauta, M. H., Scholing, A., Rapee, R. M., Abbott, M., Spence, S. H., & Waters, A. (2004). A parent-report measure of children's anxiety: Psychometric properties and comparison with child-report in a clinical and normal sample. *Behaviour Research and Therapy*, 42 813-839.
- Neil, N.M. (2011). Group function-based cognitive behavioural therapy for children with comorbid pervasive developmental disorders and obsessive-compulsive behaviours. (Unpublished master's thesis). Brock University, St. Catharines, ON.
- Pahl, K.M., & Barrett, P.M. (2010). Interventions for anxiety disorders in children using group cognitive behavioural therapy with family involvement. In Kazdin, A.E. & Weisz, J.R. (Eds.), *Evidence-based psychotherapies for children and adolescents*, 2nd edition (pp. 61-70). New York, NY: Guilford Press.

Palermo SD., Bloch MH., Craiglow B., et al. Predictors of early adulthood quality of life in children with obsessive-compulsive disorder. *Soc Psychiatry Psychiatr Epidemiol.* 2011;46:291–297.

Peris, T.S., Sugar, C.A., Bergman, R.L., Chang, S., Langley, A., Piacentini, J. (2012). Family factors predict treatment outcome for pediatric obsessive-compulsive disorder. *Journal of Consulting and Clinical Psychology*,(80)2, 255-263.

Pediatric OCD Treatment Study Team. (2004). Cognitive behavior therapy, sertraline, and their combination for children and adolescents with obsessive-compulsive disorder. *Journal of the American Medical Association*, 292, 1969-1976.

Piacentini, J., & Bergman, R. L. (2000). Obsessive-Compulsive disorder in children. *The Psychiatric Clinics of North America*, 23, 519-533.

Piacentini, J., Langley, A., & Roblek, T. (2007). *Cognitive-behavioral treatment of childhood OCD: It's a false alarm*. New York: Oxford University Press.

Piacentini, J., Peris, T.S., Bergman, R.L., Chang, S., & Jaffer, M. (2007). Functional impairment in childhood OCD: Development and psychometrics properties of the child obsessive-compulsive impact scale-revised (COIS-R). *Journal of Clinical Child and Adolescent Psychology*, 36, 645-653.

Piacentini, J., Bergman, L., Chang, S., Langley, A., Peris, T., Wood, J.J., & McCracken, J. (2011). Controlled comparison of family cognitive behavioural therapy and Psychoeducation/Relaxation Training for Child Obsessive Compulsive Disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, (50)11, 1149-1161.

- Rapee, R.M., Abbott, M.J., & Lyneham, H.J. (2006). Bibliotherapy for children with anxiety disorders using written materials for parents: A randomized controlled trials. *Journal of Consulting and Clinical Psychology*, 74(3), 436-444.
- Rapee, R.M., Spence, S.H., Cobham, V., & Wignall, A. (2000). *Helping your anxious child: A step-by-step guide for parents*. Oakland, CA: New Harbinger Publications.
- Reaven, J. The treatment of anxiety symptoms in youth with high-functioning autism spectrum disorders: Developmental considerations for parents. *Brain Research*, 1380, 255-263.
- Reaven, J.A., Blakeley-Smith, A., Culhane-Shelburne, K., & Hepburn, S. (2012). Group cognitive behaviour therapy for children with high-functioning autism spectrum disorders and anxiety: a randomized trial. *Journal of Child Psychology and Psychiatry*; 53, 410-419.
- Reaven, J.A., Blakeley-Smith, A., Nichols, S., & Hepburn, S. (2011). *Facing Your Fears: Group therapy for managing anxiety in children with high-functioning autism spectrum disorders*. Baltimore: Paul Brookes Publishing.
- Reaven, J. A., & Hepburn, S. (2003). Cognitive-behavioral treatment of obsessive-compulsive disorder in a child with Asperger syndrome: A case report. *Autism*, 7, 145.
- Rombough, E. (2011). Dyad function-based cognitive behavioural therapy as a treatment for Obsessive-Compulsive Disorder in two school-aged children with high-functioning autism. (Unpublished master's thesis). Brock University, St. Catharines, ON.

- Ruta, L., Mugno, D., D'Arrigo, V.G., Vitiello, B., & Mazzone, L. (2010). Obsessive-Compulsive traits in children and adolescents with Asperger syndrome. *European Child & Adolescent Psychiatry*, 19, 17-24.
- Sattler, J.M., (2008). *Assessment of Children: Cognitive functions* (5th ed.) San Diego, CA: Author.
- Silva, R.R., Gallagher, R., & Minami, H. (2006). Cognitive-behavioural treatments for anxiety disorders in children and adolescents. *Primary Psychiatry*, 13(5), 68-76.
- Silverman, W. K., & Albano, A. M. (1996a). *The Anxiety Disorders Interview Schedule for DSM- IV: Child Interview Schedule*. San Antonio, TX: Graywind Publications, a Division of The Psychological Corporation
- Silverman, W. K., & Albano, A. M. (1996b). *The Anxiety Disorders Interview Schedule for DSM- IV: Parent Interview Schedule*. San Antonio, TX: Graywind Publications, a Division of The Psychological Corporation.
- Singh, N.N., Matson, J.L., Lancioni, G.E., Singh, A.N., Adkins, A.D., McKeegan, G.F., & Brown, S.W. (2006). Questions About Behavioral Function in Mental Illness (QABF-MI): A behavior checklist for functional assessment of maladaptive behavior exhibited by individuals with mental illness. *Behavior Modification*, 30, 739-751.
- Sofronoff, K., Attwood, T., & Hinton, S. (2005). A randomised controlled trial of a CBT intervention for anxiety in children with Asperger syndrome. *Journal of Child psychology and Psychiatry*, 46(11), 1152-1160
- Sparrow, S.S., Cicchetti, D.V., & Balla, D.A. (2005). *Vineland Adaptive Behavior Scales, Second Edition (Vineland-II)*. Circle Pines, MN: AGS Publishing.

- Spence, S. H., Barrett, P. M., & Turner, C. M. (2003). Psychometric properties of the Spence children's anxiety scale with young adolescents. *Journal of Anxiety Disorders, 17*, 605-625.
- Spence, S. (1998). A measure of anxiety symptoms among children. *Behaviour Research and Therapy, 36*, 546-566.
- Suveg, C., Roblek, T.L., Robin, J., Krain, J., Aschenbrand, S., & Ginsburg, G.S. (2006). Parent involvement when conducting cognitive-behavioural therapy for children with anxiety disorders. *Journal of Cognitive Psychotherapy: An International Quarterly, 20*(3), 287-299.
- Stewart, S.E., Geller, D.A., Jenike, M., et al. Long-term outcome of pediatric obsessive-compulsive disorder: a meta-analysis and quantitative review of the literature. *Acta Psychiatr Scand., 110*(1), 4-13.
- Storch, E. A., Murphy, T. K., Geffken, G. R., Soto, O., Sajid, M., Allen, P., ... Goodman, W.K. (2004). Psychometric evaluation of the children's Yale-Brown obsessive-compulsive scale. *Psychiatry Research, 129*, 91-98.
- Storch, E.A. et al. (2007). Family-based cognitive behavioural therapy for pediatric obsessive-compulsive disorder: comparison of intensive and weekly approaches. *Journal of the American Academy of Child and Adolescent Psychiatry, (46)*4; 469-478.
- Sze, K., & Wood, J. (2007). Cognitive behavioral treatment of comorbid anxiety disorders and social difficulties in children with high-functioning autism: A case report. *Journal of Contemporary Psychotherapy, 37*, 133-143.

- Tanguay, P., Robertson, J., & Derrick, A. (1998). A dimensional classification of autism spectrum disorder by social communication domains. *Journal of the Amer. Acad. of Child & Adolescent Psychiatry*, 37:3.
- Thienemann, M., Martin, J., Cregger, B., Thompson, H.B., & Dyer-Friedman, J. (2001), Manual-driven group cognitive-behavioral therapy for adolescents with obsessive-compulsive disorder: a pilot study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 40, 1254-1260.
- van, Steensel, F.J.A., Bögels, S. M., & Perrin, S. (2011). Anxiety Disorders in Children and Adolescents with Autistic Spectrum Disorders: A Meta-Analysis. *Clinical Child and Family Psychology Review*, 14, 302-317.
- Varni, J.W., Seid, M., & Rode, C.A. (1999). The PedsQL: measurement model for the pediatric quality of life inventory. *Medical Care*, 37, 126-139.
- Vause, T., Neil, N., & Feldman, M. (2010). I Believe in Me not OCB. Unpublished manuscript.
- Velting, O. N., Setzer, N. J., & Albano, A. M. (2004). Update on and advances in assessment and cognitive-behavioral treatment of anxiety disorders in children and adolescents. *Professional Psychology: Research and Practice*, 35(1), 42-54.
- Volkmar, F.R., Cohen, D.J., Bregman, J.D., Hooks, M.Y., & Stevenson, J.M. (1989). An examination of social typologies in autism. *Journal of the American Academy of Child and Adolescent Psychiatry*, 28, 82-86.
- Volkmar, F. & Klin A. (2000) Diagnostic Issues in Asperger Syndrome. In Klin, A., Volkmar, F.R., & Sparrow, S.S. (Eds.), *Asperger Syndrome* (p. 25-71). New York: The Guilford Press.

- Ward-King J, Cohen IL, Penning H, Holden JJ. (2010). Brief Report: Telephone Administration of the Autism Diagnostic Interview-Revised: Reliability and Suitability for Use in Research. *Journal of Autism and Developmental Disorders*. *J Autism Dev Disord* 40: 1285-1290.
- Watson, H., & Rees, C. (2008). Meta-analysis of randomized, controlled treatment trials for pediatric obsessive-compulsive disorder. *Focus*, 49, 489-498.
- Wechsler, D. (2004). Wechsler Intelligence Scale for Children - Fourth Edition (WISC-IV). San Antonio: TX: The Psychological Corporation.
- Wood, J., Drahota, A., Sze, K., Har, K., Chiu, A., & Langer, D. (2009). Cognitive behavioral therapy for anxiety in children with autism spectrum disorders: a randomized, controlled trial. *Journal of Child Psychology and Psychiatry*, 50, 224-234.
- Wood, J. J., Piacentini, J. C., Southam-Gerow, M., Chu, B. C., & Sigman, M. (2006). Family cognitive behavioral therapy for child anxiety disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, 45, 314-321.

Appendix B

Scoring Guidelines from Sofronoff et al.,

1

Scoring Guidelines for James and the Maths Test and Dylan is Being Teased

**Instructions: Award 1 point for each correct response.
Score 0 for inappropriate/ unhelpful strategies.**

For a strategy to be scored as 1, it must be appropriate to the situation that the character is in: e.g. punching something in the classroom is likely to be inappropriate. However, this strategy may be appropriate at home.

Score separate points for responses that are related, but not exactly the same. For example, for Dylan is Being Teased, score separate points for "Tell a teacher" vs "Tell an adult/ the principal".

Don't score repetitions of coping strategies.

Relaxation Gadgets: only gets a score of 1 if at least 1 example is given.

Positive thought missiles: means thinking positive thoughts
Score 1 point for response "positive thought missiles/ thinking positive" and 1 point for each example of a helpful thought listed.

Imagining good things and helpful thoughts: scored separately.

Answers: DECODE/ Use code cards: Score 0. Only give points for each specific helpful solution given.

Specific Guidelines for Scoring James and the Maths Test:

Just being quiet: scored as 0.

Get to know the new teacher: score 1

Score 1 point for "telling teacher _____ (e.g. that he feels scared) and asking for help" as opposed to 2.

Just trying to stay calm: given score of 0 points: need to list specific strategies of how to stay calm.

Don't tell anyone his answers: score 0: not an anxiety management strategy.

Study for the test: score as 1 point: likely to help reduce James' anxiety about the test.

General mention of asking a friend for help: score 1; asking a friend for help on the test: score 0 (not practical solution).

Asking teacher for help with test: distinct from asking teacher for help with nerves/ anxiety and asking teacher to keep the class quiet: score 1 point for each suggestion.

Appendix C

Scoring Guidelines

Scoring Guidelines for Sally and Her Handing Washing**Sally and her Hand washing**

Sally washes her hands so frequently and aggressively that her skin is red, dry, and cracked. She tells her mother that she has to routinely perform this hand washing ritual to prevent her from getting ill. Given that she spends so much time washing, Sally often has to rush to get to school on time, and misses class exercises (e.g., parts of Math lessons).

While writing a math test at school today, Sally told her parents that the boy who sits next to her sneezed. She said that she immediately began thinking about getting sick from the sneeze and had to stop working on her test to go wash her hands.

Write down how Sally's parents could support her both in dealing with her thoughts and corresponding behaviours.

The following scoring guidelines are modeled after the Weschler Intelligence Scale for Children – Fourth Edition (WISC-IV; Weschler, 2004) in order to ensure that the scoring of responses is an objective process and calls for little, if any, interpretation of scoring criteria (Weschler, 2004). This author consulted the scoring system used by Sofronoff, Attwood and Hinton (2005) in the development of the guidelines below; however, a multi-point scoring system (i.e. 0, 1, 2) was employed over the single-point system (i.e. 0, 1) used by Sofronoff et al. (2005) in order to differentiate between responses that represent a complete understanding of the intervention strategy. In addition, sample responses provided were generated from the treatment manual *“I believe in ME, not OCD!”* (Vause, Neil & Feldman, 2010), the treatment integrity checklist (Vause et al., 2010), functional behaviour assessment plans participants received weekly during treatment and this authors clinical experience.

Instructions:

Award 2 points for a response that is equivalent or superior to the sample responses.
Award 1 point for a response that is equivalent in quality to the 1-point sample responses.
Award 0 points for any response that equivalent or inferior to the 0-point sample responses.

- o The sample responses provided in the scoring guidelines below illustrate various levels of responding. The quality of the participant’s response refers to the content – not the elegance or length – of the parent’s answer (Weschler, 2004.) A response should not be penalized because of improper grammar or spelling.
- o Responses that are awarded 2-points are those which demonstrate that the parent has a thorough or complete understanding of the intervention strategy.
- o Responses that are awarded 1-point are those, which demonstrate that the parent has a partial but incomplete understanding of the intervention strategy.
- o Responses that are awarded 0 points are those which demonstrate that the parent does not have an understanding of the intervention strategy.
- o In some instances, one concept or strategy may be represented by multiple examples, all of which are different but correct. Score all responses separately, regardless of whether those responses are related. Punctuation to be used a guide for this – sentences separated by periods (regardless of whether or not they are grammatically correct periods) will each be scored separately.
 - o *Examples:*
 - *For Sally and Her Hand Washing, score separate points for ‘ignoring the thoughts’ and ‘thinking about something else’*
 - *‘Imagining/thinking about good things’ and ‘think helpful thoughts’ should be scored separately*
 - *Sally should wash her hands less. Help Sally wash her hands fewer times.*
- o In other instances, the same concept or strategy may be represented by multiple examples, all of which are the same. Even in this, score each response separately!
 - o *Examples:*
 - *‘Deeping breathing’, ‘taking deep breaths’, ‘relax’, etc. each get scored as 2 points*

- ‘Sitting with OCB’, ‘waiting until OCB passes,’ etc. each get scored as 2 points

Awareness Strategies

Example	Score
<p>Helps Sally to learn about/understand OCB</p> <p>(Award 2 points for each of the examples listed below):</p> <p><i>Examples:</i></p> <ul style="list-style-type: none"> • Teach Sally about obsessions and compulsions • Define obsessions and compulsions for Sally • Helps Sally understand OCB using a metaphor such a ‘brain hiccup • Talks with Sally about how OCB is just the brain sending incorrect messages • Sally should know that hand washing is a compulsion 	2
<p>Helps Sally identify/label her obsessions and provides specific examples of the obsession</p> <p>(Award 2 points for each of the examples listed below):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Talk to Sally about what she is thinking before she washes her hands • Sally should think about why she thinks she has to wash her hands 	2
<p>Helps Sally identify/label her obsessions</p> <ul style="list-style-type: none"> • Tell Sally she worries too much 	1
<p>Helps Sally identify/label her compulsions and provides specific examples of the compulsion</p> <p>(Award 2 points for each of the examples listed below):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Help Sally to learn that hand-washing after someone sneezes is a compulsion • Talk to Sally about how other people don’t need to wash their hands after someone else sneezes 	2
<p>Helps Sally identify/label her compulsions</p> <ul style="list-style-type: none"> • Tell Sally that she washes her hands too much • Sally’s hand washing is out of control 	1
<p>Sally should take charge of OCB by getting help from supports (i.e. family and friends)</p>	2

(Award 2 points for each of the examples listed below): <i>Example:</i> <ul style="list-style-type: none"> • Help Sally find people that can help her with her worries about getting sick 	
Sally should come up with a nasty nickname for OCB	1
Tell Sally to “take charge” or “boss back” OCB (if both “take charge” and “boss back” OCB are stated, score each separately)	1
Help the Sally to develop a fear thermometer and gives rationale or examples (Award 2 points for each of the examples listed below): <i>Example:</i> <ul style="list-style-type: none"> • Sally should rate how distressed she would be if she couldn’t wash her hands • Sally could tell her teacher that she is at 5 when the boy sneezed 	2
Sally should develop a fear thermometer	1
Helps Sally to think about some of the positive consequences associated with the absence of OCB and provide examples of what these consequences might be (Award 2 points for each of the examples listed below): <i>Example:</i> <ul style="list-style-type: none"> • Talk to Sally about how she would have more time to do fun things if she washed her hands less 	2
Help Sally to think about some of the positive consequences to reducing/changing her compulsion <ul style="list-style-type: none"> • Sally spends too much time washing her hands. 	1
Sally should a specific relaxation strategy (Award 2 points for each of the examples listed below): <i>Example</i> <ul style="list-style-type: none"> • Deep breathing • Progressive muscle relaxation 	2
Helps Sally to identify possible triggers OCB by having them identify any of the following:	2

(Award 2 points for each of the examples listed below):	
<ul style="list-style-type: none"> • Who is around when OCB happens? • What does OCB look like? • Where does OCB take place? • When does OCB take place? 	
Sit with OCB	2

Cognitive Strategies

Example	Scores
<p>Sally should change negative self-talk to positive self-talk <u>and</u> gives an example</p> <p>(Award 2 points for each if multiple statements are listed)</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Sally can say to herself “I can’t do this” to “This may be hard, but I can do it!” 	2
<p>States that Sally should change negative self-talk to positive self-talk</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Sally should start saying positive things to herself • Sally should stop telling herself she can’t do it 	1
<p>Help Sally identify faulty assumptions or overestimation of risk associated with obsessions or compulsions</p> <p>(Award 2 points each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Sally thinks that if she doesn’t wash her hands after the sneeze she will get a life-threatening illness • Every time someone sneezes around her, Sally thinks her whole family will get sick if she doesn’t wash her hands 	2
<p>Helps Sally disregard or disprove faulty assumptions by providing information or convincing “proof”</p> <p>(Award 2 points each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Talk to Sally about how unlikely it is that she will get from the sneeze 	2

<ul style="list-style-type: none"> • Explain to Sally how washing her hands many many times might make her more likely to get sick • Tell Sally how you only wash your hands 3 times a day and you don't get very sick 	
<p>Provides general information/"proof"</p> <p>(Award 1 point each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Talk to Sally about when it is appropriate to wash her hands • Tell Sally that she doesn't need to wash her hands so much • Sally should only wash her hands 3 times a day, 5 times a day is too much 	1
<p>Help Sally to learn to tolerate letting OCB come and go (i.e. cultivating nonattachment/rational nonsuppression)</p> <p>(Award 2 points each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Sally should think of OCB as a brain hiccup • Sally can think of OCB as a cloud passing in the sky • Sally should sit with OCB 	2
Encourage Sally to make a list of pros and cons <u>and</u> provides examples	2
Encourage Sally to make a list of pros and cons	1

ERP Strategies

Example	Score
<p>Contrive opportunities for exposure tasks/helps Sally find ways to "break the rules of OCB" <u>and</u> lists examples of what these might be</p> <p>(Award 2 points each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Sally can practice not hand washing at home • Sally can wash her hands in a different order • Sally can wash her hands with a different soap • Sally can break the rules of OCB by washing her hands less times 	2
Contrive opportunities for exposure tasks/helps Sally find ways to "break the rules of OCB" (no examples provided)	1

States a specific graded exposure task(s) <u>and</u> provides two or more steps in the task (Award 2 points each if multiple examples are listed): <i>Example:</i> <ul style="list-style-type: none"> • Help Sally delay her hand-washing by having her delay for 5 seconds, then 10 seconds, then 15 seconds 	2
States a specific graded exposure task(s) (Award 1 points each if multiple examples are listed): <i>Example:</i> <ul style="list-style-type: none"> • Sally should delay hand washing by 5 minutes 	1
Identifies a replacement behaviour or coping strategy (Award 2 points each if multiple examples are listed): <i>Example</i> <ul style="list-style-type: none"> • Sally could squeeze a stress ball when she feels like washing her hands • Sally should sit with OCB 	2
Sally should use a coping strategy	1
Sally should sit with OCB	1
Sally should ignore OCB	1
Help Sally to make a stairs of learning	1
Set goals for Sally to reduce her hand washing	1

Function-based Strategies

Examples	Score
Identifies that a compulsion may be maintained by attention and therefore provides reinforcement only for the absence of the behaviour (Award 2 points each if multiple examples are listed): <i>Example:</i> <ul style="list-style-type: none"> • Give Sally praise when she isn't washing her hands • Sally's teacher should ignore her hand washing but give her attention 	2

<p>when she isn't hand washing</p> <ul style="list-style-type: none"> • Don't argue with Sally when she is hand washing 	
<p>Provides attention for the absence of the behavior (but does not demonstrate or clearly identify function)</p> <p>(Award 1 point each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Give Sally praise • Make sure Sally gets attention 	1
<p>Identifies that a compulsion may be maintained by escape and suggests an intervention strategy that does not allow the child to escape an aversive event</p> <p>(Award 2 points each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Make sure Sally completes the math test, even if she washes her hands 	2
<p>Provides reinforcement when the child does not escape a difficult task to complete a compulsion (but does not demonstrate or clearly identify function)</p> <p>(Award 1 point each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Give Sally a reward for finishing the test 	1
<p>Identifies that a compulsion may be maintained by access to tangibles (i.e. toys, games, activities) and therefore provides access to preferred items only for refraining from engaging in compulsion</p> <p>(Award 2 points each if multiple examples are listed):</p> <p><i>Example</i></p> <ul style="list-style-type: none"> • Let Sally play with her favourite toy if she doesn't wash her hands after the sneeze 	2
<p>Provides access to a preferred item when the child refrains from engaging in the compulsion</p> <p>(Award 1 point each if multiple examples are listed):</p> <p><i>Example</i></p> <ul style="list-style-type: none"> • Let Sally play with her favourite toy if she finishes the math test 	1
<p>Assist Sally in refraining from engaging in the compulsion even if she is ill</p>	2

<p>Uses differential reinforcement to reinforce Sally’s independence in refraining from engaging in the compulsion</p> <p>(Award 2 points each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Give Sally 15 minutes extra to play with her favourite toy if she only hand washes 15 times during the day and 30 minutes extra to play with her favourite toy if she only hand washes 10 times during the day • The more Sally tries to not wash her hands, the more rewards she gets 	2
<p>Provide reinforcement (praise, reward, etc.)</p> <p>(Award 1 point each if multiple examples are listed):</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> • Reward Sally for not washing her hands after the sneeze • Give Sally a reward for washing her hands less times during the day • Give Sally rewards for meeting her goals 	1
<p>Introduces a token economy</p> <ul style="list-style-type: none"> • E.g. anytime Sally is around someone who sneezes and doesn’t wash her hands she receives a penny. When Sally obtains 5 pennies, she can trade them in for her favourite candy. 	2

Miscellaneous

Examples	Score
<p>Suggests the use of visual supports to assist Sally in components of the intervention (award 2 points each if multiple examples are listed)</p> <ul style="list-style-type: none"> • E.g. Encourages Sally to draw a picture of OCB to assist her in thinking of it as separate from herself 	2

The scoring guideline below taken directly from Sofronoff et al., (2005)

Encourage the child to seek treatment/go to a psychologist/psychiatrist/OCB group	1
Tell the child to stop engaging in the compulsion	0
Tell the child to stay calm/calm down	0
Give Sally hand sanitizer/wipes/etc	0
Show Sally how to wash her hands	0

