Use of Modified Cognitive Behavioural Therapy Paired with Parent Training on Differential Reinforcement Procedures to Decrease Obsessive Compulsive Tendencies in Children with Autism
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Dedication

This thesis is dedicated to my parents, for their unconditional love, support, and guidance. Without your continuous encouragement and belief in me, the creation of this thesis would not have been possible. Thank you.
Abstract

Obsessive compulsive (OC) tendencies are highly comorbid with Autism Spectrum Disorder (ASD). These tendencies have been noted to be intrusive, interfere with daily living, impair social functioning, and effect sleep patterns, and interfere with the ability to focus. The aim of the study was to evaluate the effectiveness of implementing parental training in differential reinforcement and a modified cognitive behavioural therapy (CBT) to decrease OC tendencies in youth diagnosed with ASD. Two participants, one aged 13 and the other 15, were referred to this study. Prior to the study modified functional interviews were completed with the parents of the participants. In addition, the Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS) was completed to measure the treatment effectiveness. This study consisted of three phases; a parental training phase, a psychoeducation phase with participants, and a modified CBT phase. Participants were asked to self-report on their level of obsessions/compulsions after each session in the first and second phases. The results of this self-report measure display a decrease in levels of obsessions/compulsions throughout treatments. From pre-test to post-test the CY-BOCS scores decreased for both participants. A one-month follow-up interview was also completed with parents of the participants which indicated the progresses made during treatment were maintained, demonstrating the potential long-term benefits. Future recommendations are also offered, as this study is exploratory, which include recruiting more participants, and extending the parental training phase of the study.

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Use of Modified Cognitive Behavioural Therapy Paired with Parent Training on Differential Reinforcement Procedures to Decrease Obsessive Compulsive Tendencies in Children with Autism

Youth diagnosed with Autism Spectrum Disorder (ASD) often have obsessions or compulsions (Murray, Jassi, Mataix-Cols, Barrow, & Krebs, 2015). Obsessive compulsive tendencies are highly comorbid with the Autism Spectrum and these tendencies have been noted to be intrusive and interfere with daily living (Murray et al., 2015). ASD is characterized as a neurodevelopmental disorder in which those diagnosed experience challenges with social interactions, communication, and imagination (Murray et al., 2015). Murray et al. (2015) also state that those diagnosed may be impaired by having restrictive or repetitive interests. Obsessions, compulsions, or the need for order are all traits of ASD. Obsessions can be characterized as unwanted intrusive images, thoughts, or urges and compulsions refers to the associated ritualistic or repetitive behaviours (Murray et al., 2015).

This study focuses on specific obsessive compulsive tendencies youth diagnosed with ASD are struggling with. These tendencies can keep youth from engaging in activities they would otherwise enjoy, can impair their social interactions and ability to focus, and can interfere with their sleep (Murray et al., 2015). These issues are all part of a domino effect. For example, if a youth is constantly preoccupied with an obsession, they may struggle to focus their attention on other tasks. This can lead to a decline in grades, resulting in employment difficulties, ultimately leading to being an unproductive member of society. When the mind is constantly unfocused it can be nearly impossible to function on a day to day basis.

It is not uncommon for young people diagnosed with ASD to have obsessive-compulsive tendencies (Murray et al., 2015). ASD is characterized as a developmental disorder, with the diagnostic criteria of impairments in social communication and social interactions, restricted interests, and repetitive patterns of behaviours or interests (Kincaid, Doris, Shannon, & Mulholland, 2017). Obsessions are recurrent persistent thoughts, impulses, or images, that are impairing the well-being of the individual and compulsions are when the person feels the need to act or behave in response to the obsessions (Dar, Lazarov, & Liberman, 2016). The prevalence of Obsessive Compulsive Disorder (OCD) is highly elevated among adolescents with ASD (Ruzzano, Borsboom, & Geurts, 2015), which is why it is important to teach youth with ASD how to function independently and to the best of their abilities. Though, this can prove to be challenging when obsessive compulsive thoughts are becoming intrusive. The obsessive-compulsive tendencies may never fully go away but the goal of this study was to make them more manageable. This study examined the use of differential reinforcement (DR), parent training, and modified cognitive behavioural therapy (CBT) in attempt to decrease the obsessive-compulsive tendencies to a more manageable level.

Parental training in DR was utilized prior to the modified CBT intervention. DR is primarily used to extinguish the undesirable behaviours and encourage the presence of alternative behaviours (Van Haaren, 2017). Research surrounding the use of DR to decrease specific obsessive-compulsive tendencies in youth with ASD is limited, although DR has been successfully used with the ASD population in the past. The parents of participants were trained to understand the purpose of DR and on strategies to implement it so it could be utilized in their home. It was important that the reinforcement came from the ones who spend the most time with the youth and that the behaviour was modified in their natural environment.

The use of CBT has been seen to decrease obsessive-compulsive tendencies in children
with ASD, however CBT is more effective when attempting to decrease obsessive-compulsive tendencies in typically developing children (Murray et al., 2015). Therefore, a modified version of CBT that is ASD friendly was utilized. To adjust for ASD, additional visuals were incorporated and treatments were repeated several times. The effects of a modified CBT paired with DR used in attempts to decrease obsessive compulsive tendencies in adolescents diagnosed with ASD was evaluated in the current study.

**Rationale**

It is important to teach adolescents with ASD how to control their obsession and compulsions so they are not impaired by them. An inability to manage their obsessions can lead to a strain on parent-child relationships, social relationships outside of the home, and impair ability to become a functioning member of society (Murray et al., 2015). Based on the overwhelming need cited in the literature for children to be able to control their obsessive-compulsive tendencies this study sets out to determine the following question: Is the use of a modified CBT paired with parental training in DR procedures effective in decreasing obsessive compulsive tendencies in youth diagnosed with ASD? It is hypothesized that yes, utilizing these treatments will be effective in decreasing the obsessive compulsive tendencies.

**Thesis Overview**

This thesis is comprised of five chapters. The first chapter is the introduction which gave an insight into the purpose and rationale of completing this thesis. The second chapter is the literature review which encompasses several peer-reviewed, empirically validated articles covering ASD, obsessive compulsive tendencies, CBT, modified CBT, parental training, and DR. Chapter three is focused on the methods utilized, which is where the procedure of the study is explained. Including information on participants, the design of the study, the materials and measures used, and a detailed breakdown of how the study was conducted. Chapter four presents the results of the study with the visual analyses. Finally, the discussion chapter consists of an overall summary of the study including strengths and limitations from a multilevel systems perspective, implications for the field of Behavioural Psychology, and recommendations for future research.

**Chapter II: Literature Review**

Ruzzano, Borsboom, and Geurts (2015) state that multiple disorders or comorbid symptoms often occur in individuals with ASD. They examined the significant incidence of OCD in adolescents with ASD (2015). Their goal was to examine the interactions between the repetitive and/or compulsive behaviours of ASD versus those of OCD. Their research found that in OCD, the compulsive behaviors aim to reduce the distress caused by obsessions, while in the ASD population, the obsessive-compulsive tendencies do not (Ruzzano, Borsboom, & Geurts, 2015). This is why the effective treatment is so valued.

Although several articles have been written surrounding OCD and ASD, limited research has been done looking at the specific obsessive-compulsive tendencies children with ASD display. The following literature review examines treatments that have proven to be effective for children with ASD and youth with obsessive-compulsive tendencies. More specifically, the literature review covers DR, parent mediated interventions, ASD, obsessive-compulsive tendencies, CBT, and modified CBT.
**Differential Reinforcement**

In an article written by Van Haaren (2017) DR is explained as “…a procedure in which reinforcement is provided for responses that share a predetermined dimension or quality, and in which reinforcement is withheld for responses that do not demonstrate that quality . . .” (p.98). The predetermined dimension Van Haaren (2017) refers to is the adaptive or socially acceptable behaviours in which he hoped to increase. Van Haaren (2017) expands on DR, saying it is used to mold specific behaviours across the following dimensions: topography, latency, duration, amplitude, magnitude, or rate. Although Van Haaren explains the various types of DR, this literature review focuses on differential reinforcement of alternative behaviours (DRA), differential reinforcement of incompatible behaviour (DRI), and differential reinforcement of other (DRO) behaviours.

Van Haaren (2017) describes the following similarities and differences between the three approaches: DRA is the process of reinforcing desirable alternative behaviours that the youth is displaying while ignoring their undesirable behaviours. DRI ignores the undesirable behaviours but provides reinforcement for behaviours the youth is displaying that are incompatible with the undesirable behaviour. DRO is similar to the first two in the sense that the problem behaviour is ignored, but this procedure reinforces the absence of a particular response through a given time period. DRO is different from the first two processes mentioned as it is the only one with time constraints attached to it.

Teaching preschool life skills (PLS) programming has successfully taught young children to request assistance, tolerate delays, form friendships, and increase communication (Falligant & Pence, 2017). A study conducted by Falligant and Pence (2017) built upon the PSL model by primarily looking to teach children with ASD and developmental disabilities to respond to their name, the ability to request attention or assistance, the ability to tolerate delays or denials and to assess the level of instruction required to do so. A multiple baseline across behaviours design was utilized to explore the effects of the extended PLS to incorporate instruction and DR. This study was set in a classroom where the teacher was the one providing the DR. The teacher provided DR to the student following a correct pro social response in various situations. This study demonstrated that incorporating DR increases the likelihood of pro social responding. However, there was a lack of generalization seen after the study was completed. The lack of generalization highlighted the need for additional teacher training to maintain the learned functional social skills (Falligant & Pence, 2017).

Similarly, Johnson, Vladescu, Kodak, and Sidener completed a study in 2017 assessing the effects of DR procedures when used with youth diagnosed with ASD with the aim of determining the most efficient reinforcement arrangement. The assessment showed that after implementing the DR the number of correct responses dramatically improved. All participants showed similar results in the sense that after DR was implemented their levels of correct responding increased (Johnson, et al., 2017). Three young boys, aged eight, nine, and ten participated in the study, all having an ASD diagnosis (Johnson, et al., 2017)). The study took place in a classroom and four reinforcement arrangements were assessed across three skills; auditory-visual, tact, and intraverbal instruction (Johnson, et al., 2017). Each skills had previously identified targets which were presented an equal number of times during each session (Johnson, et al., 2017). The four reinforcement arrangements were set up to evaluate which instruction type would be most efficient across multiple skills (Johnson, et al., 2017). Overall, the DR procedures used in this study showed to be effective with the three children with ASD (Johnson, et al., 2017).
Otero and Hunt (2016) conducted a study with elementary school students identified with difficulty staying on-task. Similar to the study done by Johnson, et al., (2017), the sample size of this study was quite small, consisting of only three participants (Otero & Hunt, 2016). The authors evaluated the effects of DR on a self-monitoring intervention. Although the time spent on task did increase due to the intervention, data showed that the increase of on-task behaviours varied across participants in the DR phase (Otero & Hunt, 2016). As mentioned, all three participants demonstrated an increase in productivity in the class however one student in particular demonstrated exceedingly elevated levels of on-task behaviour in the added differential reinforcement phase, showing the effectiveness of adding differential reinforcement to an already well established intervention (Otero & Hunt, 2016).

Parent Mediated Interventions

Murphy and Zlomke (2016) also conducted a study examining the effects of DR procedures. More specifically, they explored the effects of parent mediated DR, psychoeducation, parent coaching, and parent modeling when implemented with a six-year-old girl with avoidant/restrictive food intake disorder. This study, similar to the previous ones, looked at DR. However, this study did not take place in a school setting, it was in home. Murphy and Zlomke (2016) were focused on parent mediated strategies, rather than teacher mediated. In their study, DR was the initial phase of intervention followed by subsequent directive phases. Parent mediated interventions had proven successful in previous outpatient treatments for young children which is why Murphy and Zlomke (2016) established their outpatient intervention in such a manner. They hypothesized parent mediated interventions would result in clinically significant improvement in meal time behaviours and acceptance of food in the young girl with avoidant/restrictive food intake disorder. They tested a combination of five interventions: parent training, parent mediated DR, psychoeducation, parent coaching, and parent modeling. The results of this study confirmed their hypothesis: the combination of the five treatments were effective in decreasing the undesirable behaviours and increasing the desirable. Furthermore, these outcomes were maintained at a six-week post treatment follow-up (Murphy & Zlomke, 2016).

Parent training was proven effective again by Malow, MacDonald, Fawkes, Alder, and Katz in 2016. Similar to Murphy and Zlomke (2016), Malow et al., completed a study examining the effects of a parent training program. They completed a five-week in-home sleep education program for 10 sets of parents with ASD children aged three-nine. Parents were referred to the study when they expressed the need for additional assistance in getting their child to sleep (Malow et al., 2016). Previous to intervention, information was gathered on the parents’ areas of need. The parents were provided with educational tools to implement the program and to support their children sleep (Malow et al., 2016). Each family expressed good to excellent comprehension of the training materials (Malow et al., 2016). After the five-week educational period, the parents completed the post-test questionnaires. Results showed that the majority of participants’ sleep improved in at least one domain that was identified as a need area by the parents (Malow et al., 2016). Only eight out of ten families completed the study, and six out of those eight showed improvements (Malow et al., 2016). Overall, this study suggests that parents can learn effective strategies for improving need areas in their children’s lives and shows the effectiveness of parent training and parent mediated interventions.
Cognitive Behavioural Therapy

A systematic review done by Lang, Regester, Lauderdale, Ashbaug, and Haring (2010) examined the use of CBT to decrease anxiety in youth with ASD with the purpose of informing practice and identifying areas of future research. The authors of this review assessed several references of prior study from online databases, and journals (Lang et al., 2010). Nine studies were selected meeting their criteria. The findings of this review showed that regular CBT has been proven to be an effective treatment for individuals with Asperger’s (Lang et al., 2010). However, the authors noted that the literature on other ASD diagnostic subtypes is limited and should be further explored. It was recommended that further research be done on youth with ASD, with varying sub-types, using a modified CBT rather than the standard CBT (Lang et al., 2010). The authors of this study believe that expanding research on modified CBTs could lead to more efficient interventions, especially for those with ASD (Lang et al., 2010).

Murray et al. (2015) conducted a study comparing CBT for OCD outcomes among youth with (n=22) and without (n=22) ASD. Patients, having ASD and having consecutive (from 2007-2011) referrals (n=387) to a national OCD clinic, were selected to participate in the study. After using the CY-BOCS interview with the children and completing a psychiatric assessment with their parents, 336 were identified as having a primary diagnosis of OCD (Murray et al., 2015). From that sample, 204 were identified as having pre- and post-treatment data available; patients with OCD and ASD and patients with OCD and no ASD (Murray et al., 2015). Overall only 22 patients were confirmed with both diagnoses and had previously undergone a course of CBT with pre- and post-treatment data available, and therefore only 22 were asked to participate in the control group (OCD with no ASD) so they would have even numbers (Murray et al., 2015). Individual CBT sessions, with an experienced therapist or psychologist, were provided to both groups of participants. Sessions were individually tailored and ran over the course of a 17-week period. Each participant received 14 sessions, each lasting for one hour, with additional sessions offered if needed. The sessions consisted of three phases: (1) psychoeducation, (2) exposure with response prevention, and (3) relapse prevention. Homework was scheduled each week. Results showed that treatment was effective for both groups of participants (Murray et al., 2015). However, when the effects of CBT on these two groups were compared, data showed that CBT was inferior when using it with the ASD group (Murray et al., 2015). Although CBT is effective in treating symptoms of ASD, it needs to be modified to be equally as effective as it is when used for those without ASD (Murray et al., 2015).

Modified Cognitive Behavioural Therapy

In 2015, Krebs, Murray, and Jassi completed a case study examining the effects of a modified CBT treatment on an adolescent boy with ASD and OCD. The researchers found that there was limited evidence supporting effective treatments of youth with OCD who are on the spectrum (Krebs et al., 2016). They found that although CBT is effective in treating OCD, modifications need to be made to the standard CBT when using it for youth with ASD (Krebs et al., 2016). The use of CBT was seen to be less effective with adolescents who have ASD when compared to their typically developing peers (Krebs et al., 2016). The authors determined this to be true as youth with ASD have great difficulty with recognizing and reporting thoughts, feelings, and behaviours. Furthermore, ASD youth are very rigid in their cognitive abilities and principles and have impaired executive functioning (Krebs et al., 2016). Therefore, the modifications being recommended to the standard CBT included extended psychoeducation, scheduling regular home-based sessions, and having an increase in involvement from family and
school (Krebs et al., 2016). More specifically, they incorporated greater use of visual materials and worksheets, took short breaks throughout the sessions, had a highly-structured agenda written on a white board, used a very directive approach, extended psychoeducation, had regular home-based visits, worked with schools, and had weekly family meetings. They used these modifications and explored the effects of them with a 14-year old boy who had experienced OCD since the age of eight and had a diagnosis of ASD (Krebs et al., 2016). The boy attended 18 modified CBT sessions over the course of four months (Krebs et al., 2016). Pre- and post-test measures, including the CY-BOCS, along with 6- and 12-month follow up were completed (Krebs et al., 2016). Scores on all outcomes declined, from severe range at pre-treatment to mild range at post-treatment, showing drastic improvements in the OCD symptoms through the course of treatment (Krebs et al., 2016). Also shown was an improvement in terms of daily functioning, social functioning and his family life (Krebs et al., 2016). The gains made throughout treatment were all maintained at the 6- and 12-month follow ups (Krebs et al., 2016).

As mentioned youth with ASD have difficulty with communication. This population has difficulty understanding people’s intentions, conversations often get misinterpreted, and they do not know how they are expected to behave (Ekman & Htlunem, 2015). There is a need for information to be presented in a visual and systematic manner for ASD youth to be able to cognitively process information and be part of the dialogue in social situations (Ekman & Htlunem, 2015). Ekman and Htlunem conducted a study in 2015 investigating if youth with ASD benefit from CBT treatment modified to incorporate visualization in communication during treatment. The authors modified CBT to the behaviours they were trying to treat by incorporating several visuals into the conversations. This allowed the clients to comprehend the social and emotional context while visualizing the invisible aspects of the conversation (Ekman & Htlunem, 2015). The effectiveness of the modified CBT was assessed by looking at anxiety levels and behavioural changes in the target behaviours (Ekman & Htlunem, 2015). They implemented their study in three different settings: a private clinic, a child and adolescent psychiatric clinic, and a treatment center for youth by experienced CBT therapists. They set up the study to incorporate two pre-, one mid-, and one post- assessment. Throughout the intervention, the therapists measured the clients target behaviours through frequency and intensity recording (Ekman & Htlunem, 2015). These recordings showed significant improvement in the excessive behaviours they were measuring (Ekman & Htlunen, 2015). The Global Function Rating Scale was used to display these findings (Ekman & Htlunen, 2015). These results showed that modifying CBT to incorporate visualized language could be an effective way to decrease undesirable behaviours and increase the desirable behaviours in children with ASD (Ekman & Htlunen, 2015).

Ehrenreich-May et al. (2014) conducted a study looking at the effects of modified CBT with 20 adolescents with ASD and comorbid anxiety disorder. They found that although CBT has been effective in treating anxiety disorders modifications should be made to the standard treatment to increase positive results when working with clients with ASD (Ehrenreich-May et al., 2014). Similar to Ekman and Htlunems findings (2015), Ehrenreich-May et al. (2014) noticed that the implementation of modified CBT increase treatment effectiveness. The study consisted of 20 youth, between the ages of 11-14, diagnosed with ASD and comorbid anxiety disorder (Ehrenreich-May et al., 2014). It was an open trial, in which both the researchers and participants knew the treatment was being administered, with the goal of reducing the anxiety symptoms using a modified CBT. By incorporating visuals and hands on activities in the treatment, the participants showed significant reductions in their anxiety severity. The anxiety reductions were assessed by a clinician and through parent ratings, where externalized symptoms were observed,
at both pre- and post- treatment (Ehrenreich-May et al., 2014). More notably, the gains made as a result of this study were maintained at a one-month follow up (Ehrenreich-May et al., 2014).

**Relationship Between the Literature and the Research Statement**

The findings in this literature review show various empirical, evidence-based treatments which showed to be effective for children with ASD and/or obsessive compulsive tendencies. Although these studies proved effectiveness of various treatments for the ASD population, several of the articles highlighted the need for expansion on this topic. Findings show that CBT is most effective when attempting to decrease obsessive compulsive tendencies in youth, however when being used with youth who have an ASD diagnosis modified CBT is more successful. Parent mediated interventions and parent training were also seen effective in several of the studies reviewed, when being used with the target population. By incorporating the three interventions examined, differential reinforcement, parent-training, and modified CBT, into one program it would both be beneficial to the expansion of literature and hopefully further show the effectiveness of these treatments.

In summary, the research highlights the effectiveness of differential procedures as well as modified CBTs to decrease the unwanted or increased the desired behaviours in youth diagnosed with ASD. With the purpose of expanding upon this research, the current study investigated the effects of combining these procedures into one intervention to decrease unwanted behaviours OC tendencies in adolescents with autism display.

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**Chapter III: Method**

**Participants**

Participants of this study included two teenage females, one aged 13 and one 15. Both young females had an official diagnosis of ASD and were identified as having concurrent severe obsessive compulsive (OC) tendencies. These participants were both referred to the study by the Behaviour Therapist from the Neurodevelopmental team at Hotel Dieu Hospital, and were accepted to the study when it was confirmed that they met inclusion criteria. Additional inclusion criteria factors included age and location. It was important the participants both be between 8-15 years old, and location was considered as transportation to and from the hospital and distance to their home were a factor. Exclusion criteria included anyone with a formal OCD diagnosis, and anyone who missed more than 25% of the sessions. These participants were to be excluded as formal OCD was not being targeted, and they would be at a significant disadvantage having fewer sessions, ultimately losing out on important content due to time constraints.

Participant A, 15-years-old, was identified as having a fear of losing things, a fear of not having her possessions, and the need to know about certain things. It was further reported that she has trichotillomania, and engages in hoarding behaviours. At the time of the study she was not attending school, nor had she been for the past year, as she reported feeling overwhelmed at school and could not identify the cause.

Participant B, 13-years-old, was identified as having severe intrusive sexual and rebellious thoughts, being severely impulsive, and spending excessive amounts of time obtaining trivial information. She was also reported as having compulsive handwashing behaviours, teeth brushing, and sleep patterns in the past. Her biggest concerns were her impulsivity and obsessions surrounding sexual behaviours, drugs, and consumption of alcohol.
Despite the variation in specific obsessions or compulsions being displayed by the participants, the same outline of each session was used for both participants. As both girls referred to the study met inclusion criteria they were accepted as participants.

Consent/Assent Procedures

Prior to the start date of the study, the participants’ parent(s)/guardian(s), the participants, a witness, and the principle investigator signed the consent forms (see Appendix A). The consent form was created by the principle investigator, following the St. Lawrence College (SLC) guidelines. This consent form was approved by the student’s college supervisor, the Research Ethics Board at SLC, and the Health Sciences and Affiliated Hospitals Research Ethics Board at Queens University. Post approval, the form was given to the participants’ parent(s)/guardian(s) by the principle investigator via email for them to review prior to arrival at the hospital. The consent form outlined the purpose of the study and the data being collected, as well as the benefits, limitations, and risks associated with it. Upon arrival at Hotel Dieu Hospital the principle investigator reviewed the consent form with the parent(s)/guardian(s) in person and addressed any questions or concerns they were having. Parent(s)/guardian(s) and the participants had the opportunity to ask questions and receive answers regarding the study, and it was reiterated that participation was voluntary and they may withdraw consent at any point without penalty; meaning they were free to withdraw from the study, and continue receiving regular services from the agency. These procedures were all explained prior to the signing of the consent form.

Assent was also obtained from participants prior to the start date of the one-on-one modified CBT sessions. The study was explained verbally by the principle investigator to the participants in lay terms; participants were required to verbally agree to participate as well as sign the form. The assent form which was given to participants can be seen in Appendix B.

Design and Variables

The study utilized an AB design. The ‘A’ condition involved collecting baseline data during the psychoeducation phase with participants, asking them to rate their severity of OC tendencies at the end of each session. The ‘B’ condition involved implementation of a modified CBT intervention and a variety of differential reinforcement (DR) procedures. The dependent variable in the study was identified as the OC tendencies displayed by the participants, which were defined as the act of repeated performance of a specified behaviour due to intrusive thoughts or feelings. The dependent variable was measured by comparing pre- and post-test CY-BOCS scores and through a self-report measure which was utilized throughout the study. The independent variable was, therefore, the interventions of modified CBT and DR. Modified CBT in this case included incorporating more visuals, having a greater use of worksheets, including break times throughout sessions, having extended psychoeducation, and having regular home or school visits. DR was implemented in the home, in the form of an at home token economy or increased verbal praise, with the goal of increasing desirable behaviours and decreasing the undesirable behaviours displayed by the participants. The principle investigator also completed assessments with the participants’ parents prior to the commencement of intervention to determine the topography of the participants’ specific behaviours.
Descriptive Analysis

To determine the effectiveness of the intervention, the principle investigator used descriptive and visual analyses. This included the calculations of central tendency and standard deviation of the participants’ self-report measures. This data was visually displayed using tables and graphs. Nelson, Van Norman, and Christ (2017) discussed the use of automated trend lines in interpreting data through visual analyses. Therefore, a trend line is displayed on these graphs as a visual indicator of the data trend. The trend lines show if the OC tendencies increased, decreased, or were maintained over the course of intervention, by the direction of them. It is also able to show the variability of data points across sessions for both participants.

Setting and Apparatus

The study took place in multiple settings. Training took place with the mothers of participants A and B prior to intervention. For participant ‘A’, the first session was completed at the hospital and the other within her home. For participant ‘B’ the first two sessions with her mother took place solely in the clinical setting at the hospital.

When the interventions with the participants began, the principle investigator and the parents discussed where they thought treatment would be most effective. For participant A, this meant having 2 sessions per week at her home and 1 session per week at the hospital for the first 3 weeks. Gradually the percent of sessions in the clinical setting increased as the participant became more comfortable leaving her home. The at-home sessions were conducted at the kitchen table with only the participant and investigator present. For participant B, the school setting was seen as most appropriate. This participant was struggling greatly with the freedom of high school lunch hour, and, therefore, sessions were scheduled during this time. An office space was provided by the school to ensure privacy of these sessions.

The materials required for the completion of this study included chart paper, markers, worksheets, paper, pens, cue cards, stickers, and reinforcers for the DR procedure.

Measures

Indirect Measures

Indirect measures were primarily used to gather data on the participants prior to the intervention start date. First the Children’s Yale-Brown Obsessive Compulsive Scale (CY-BOCS, see Appendix C) was completed with parent(s)/guardian(s) of each participant to determine what behaviours the adolescents were displaying and the severity of these behaviours (Scahill, Riddle, McSwiggin-Hardin, & Ort, 1997). Following the CY-BOCS, Bernfeld’s (2012) adoption of O’Neil et al.’s (1997) Modified Functional Assessment Interview (FAI) was completed with the parent(s)/guardian(s) to gather more information about the function of their OC tendencies (see Appendix D). Finally, parent(s)/guardian(s) were sent home with an event recording sheet to track when certain behaviours were being seen (see Appendix E).

The CY-BOCS was completed with the parent of each participant during the first session of the parent training phase. This principle investigator administered the assessments and they took approximately 30 minutes in length to complete. The purpose of this assessment was to determine the specific obsessions and compulsions the participants were experiencing and their severity. The CY-BOCS also allowed parents to identify target symptoms for both obsessions and compulsions and rank their severity from the parent perspective. The principle investigator
scored the assessments so the severity of the participants’ obsessions and compulsions could be determined.

The modified FAI, which was completed following the CY-BOCS, was done to gain further insight into the specific behaviours displayed by the participants and gathered general information about them. Parents commented on the specific behaviours they were seeing and reported their frequency, duration, and intensity. Questions regarding antecedents, consequences of the behaviours were asked, and the environment in which these behaviours were most or least likely to occur was identified. Following the initial questions, the parents were asked about any medications and medical conditions the participants may have. They were then asked to outline their child’s daily routine including sleep and eating patterns. This assessment took approximately 30 minutes to complete.

After these assessments were completed with the principle investigator, an event recording sheet was given to the parent and explained in detail. Event recording was utilized so that the principle investigator could capture a stronger picture of when and where the OC behaviours were being displayed. This sheet was to be completed by the parents or teachers of the participant to the best of their ability. Having this data collected by parent(s) or teacher(s) was more effective than having the principle investigator do it because the parents were with the participant for the greatest duration. There was also a concern with reactivity to observations, and the concern that the participants behaviour would shift related to the presence of the principle investigator and thus provide an inaccurate representation of the frequency of behaviour. The date, time, and number of behaviour occurrences were recorded.

Direct Measures
Naturalistic observation recordings were completed using the Antecedent, Behaviour, Consequence Chart (see Appendix F). The ABC chart was utilized throughout the first four, 1-hour sessions with the principle investigator. This allowed the principle investigator to identify possible antecedents and consequences of the behaviour.

Ongoing Data Collection Measures
Through the second and third phases of the study, participants were asked to rate the severity of their OC tendencies at the end of each session. They were first given a sheet of paper to read over with different levels of severity from 1 (*not noticing obsessions and compulsions at all*) to 10 (*obsessions and compulsions make it difficult to get through the day*). They were then asked to plot that number on a graph (see Appendix J), with the Y axis being the severity level and X axis being the session number. This activity was used to determine the participants’ perceived level of OC tendencies. This process also allowed participants to visualize their progress over the course of treatment.

Follow-up Measures
An interview was conducted with the parent(s)/guardian(s) of the participants one month following the end of the study to evaluate the maintenance of program results. This interview consists of 4 questions to evaluate if the gains made through treatment were generalized and maintained (see Appendix G). This questionnaire took no more than 15 minutes to complete and was completed via email.

Procedure
This intervention consisted of three phases: phase 1 consisted of parental training in DR, phase 2 consisted of psychoeducation completed with participants, and phase 3 incorporated modified CBT.
Phase 1
The first two sessions of this study were completed solely with the parent(s)/guardian(s) of the participants. During this phase, the indirect assessments were completed and parents received training. They were taught about DR procedures, instructed on how to use them, and shown how to be used most effectively within their homes. To ensure treatment integrity, modeling, rehearsal, and feedback were utilized. This phase ran for the first week of the study and consisted of two, 1-hour sessions, with each participant’s parent(s).

For participant A’s parent, the first of the two sessions were completed at Hotel Dieu Hospital in a clinical setting, and the second was completed in her home to accommodate the parents’ needs. Participant B’s parent sessions were both completed in the clinical setting at the hospital.

The same procedures were utilized for each parent and are detailed below.

Session 1: This session began with the parents identifying the behaviours to increase and decrease in their children, in addition to a general overview of the participants’ behaviours. The principle investigator verbally explained and conducted the CY-BOCS assessment with the parents. The definition of reinforcement was verbally explained by in lay terms. Specifically, positive reinforcement was highlighted. Several examples of reinforcement, positive reinforcement, and DR were given to help the parents fully grasp the concepts. This explanation included a description of who can use these procedures, the goals of reinforcement, the definition in lay terms, and examples. The three primary types of DR including DRA, DRI, and DRO were reviewed. The same example was used to explain each of these types, to illustrate the difference between them. Parents were asked to think about these in more depth to determine which would be most effective for them to utilize.

Session 2: The second session began with the opportunity for parents to ask questions or address concerns. The Modified FAI was explained in lay terms and the parents completed the measure. DR was briefly reviewed as a refresher, and a video of someone using each of the DR procedures was shown. An opportunity for the parents to practice the skill was offered, and it was discussed how they could best implement the procedure in their home. For participant A, a token economy system was the best fit according to her parents. The definition of a token economy, and how to implement it in their home was explained, and was later set up in collaboration with the parent, the participant, and the principle investigator. For participant B, the use of verbal praise and recognition were seen as most age appropriate, which was explained and modelled with the parents. An opportunity was provided for parent(s) to practice the skill and feedback was provided by the principle investigator. The event recording sheet was given to the parents. The purpose of this data sheet and how to use it were explained verbally and examples were given. The session ended with providing the parents with another opportunity to address concerns and ask questions.

Phase 2
Phase 2 of the study primarily focused on psychoeducation. These sessions ran 2-3 times per week with each participant in either the clinical setting at Hotel Dieu Hospital, a secondary school in Kingston, or the home of the participant to best suit their needs. Participant A was seen 3 times per week throughout this phase and the majority of sessions were held at her home. Participant B was seen primarily at her secondary school during the lunch hour. She was also seen 3 times during the first week of this phase, however this was modified to twice per week as she was grasping the concepts and able to recall the information presented quite easily. These sessions all lasted for approximately one hour and were tailored to meet the specific needs of the
participant. The focus of the psychoeducation phase was on the OC tendencies the participants were experiencing and trying to normalize the ‘fight or flight’ response which accompanies it. This was done incorporating several visuals, and was extended to run for the first 4 weeks of the intervention.

The same session outlines were followed for each participant, however with participant A more time was spent on each session to account for lack of productivity. The session outlines below are representative of the timeline participant B followed.

**Session 1:** The first subject covered with the participants was assent procedures. The letter was read to the girls, they verbally agreed to participate, and they signed the form. Next, obsessions and compulsions were explained to the participants, with the use of examples. They were asked to identify any OC tendencies they were struggling with, and it was explained that those identified were going to be targeted in treatment. Overall treatment goals were made, ultimately stating the goal was to put the participant in charge of their decisions and take away the obsessions/compulsions power. The at differential reinforcement which was previously discussed with the parent(s) was reviewed. Reinforcement was briefly explained using examples and a preference assessment (see Appendix H) was completed. Participants were asked to think about one specific element they would like to target. Lastly, during this session, participants rated their anxiety level on a 10-point scale (see Appendix I) and plotted it on a blank graph (see Appendix J). This occurred at the end of each session.

**Session 2:** Session 2 began with a 5-10-minute recap of session 1, discussing the difference between obsessions and compulsions. A video on intrusive thoughts was shown to participants, and a game to test their knowledge followed. Participants were given two cards, one labelled obsessions, and one labelled compulsions. The participant was given a statement and they were asked identify it as an ‘obsession’ or ‘compulsion’ using cards (see Appendix K). The root and reasoning behind obsession and compulsions was also discussed. Also discussed was how these tendencies are treated, and how although these tendencies may never go away, the symptoms of them can be reduced to a manageable level. A visual cycle was used, and was continually used throughout sessions to show the role of CBT and how it can be helpful in managing behaviours (see Appendix L). The importance of parent involvement in treatment was reiterated to the participants. However, participants were told that although parents were playing a role, they themselves would have to be the one to desire and implement changes in their life. Homework was assigned to participants to try to notice where OC tendencies take over and to notice what happens when they do.

**Session 3:** A review from last session was done, and homework was collected. The review was done with the use of a comic and a verbalized recap. Participants were asked if they were able to notice any other obsessions and compulsions that they might be struggling with. The answers provided to this question were mapped out visually, and they were put into the CBT cycle. The participants and principle investigator also discussed the use of a fear thermometer, and how to rate feelings towards different situations. Homework was assigned to continue to think about where obsessions and compulsions arose.

**Session 4:** All sessions had a similar format in the sense that they all began with a 5-10-minute casual conversation, which was followed by a recap of the previous session, and a homework check. If homework was uncomplete, participants were asked to have it done for the next session. Session 4 primarily focused on body reactions. The principle investigator explained that because people tend to notice physical reactions prior to recognizing emotions, body reactions plays a large role in how people feel. A worksheet was completed so the participants could
visually see how their bodies were reacting and specifically where in their bodies they could feel it. The ‘fight or flight’ alarm system was touched on, and it was stated that it would be discussed more in depth during the next session. Homework was assigned to continue to think about the situations in which obsessions or compulsions were prevalent including the location, the situation, and the people around.

**Session 5:** During this session, participants were asked what they were noticing their bodies doing when they were put in an uncomfortable situation or an unfamiliar place. The conversation surrounding the ‘fight or flight’ response was continued. The fact that it is challenging to notice the difference between real alarms and false alarms was addressed. Several examples were used and this was worked on until the participants were able to fully understand the concept. Deep breathing strategies were then taught to participants, as it is the one body response to the ‘fight or flight’ alarm system that can be controlled. Why it is done, how it is done, and how to practice it was all explained to participants. The skill was modeled and an opportunity to practice it was provided. An opportunity to ask any questions was also provided prior to the homework assignment. Participants were asked to practice deep breathing at home or in comfortable settings as much as possible, as the more a skill is practiced the more it becomes second nature so that it can be used in situations when they are feeling overwhelmed or uncomfortable.

**Session 6:** This session was focused on how to sort thoughts. Thoughts were compared to garbage, in the sense that people know how to sort garbage without really thinking about it. However, sometimes more thought needs to be put in if people are unsure if something needs to be thrown out or not. Similarly, people can usually sort their thoughts but sometimes a thought can get stuck or and people can be unsure if it is worth keeping or not. A couple of worksheets were completed to add the visual component to this session and several examples were given. Homework was assigned to participants to try to think of other thoughts their brains might be having a hard time sorting.

**Session 7:** A brief review of what obsessions and compulsions are and what the CBT cycle is was done to see how much participants were able to recall. This session was focused on the fact that obsessions/compulsions always want more. An example was used to help further explain this concept. Questions were focused around this example, asking how the outcome could have been changed and challenging their thoughts to determine the worst thing that could have happened. It was questions what could be done next time to avoid the same situation. It was explained that changing the way you behave changed the result of the situation, and will continue to have an effect on the situation in the future. The example was applied to their specific obsessions/compulsions and this was discussed until the connection was made. Homework was assigned to try to think of other obsessions/compulsions they might be experiencing.

**Phase 3**

The third phase of this study involved cognitive restructuring. Specifically, negative thoughts were questioned, and participants were prompted to challenge irrational thoughts which provoke their OC tendencies. Teaching the participants tools that they could use to combat intrusive thoughts was also a focus. These sessions ran 1-3 times per week with each participant, and were held in flexible setting to best suit their needs. The primary this phase was centered around challenging the intrusive thoughts and teaching participants OC tendencies coping strategies. Several visual aids were incorporated into this session, and hands on learning activities were utilized. Sessions in this phase were similar to phase 2 in their formatting sense. Each session began with a casual conversation, a recap of the previous session and a homework review and finished by asking participants to rank their OC tendencies on the 10-point scale.
The same session outlines were followed for each participant, however more time was spent on each session with participant A, as she was having difficulty understanding the concepts being taught. The session outlines below are representative of the timeline participant B followed. Both participants sessions were held over the remaining 3 consecutive weeks of the study.

Session 8: This session focused on identifying ‘tricks’ obsessions and compulsions can play. Optical illusions were discussed and visual activities were provided, which were both related back to obsessions. Three tricks that OC tendencies can play were discussed including ‘sound the alarm’, ‘the maybe game’, and ‘the disappearing just-right feeling’. Sounds the alarm was focused on body reactions and the fight or flight response. The maybe game was focused on challenging intrusive or negative thoughts and the “what if”s”. The last trick, the disappearing just-right feeling, was in regards to compulsions and how sometimes we have to do certain things such as rituals to feel just right. These tricks were written on chart paper with markers as the session progressed so participants could review them. The participants were told they would be learning tools in the upcoming sessions to help avoid falling for these tricks. Homework was assigned for the participants to notice when obsessions and compulsions were playing these tricks.

Session 9: Session 9 was tailored towards teaching the first tool; how to catch obsessions and compulsions. The game I Spy was played, as an example of how it can be difficult to find things in a cluttered environment. Similarly, intrusive or obsessive thoughts hide amid the regular ones, as brains can become cluttered or overwhelmed with thoughts. A review of obsessions, intrusive thoughts, compulsions, and urges was done. Participants were asked to start to label obsessions and compulsions when they noticed them to being to reduce their size and allow the individual to make free choices. A thought bubble worksheet was filled in with how to label, and what could be said while labelling. Homework was assigned to practice playing I Spy at home with obsessions and compulsions, and try to recognize them in comparison to of regular thoughts.

Session 10: The focus of this session was tailored toward the second tool on how to cope with OC tendencies; talking back. It was explained to participants that it is not appropriate to talk back to people, but how it is different when dealing with OC tendencies. Things to say to talk back to someone were brainstormed and then ones applicable to obsessions and compulsions were written into a thought bubble worksheet. The fact that OC tendencies were already losing their power was reiterated, and it was promoted that they will continue to lose their power if participants were to practice talking back to them. A worksheet was given to participants to draw a monster of what their OC tendencies look like, so they could put it on their wall and talk back to it. Homework was given to participants to continue noticing the situations they are in when they notice their obsessions or compulsions and practice talking back to them when they are noticed.

Session 11: The focus of this session was on showing OC tendencies who is in charge, and how to say “no” to them. The first strategy discussed was the ‘delay’ strategy. This referred to making the obsession or compulsion wait a predetermined amount of time prior to giving into the urge. When the obsession is made to wait it often disappears and therefore there is no urge to engage in. The second strategy discussed was the ‘walk away’ strategy. Telling the obsession “I’m not listening to you” and then leaving the scene to get busy with something else reduces its power. The third strategy discussed in this session was the ‘limit’ strategy. This strategy was in regards to telling the obsession or compulsion “you’re a waste of my time”. Limiting the compulsion to a certain number or a certain time length put the person in charge instead of the obsession or
compulsion. Examples of each of these strategies was given and applied to the participant. Homework was assigned to try one of these strategies over the weekend and be able to share what they had noticed.

Session 12: The focus of session 12 moved onto the next 3 strategies participants can use to increase their ability to make their own decisions. The first strategy discussed in during this session was the ‘change the ritual’ strategy where participants were to tell obsessions or compulsions “you’re not the boss of me” and change the order of how they performed compulsions. The second strategy discussed was the ‘opposite’ strategy. It was explained to participants that this was a big step and that it was not going to be a comfortable thing to do. It is to do the opposite of whatever the urge is. The last strategy discussed was called make it funny. It was in regards to teasing the obsession or compulsion in attempts to turn it into something funny. Participants were told instead of trying to run from the OC tendencies to set aside a time everyday to think about them on purpose, but in a funny way. Examples of each of these strategies were given until it appeared participants comprehended the concept. Each of the strategies taught were written out on chart paper and reviewed at the end of the session. It was explained that they could also use these strategies with OC thoughts that were too difficult to share. A sheet was given to participants to take home with written words and visuals to remind them of these strategies. Participants rated their OC tendencies and then homework was assigned to practice two of the strategies at home. The more they are practiced the more the power shifts back to the participant rather than the OC tendency.

Session 13: All previous tools and strategies discussed were reviewed and summarized before getting into the focus of today’s session of setting goals. Participants were taught how to set smart goals and the importance of them were explained. Smart is an acronym which stands for specific, measurable, attainable, realistic, and timely. A work sheet was given to participants with a category for each of those things and it was collaboratively filled out. The goal was extensively thought about and a plan for how to attain it was made. As it can be challenging to reach goals, gradual exposure through the use of a fear ladder was the next tool discussed. A fear ladder was put in place to help participants reach their goal. The large goal was broken down into smaller steps so they could visually see where they are now and where they want to be. The goal was placed at the top of the ladder, which represented most troublesome, then smaller steps leading up to the goal were made so it was not as difficult to move towards the goal. Participants were asked to start using their fear ladders over the weekend and see how far they could climb.

Session 14: Two skills were taught within this session. The first skill, ‘how to give a pep talk’ to oneself, was explained and modeled. Examples were given and participants were given an opportunity to practice this skill. It was further discussed how doing this can give the individual back their power against OC tendencies. How to create and utilize ‘coping cards’ was the second tool taught in this session. Several examples were given to participants, and an opportunity was then given for participants to create their own coping cards which they were allowed to keep or wait to take home at the end of the sessions. It was explained to the participants that they can use these cards to talk themselves through things that make them feel uncomfortable. Participants rated their OC tendencies and homework was assigned to try utilizing one of the skills taught during this session.

Session 15: The focus of session 15 was on how to decrease the size of OC tendencies and how to reduce attention to them. This was done by teaching participants how to cut them down and let them float by. Cutting OC tendencies down refers to questioning the negative thought processes and challenging them. This was discussed at length, and several examples were given.
that could be asked when noticing an intrusive thought were brainstormed and written down. It was explained that the more thoughts are challenged, the less power they have. Letting OC tendencies float by referred to trying to take a step back from them. Separating the thought from the person, acknowledging their presence but just letting them float by instead of focusing on them. The more this is done the less intrusive the thought becomes, again, limiting its power. As homework participants were asked to practice challenging their negative thoughts.

Session 16: The focus of this session was to attain some feedback from participants, asking if they noticed changes since beginning the sessions, and to review all the skills taught. The core topics of the sessions were reviewed and participants were prompted to recall information on their own. A duatang was put together by the principle investigator which was reviewed with participants containing pertinent information learned in session. At the end of the session participants were asked to rate their levels of OC tendencies and were then given the duatang to keep. They were encouraged to use the duatang to continue to practice their skills and continue the progress they have made.

All three phases ran over the course of an 8-week period. Participant B had 16 sessions over this period, reflecting the numbers of the session outlines. Participant A had more sessions as she was not grasping the concepts as easily, increasing her total number of sessions to 19. This intervention was chosen based on the functional assessment data presented in the Results section of this study.

Chapter IV: Results

Phase One Results

Parents of participant A recorded five incidents of refusal behaviour in the first week of the study (Table 1). A time of day analysis was conducted with the data (Appendix M) which indicated that 40% of behaviors occurred between 12:00pm and 1:00pm, 40% occurred between 2:00pm and 3:00pm, and 20% occurred between 3:00pm and 4:00pm. This was completed to identify patterns in time of behaviour occurrences. The findings were shared with the parents of participant A so they could recognize when the behaviors were most likely to occur and prepare accordingly.

Table 1.
Parental Recording of Behaviour Occurrences Participant A

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Occurrences of Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>29/09/17</td>
<td>3:30pm</td>
<td>Task refusal- not taking out the dog</td>
</tr>
<tr>
<td>30/09/17</td>
<td>2:30pm</td>
<td>Task refusal- not walking the dog</td>
</tr>
<tr>
<td>01/10/17</td>
<td>2:00pm</td>
<td>Task refusal- not doing the dishes</td>
</tr>
<tr>
<td>203/10/17</td>
<td>12:30pm</td>
<td>Task refusal- not getting dressed</td>
</tr>
<tr>
<td>06/10/17</td>
<td>12:30pm</td>
<td>Task refusal- not doing the dishes</td>
</tr>
</tbody>
</table>

Also completed in phase 1 of the study was the MFAI. Participant A’s behaviours were defined as becoming oppositional and defiant for 30 minutes each day when asked to get out of bed, refusing to dress appropriately everyday, and having to carry certain items with her every time she left the home. Her parents stated that she spends almost all her time reading because she
has the freedom to do so as no demands were being put on her. When she becomes uncomfortable in public areas she begins to pull on her hair and isolate herself from others. Her behaviours allow her to avoid/escape situations she does not want to be in, including school, which she is currently not attending. Participant B was identified as being verbally hostile to authority several times per day, approaching the older crowd at school to engage in unwanted conversation every chance she gets, and seeking out rebellious behaviours including smoking and lying when opportunity presents itself. These behaviours have become a stressor on the family, is impairing her social relationships, and has led to physical and verbal altercations. Her behaviours gain her attention from family, authority figures, and peers, across settings. Both participants were taking medications at the time of the study.

**Phases Two and Three Results**

During the second phase of the study Participant A’s level of OC tendencies averaged at a level nine, ranging from level 7 to 10, with the standard deviation being 1.08 (Figure 1). During the third phase of the study Participant A averaged a level 5 of OC tendencies, ranging from level 3 to 7 having a standard deviation of 1.28 (Figure 1).

![Participant A's Level of OC Tendencies](image)

*Figure 1. Participant A’s Self-Report of OC Tendencies.*

During the second phase of the study Participant B’s level of OC tendencies averaged at a level 4, ranging from levels 2 to 6, with the standard deviation being 1.33 (Figure 2). During the third phase of the study Participant B averaged a level 3 of OC tendencies, ranging from level 1 to 7, having a standard deviation of 2.4 (Figure 2).
Data collected from both participants displayed a modest decreasing trend during phase two and a more drastic trend was noted in phase three (Appendix N, O). The median of the self-report for participant A was 9.5 and was 4 for participants B which is indicated with a dashed line across the graph (Appendix P, Q). All of participant A’s data points were found to be lower than the median which indicated a PEM score of 100%. According to Scrugg and Masteropiere (1998) a score of 100% indicates the treatment was very effective. The PEM score for participant B’s data was calculated as 66.6% which indicates that the effectiveness would be considered questionable (Scrugg & Masteropiere, 1998).

Stability of the data in phase 2 of the study was seen for participant A, as 91% of the data points fell within 25% of the median (Appendix R). According to Gast and Ledford (2014) data is stable if 80% of the data points fall within 25% of the median. Only 66% of participant B’s data points are within 25% of the median in phase 2 and therefore the data does not show stability (Appendix S). In phase 3, 50% of participant A’s data points fell within 25% of the median, and 33% of participant B’s data points fell within 25% of the median. This indicates the data are not considered to be stable for either participant in phase 3 of the study.

Both measures of central tendency, median and mean, calculated show a decrease from phase 2 to 3 for both participants, representing that there was a decrease in average scores between phases. The mean for participant A for phase two was 9.18 and phase three was 5.25. This indicates a 43 percent decrease in reported OC tendencies (Table 2). The mean for participant B for phase two was 4.17 and phase three was 3.17. This indicates a 24 percent decrease in reported OC tendencies (Table 2). Also, noted, the standard deviation shows an increase from phase 2 to 3 for both participants. Though the standard deviation increase between phases it is still quite low representing low variability in scores.

Figure 2. Participant B’s Self-Report of OC Tendencies.
REDUCING OBSESSIONS/COMPULSIONS

Table 2. 
**Statistical Analyses of Participants Self-Report Measures**

<table>
<thead>
<tr>
<th></th>
<th>Participant A</th>
<th></th>
<th>Participant B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Phase 2</td>
<td>Phase 3</td>
<td>Phase 2</td>
<td>Phase 3</td>
</tr>
<tr>
<td>Mean</td>
<td>9.18</td>
<td>5.25</td>
<td>4.17</td>
<td>3.17</td>
</tr>
<tr>
<td>Median</td>
<td>10</td>
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<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>1.08</td>
<td>1.28</td>
<td>1.33</td>
<td>2.4</td>
</tr>
</tbody>
</table>

The CY-BOCS assessment was completed prior to and after the intervention. The table below outlines the results.

Table 3. 
**Pre- and Post- Test CY-BOCS Scores**

<table>
<thead>
<tr>
<th></th>
<th>Participant A</th>
<th></th>
<th>Participant B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>Obsession</td>
<td>20</td>
<td>6</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>Compulsion</td>
<td>23</td>
<td>8</td>
<td>23</td>
<td>15</td>
</tr>
<tr>
<td>Combined</td>
<td>43</td>
<td>14</td>
<td>45</td>
<td>33</td>
</tr>
</tbody>
</table>

A decrease from pre- to post-test CY-BOCS scores are displayed on the table. Participants A’s overall CY-BOCS score decrease from 43 to 14 showing a decrease of 67.45%. Participants B’s overall CY-BOCS score decrease from 45 to 33 showing a decrease of 26.67%.

**Figure 3.** Total CY-BOCS scores for both participants.
Furthermore, a one-month follow-up interview was completed to assess the maintenance of program results. This follow-up was conducted via email as it was the easiest form of communication for the participants’ parents. Participant A’s parents did not respond to the first email sent and therefore a follow-up was sent a week later. A response from the follow-up email was received the same day in which it stated that the participant had not been engaging in OC tendencies as often as she had previously and that although it was challenging to quantify the number of times she was engaging in those behaviours it was noticeably less. Other medications were reported; however, prescriptions specifics were not disclosed. Lastly, the parents stated that participation in this study was beneficial to both the participant and the family.

Participant B’s parents promptly responded, and provided answers to the questions asked. Although the answers to the questions were vague, there was enough information to infer that the results were maintained at the one-month follow-up. The parents stated that the participant’s level of OC tendencies has stayed the same since finishing the sessions, and that they were thankful for the opportunity to be included. Further stated was that her OC tendencies are occurring daily, that her medications have increased, and that therapies will begin in 2018.

The results show that the interventions were effective in decreasing OC tendencies in both participants. There was a decrease in both the CY-BOCS scores and in the self-report measure, proving the effectiveness of parental training in DR paired with a modified CBT when attempting to decrease OC tendencies in youth diagnosed with ASD.

**Chapter V: Conclusion/Discussion**

**Summary of Thesis**

Due to the limited research completed surrounding the use of modified CBT to decrease OC tendencies in youth with ASD, an in-depth literature review was completed to examine treatments which have been proven to be effective. Findings of this literature review show that treatment of OC tendencies in ASD patients are highly valued and should be further explored (Ruzzano, Borsboom, & Geurts, 2015). The benefits of DR were first reviewed by looking at an article by Ven Haaren (2017). The effectiveness of this treatment was then further shown in several studies by Falligant and Pence (2017), Johnson, Vladescu, Kodak, and Sidener (2017), and Otero and Hunt (2016). Each of these studies explored effects on incorporating DR into the treatment process, findings showed DR to be effective in increasing desirable behaviours. Parent-mediated interventions have also been proven effective as seen in studies by Otero and Hunt (2016), Murphu and Zlomke (2016), and Malow, MacDonald, Fawkes, Alder, and Katz (2016). There has also been a great deal of research supporting the effectiveness of CBT (Lang, Regester, Lauderdale, Ashbaug, & Haring, 2010; Murray et al., 2015). This research was then furthered by exploring effects of a modified CBT when treating children with ASD in comparison to regular CBT. Studies by Krebs, Murray, and Jassi (2015), Ekman and Htlunem (2015), and Ehrenreich-May et al., (2014) provide overwhelming evidence that modified CBTs are effective. Specifically, they found that when attempting to increase desirable behaviours in youth with ASD, more success is seen if the CBT intervention is modified. Based on the interpretations of the literature review, it was hypothesized that incorporating the use of a modified CBT paired with parental training in DR would be effective in decreasing OC tendencies in youth with ASD.
This study consisted of three phases. The first phase consisted solely of parent training which ran for the first week out of the 8-week study. The second phase, running for four weeks was primarily focused on psychoeducation with participants. The third, and final phase of the study ran for the remaining three weeks, focusing on cognitive restructuring using modified CBT techniques tailored to the participants skill level. These phases were utilized to evaluate the hypothesis; parental training in differential reinforcement and a modified CBT will be effective in decreasing OC tendencies in youth with ASD.

The results of this study show that the hypothesis was proven correct. The CY-BOCS was utilized for pre- and post-test measure as an effective way to evaluate the outcome of the study. The CY-BOCS scores drastically decreased for both participants following the intervention. A self-report measure was also developed for participant use throughout the study to recognize appreciate their progresses. This self-report measure results also displayed a drastic decrease in OC tendencies. After using descriptive and visual analyses to examine the data it was confirmed that the use of a modified CBT paired with parental training in DR was effective in decreasing OC tendencies in youth with ASD.

Strengths and Limitations

Social validity. Clinicians reported that the treatment strategies can be repeated in various settings by different professionals in the field, it is not intrusive and had no adverse effects to the participants. The parents also stated the study has had a positive effect on their family and that they were satisfied with the outcome.

Intensive and flexible. As the principle investigator was meeting with clients 2-3 times per week for 7 consecutive weeks the treatment can be considered intensive. Providing this intensive treatment suggested beneficial client outcomes. The sessions were held in various locations depending on the participants needs which allowed this treatment to be adjusted to the client and family needs and increased attendance. Having the freedom to provide intensive and flexible treatments revealed to be a major strength of the study.

Time. The short duration could have been a limitation to the study as no true baseline data were collected and fading procedures may have been introduced too soon. The lack of baseline data made it challenging to make definitive conclusions about treatment progress. The introduction of fading procedures may have been damaging to the therapeutic relationship. If the study could have been extended participants could have shown greater improvements. Furthermore, the functional assessment which was completed by parents was done incorrectly as the parent did not fill it out as requested. If there was more time these recordings could have been completed a second time after further instruction was provided.

Sample-Size. The completed study had a very small sample size of only two female participants. Having this few participants is not a good representation of OC tendencies across the ASD population as an entirety. Although the results of this study did yield positive results, a larger group would have been more representative. Including additional participants would allow for further statistical analyses and generalization across gender.

Use of self-report measure. A self-report measure was developed so participants could visually appreciate their progress over the course of the study. Although this measure showed a drastic decrease in their levels of OC tendencies and were included in the results of the study, self-report measures are not as reliable as the other pre- and post-test assessment used in the study. Participants could have skewed their responses based on what they perceived to be more socially rewarding or answered based on where they wanted to be in comparison to where they
were. Furthermore, the self-report measure was developed by the principle investigator and was not a standardized measure of testing.

**Varying skill level.** Throughout treatment the participants maintained drastically dissimilar levels of cognitive and social skills. One participant was attending school, had the ability to introduce herself to new people, and could carry a conversation. The second participant was not attending school and did not have the same social abilities as the first. Furthermore, the first participant appeared to comprehend the content of the sessions with ease where the second participant displayed difficulty with comprehension. To account for the varying levels the second participant attended more sessions with the principle investigator until she understood the matters which were being discussed. These varying skill levels potentially hindered the progress of sessions, in the sense that participants did not have an equal number of sessions.

**Multilevel Challenges**

The focus of this section is on the challenges one is faced with when working with children and adolescents with behavioural and mental health challenges. The report outlines challenges from both a placement student perspective and an agency perspective to show how challenges occur on all levels; client, program, organizational, and societal.

**Client level.** Working with adolescents in this field was challenging because it was often the parents who are seeking out the treatment for their child. The child often does not want nor see the need for treatment. This was particularly challenging in group treatment sessions. Not having the child buy into the treatment makes it very difficult to facilitate especially when there are other children in the group who are in the same position. Practicing positive paring and building a rapport with the client was crucial to gaining instructional control and having the clients trust you.

**Program level.** A major challenge regarding programming was job descriptions of professionals on the team. Often, job titles or job descriptions did not match the skill set of the individual in the position. It was often noted that the clinicians in the hospital were over qualified for their job titles. The clinical skill set of the individual was frequently greater than what the job demanded. Professionals were being paid for their title and not for their skills. Morale in the office tended to be lower because of this and within the past few years there have been a lot of turnover in staffing due to management difficulties.

**Organizational level.** Funding was a huge organizational issue within the hospital. The hospital was in a deficit and because of this they have been cutting funding for certain programs. Specifically, the mental health program. Funding plays a big role in the effectiveness of treatment. Certain materials are required to carry out group and individualized treatment sessions properly. More staffing is necessary to cut down on waitlist times and to provide more intensive therapies. Furthermore, the building itself needs significant repairs and updates to have certain rooms back in a working condition. There is a lack of funding within the division, which is frustrating to both staff and management, and it was predicted to soon affect treatment outcomes.

**Societal level.** The most predominate societal challenge when working with youth having mental health challenges was stigma. Society tends to label youth as “weirdos” or “freaks” and does not see the purpose to providing treatment. Society also tends to be less supportive of clinical treatments, especially older generations, when they thought that there was a quick fix to their issues. Some individuals assume kids needed more outdoor recreation or needed to minimize their screen time. These individuals did not understand mental health, and had already made their prejudgments prior to taking the time to educate themselves on the topic. Some
children are less receptive to treatment because of this, as they don’t want to be labelled by society as different.

**Implications to the Field of Behavioural Psychology**

The field of psychology can benefit from the outcome of this study as the results demonstrated that OC tendencies in youth with ASD can be decreased from the implementation of a modified CBT paired with parental training in DR. The analyzed literature demonstrated the value and importance of expanding upon treatment options for this population, and indicated that any research using modified CBT is widely accepted. If implemented in the future, the current study has the potential to add to the literature on the effectiveness of modified CBTs when used with youth diagnosed with ASD. Results of the study also demonstrate how behaviour changes can be made when treatment session are held in a setting comfortable for the participant. If repeated and implemented correctly, the study has the potential to change behaviours of youth to impact their lives in a positive manner.

**Recommendations for Future Research**

As this study yielded positive results, repetition of it could be beneficial. Repeating this study would also support program efficacy. However, if it were to be repeated the following recommendations should be taken into consideration; (1) Consider having more participants included in the study to allow for further statistical analyses and generalizations to be made. Also ensure variance in gender of participants to gain further generalizations; (2) When recruiting participants ensure their level of functioning is similar. Having both participants at such dissimilar levels made it difficult to keep session parallel across participants; (3) Extend the first phase of the study to include time for further parent training with an emphasis on data collection training. The recording sheets sent home with parents were either unreturned, incomplete, or completed incorrectly. Allowing further training could account for this; (4) Consider adding incentives for parents to complete data collection to motivate them to participate.
References


Appendix A

A: Consent Form

Project Title: Use of Modified Cognitive Behavioural Therapy Paired with Differential Reinforcement to Decrease Obsessive Compulsive Tendencies in Children with Autism

Principle Investigator: Cassidy Blackburn  
Name of Supervisor: Laura Campbell  
Name of Institution: St. Lawrence College  
Name of Institution/Agency: Hotel Dieu Hospital

Invitation

You and your child are being invited to take part in a research study. I am a student in my 4th year of the Honours Behavioural Psychology program at St. Lawrence college. I am currently on placement at Hotel Dieu Hospital. As part of this placement, I am completing a research project. I would like to ask you for your help to complete this project. I am inviting your child to attend 3-5 sessions per week for 8 weeks, which is the duration of the study. The information in this form will help you understand my project. Please read the information carefully and ask all the questions you might have before you decide if you want to take part.

Why is this research study being done?

My project will be looking at the use of modified cognitive behavioural therapy and differential reinforcement to decrease obsessive compulsive tendencies in your child with autism. Modified cognitive behavioural therapies have been seen effective in the past when using them with children diagnosed with Autism.

What will you need to do if you take part?

If you allow your child to take part in this study you will be asked to complete assessments before the study starts to determine what your child’s obsessive compulsive tendencies are and the reason why your child engages in these behaviours. There are two separate assessments that I am going to ask you to complete with me, the first should take no more than 20 minutes and the second no more than 40 minutes. The study will be set up in a way so that you will bring your child to scheduled clinical cognitive behavioural therapy sessions, at Hotel Dieu Hospital, and you will use differential reinforcement at home. I will train you on how to use differential reinforcement. Differential reinforcement is a term used for reinforcing only the behaviours you want to increase and not reinforcing behaviours that you do not want to occur. I will also be asking you to record the number of occurrences of the obsessive compulsive behaviours at home. I will supply you with data recording sheets for you to fill out, and ask that you bring them back to me to analyze.

Your child’s role during this study will be to attend the sessions with me. You as a parent will be responsible for the transportation of your child to and from the clinical sessions 3-5 times per week. They will not be required to bring anything to these sessions. During the sessions we will be using modified cognitive behavioural therapy. This will include drawing out your child’s thoughts, feelings, and behaviours and reviewing it together. It is my hope that your child will actively participate in these sessions.
What are the potential direct benefits of taking part?

Direct benefits of taking part in this research study may include a decrease in the unwanted behaviours displayed by your child and an increase in appropriate behaviours you would like to see. There are also several benefits to the parent training aspect of this study. With parent training there is a better chance for the effects to be maintained, it is cost effective, and it will likely increase your optimism of seeing a chance in your child.

What are the potential benefits of this research study to others?

The potential benefits of the research study to others may include advancing understanding and knowledge of what interventions work with children displaying obsessive compulsive tendencies while having a diagnosis of Autism. Completion of this study will also be of benefit to myself as it will give me more experience working in the field. Finally, it could be duplicated with other children with autism who have OC tendencies.

What are the potential disadvantages or risks of taking part?

There are no known safety concerns associated with participating in this research project. The only possible risk the study poses is the potential of your child becoming anxious, frustrated, or stressed during a session. In a situation where your child is having these feelings or is unwilling to continue with a session a break will be given, or the session will be stopped depending on the severity. You will be contacted and informed immediately following something of this nature.

Your identity and the identity of your child will be kept confidential unless required by law. I will assign you a number to use in place of your name on all collected assessments, and the corresponding code sheet will be kept on a password protected computer to minimize confidentiality risks.

What happens if something goes wrong?

Although there are no foreseen challenges, if you are feeling uncomfortable with the study, have any questions, or if you have strong feelings towards it you may speak with me or my supervisors. I have provided our contact information below. Remember that your participation in the study is voluntary, meaning you can pull out at any point without penalty. This means that if you choose to leave the study you will be able to continue to receive services at the agency as you regularly would have.

Will the information you collect from me in this project be kept private?

We will make every attempt to keep any information that identifies you or your child strictly confidential unless required by law. This could happen if your child poses a threat to him/her self, or to others. All information collected during the time of the study will be kept in a locked cabinet or will be encrypted on a computer that is password protected. The research data will be kept on file at Hotel Dieu Hospital for a period of 10 years after the completion of the study.

This consent form will be stored in a locked file cabinet at St. Lawrence College for 10 years, following your child's 18th birthday, at which point the forms will be destroyed. When you fill out questionnaires you will be assigned a number to enter in place of your name, and the sheet with the list of participant codes will be destroyed at the same time as the consent forms, so
that your identities will be kept confidential. Lastly, as the results from the research are part of a thesis, a copy of this thesis will be made available at the St. Lawrence College library. These results may also be published in professional journals or presented at professional conferences, but any such presentations will share only general findings and will never breach individual confidentiality.

Do you have to take part?

Taking part is voluntary. It is up to you to decide whether or not you take part in this research project. You will not be penalized if you choose not to. If you do decide to take part, you will be asked to sign this consent form as the parent(s)/guardian(s) of the participant. If you choose to have your child participate you are free to stop at any time, without giving reason, and without it being of negative impact to the Hospital or my project. If you do decide to stop please speak to me or my supervisor. Also, if you do allow your child to participate, and wish to withdraw from the study, you can ask that any data collected not be used.

Contact for further information.

This research project has received ethical clearance from the Research Ethics Committee for Behavioural Psychology (REC-P) under the authority of the St. Lawrence College Research Ethics Board (SLC-REB). The project was developed under the supervision of Laura Campbell, my supervisor from St. Lawrence College. I appreciate your cooperation and if you have any additional questions, feel free to ask me, Cassidy Blackburn by email at cblackburn17@sl.on.ca. You can also contact my college supervisor at lcampbell@sl.on.ca. If you have any concerns about the way this research is being conducted or about your rights as a participant you may contact the SLC-REB chair at reb@sl.on.ca.

Consent

If you agree to take part in this research project, please complete the following form and return it to me as soon as possible. A copy of this signed document will be given to you for your own records. The original will be retained at the agency.
By signing this form, I agree that:

- The study has been explained to me.
- All my questions were answered.
- Possible harms, discomforts, and benefits of this study have been explained to me.
- I understand that I have the right not to participate and the right to stop at any time.
- I am free now, and in the future, to ask any questions I have about the study.
- I have been told that my personal information will be kept confidential.
- I understand that no information that would identify me will be released or printed without asking me first.
- I understand that I will receive a signed copy of the consent form.
- I understand that the data from this study will be presented at the St. Lawrence College Behavioural Psychology Poster Gala, and may be reported at other conferences or published in a scientific journal. No identifying information will be included in these reports.

I hereby consent to take part.

<table>
<thead>
<tr>
<th>Participant Name</th>
<th>Signature of Participant</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioural Student Name</td>
<td>Signature of Behavioural Student</td>
<td>Date</td>
</tr>
<tr>
<td>Parent/ Guardian Name</td>
<td>Signature of Parent/ Guardian</td>
<td>Date</td>
</tr>
<tr>
<td>Witness Name</td>
<td>Signature of Witness</td>
<td>Date</td>
</tr>
</tbody>
</table>
Hi. My name is Cassidy Blackburn and I am a student at St. Lawrence College. I am doing a research project for my studies at school and I would like your help. Research projects help us learn new things. First, we ask a question. Then we try to find the answer. If you take part in my research project, you will help me learn about the possible benefits of using modified cognitive behavioural therapy paired with parent training on differential reinforcement procedures to decrease obsessive compulsive tendencies in children with Autism. Essentially that means we will be working towards decreasing your obsessions and understanding why you engage in certain behaviours.

You do not have to take part in this research project and no one will be upset with you if you decide you don’t want to take part in it. The choice is yours: you can say “yes” or you can say “no”, and you can change your mind at any time.

In this research project, we will talk about why you do what you do. If you want to take part in my research project, then this is what I would like you to do: attend all sessions with me, and try your best to come into them with an open mind and participate the best you can. Throughout the first few weeks of coming to see me, we will be drawing out how your feelings. Following that we will be working together to challenge the negative thoughts or obsessions that you are having. Before and after each session I will be asking you how you are feeling and recording it.

I am grateful for your help with my research project. What you get out of this is learning about your obsession and will help you learn how to deal with them.

I will not identify you or anything you tell me in my research project.

If you ever have any problems and need to talk about your emotions, you can talk to me, or your counselor. You don’t have to take part in this research project if you don’t want to. If you agree to take part in it, you can change your mind at any time. If you would like to stop, just let me know.

Do you have any questions? Do you understand everything that I have just explained and what we will be doing together? Would you like to start?
Assent Form to be Signed by Participant

By signing this form, I agree that;
✓ The study has been explained to me in a way I understand.
✓ All my questions were answered.
✓ I know I am able to stop participating right at any time.
✓ I am free now, and in the future, to ask any questions I have about the study.
✓ I have been told that my personal information will be kept confidential.
✓ I understand that no information that would identify me will be released or printed without asking me first.
✓ I am willing to participate in this study.

I hereby state my willingness to participate.

<table>
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<tr>
<th>Participant Name</th>
<th>Signature of Participant</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioural Student Name</td>
<td>Signature of Behavioural Student</td>
<td>Date</td>
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</table>
### Appendix C

#### C: Children’s Yale-Brown Obsession Compulsion Scale (CY-BOCS)

<table>
<thead>
<tr>
<th>Name ____________________________</th>
<th>Date ____________________________</th>
</tr>
</thead>
</table>

**CY-BOCS OBSESSIONS CHECKLIST**

*Check all items that apply. (Item marked "**" may or not be OCD phenomena.)*

<table>
<thead>
<tr>
<th>Current</th>
<th>Past</th>
<th>Contamination Obsessions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Concern with dirt, germs, certain illnesses (e.g., AIDS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Concerns or disgust with bodily waste or secretions (e.g., urine, feces, saliva)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Excessive concern with enviromental contaminants (e.g., asbestos, radiation, toxic waste)</td>
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<tr>
<td></td>
<td></td>
<td>Excessive concern with household items (e.g., cleaners, solvents)</td>
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<tr>
<td></td>
<td></td>
<td>Excessive concern about animals/insects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Excessively bothered by sticky substances or residues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Concerned will get ill because of contaminant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Concerned will get others ill by spreading contaminant (aggressive)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No concern with consequences of contamination other than how it might feel *</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other (Describe) ____________________________</td>
</tr>
</tbody>
</table>

**Aggressive Obsessions**

|         |      | Fear might harm self |
|         |      | Fear might harm others |
|         |      | Fear harm will come to self |
|         |      | Fear harm will come to others (may be because something child did or did not do) |
|         |      | Violent or horrific images |
|         |      | Fear of blurtong out obscenities or insults |
|         |      | Fear of doing something else embarrassing * |
|         |      | Fear will act on unwanted impulses (e.g. to stab a family member) |
|         |      | Fear will steal things |
|         |      | Fear will be responsible for something else terrible happening (e.g. fire, burglary, flood) |
|         |      | Other (Describe) ____________________________ |

**Sexual Obsessions**

* [Are you having any sexual thoughts? If yes, are they routine or are they repetitive thoughts that you would rather not have or find disturbing? If yes, are they:] *

|         |      | Forbidden or perverse sexual thoughts, images, impulses |
|         |      | Content involves homosexuality * |
|         |      | Sexual behavior towards others (Aggressive) |
|         |      | Other (Describe) ____________________________ |

**Hoardng/Saving Obsessions**

|         |      | Fear of losing things |
|         |      | Other (Describe) ____________________________ |

**Magical Thoughts/Superstitious Obsessions**

|         |      | Lucky/unlucky numbers, colors, words |
|         |      | Other (Describe) ____________________________ |
REDUCING OBSESSIONS/COMPULSIONS

<table>
<thead>
<tr>
<th>Current</th>
<th>Past</th>
<th><strong>Somatic Obsessions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Excessive concern with illness or disease *</td>
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<tr>
<td></td>
<td></td>
<td>Excessive concern with body part or aspect of appearance (e.g., dysmorphophobia) *</td>
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<tr>
<td></td>
<td></td>
<td>Other (Describe)</td>
</tr>
</tbody>
</table>

**Religious Obsessions (Scrupulosity)**

|         |      | Excessive concern or fear of offending religious objects (God) |
|         |      | Excessive concern with right/wrong, morality |
|         |      | Other (Describe) |

**Miscellaneous Obsessions**

|         |      | The need to know or remember |
|         |      | Fear of saying certain things |
|         |      | Fear of not saying just the right thing |
|         |      | Intrusive (non-violent) images |
|         |      | Intrusive sounds, words, music, or numbers |
|         |      | Other (Describe) |

**TARGET SYMPTOM LIST FOR OBSESSIONS**

**Obsessions** (Describe, listing by order of severity, with #1 being the most severe, #2 the second most severe, etc.):

1. 
2. 
3. 
4. 
**QUESTIONS ON OBSESSIONS (ITEMS 1-5)** "I AM NOW GOING TO ASK YOU QUESTIONS ABOUT THE THOUGHTS YOU CANNOT STOP THINKING ABOUT." (Review for the informant(s) the Target Symptoms and refer to them while asking questions 1-5).

1. **Time Occupied by Obsessive Thoughts**
   - How much time do you spend thinking about these things?
     (When obsessions occur as brief, intermittent intrusions, it may be impossible to assess time occupied by them in terms of total hours. In such cases, estimate time by determining how frequently they occur. Consider both the number of times the intrusions occur and how many hours of the day are affected.)
   - How frequently do these thoughts occur?
     [Exclude ruminations and preoccupations which, unlike obsessions, are ego-syntonic and rational (but exaggerated).]

   0 - NONE
   1 - MILD  less than 1 hr/day or occasional intrusion
   2 - MODERATE  1 to 3 hrs/day or frequent intrusion
   3 - SEVERE  greater than 3 and up to 8 hrs/day or very frequent intrusion
   4 - EXTREME  greater than 8 hrs/day or near constant intrusion

1B. **Obsession-free Interval** (not included in total score)
   - On average, what is the longest amount of time per day that you are not bothered by obsessivethoughts?
     0 - NONE
     1 - MILD  long symptom free intervals, more than 8 consecutive hrs/day symptom-free
     2 - MODERATE  moderately long symptom-free intervals, more than 3 and up to 8 hrs/day
     3 - SEVERE  brief symptom-free intervals, from 1 to 3 consecutive hrs/day symptom-free
     4 - EXTREME  less than 1 consecutive hr/day symptom free

2. **Interference due to Obsessive Thoughts**
   - How much do these thoughts get in the way of school or doing things with friends?
   - Is there anything that you don't do because of them?
     (If currently not in school determine how much performance would be affected if patient were in school.)
     0 - NONE
     1 - MILD  slight interference with social or school activities, overall performance not impaired
     2 - MODERATE  definite interference with social or school performance, but still manageable
     3 - SEVERE  causes substantial impairment in social or school performance
     4 - EXTREME  incapacitating
<table>
<thead>
<tr>
<th>Current</th>
<th>Past</th>
<th>Washing/Cleaning Compulsions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Excessive or ritualized handwashing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Excessive or ritualized showering, bathing, toothbrushing, grooming, or toilet routine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Excessive cleaning of items; such as personal clothes or important objects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other measures to prevent or remove contact with contaminants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other (Describe)</td>
</tr>
</tbody>
</table>

**Checking Compulsions**

|         |     | Checking locks, toys, school books/items, etc. |
|         |     | Checking associated with getting washed, dressed, or undressed. |
|         |     | Checking that did not/will not harm others |
|         |     | Checking that did not/will not harm self |
|         |     | Checking that nothing terrible did/will happen |
|         |     | Checking that did not make mistake |
|         |     | Checking tied to somatic obsessions |
|         |     | Other (Describe) |

**Repeating Rituals**

|         |     | Rereading, erasing, or rewriting |
|         |     | Need to repeat routine activities (e.g. in/out doors, up/down from chair) |
|         |     | Other (Describe) |

**Counting Compulsions**

|         |     | Objects, certain numbers, words, etc. |
|         |     | Describe: |

**Ordering/Arranging**

|         |     | Need for symmetry/evening up (e.g., lining items up a certain way or arranging personal items in specific patterns) |
|         |     | Other (Describe) |

**Hoarding/Saving Compulsion**

|         |     | [distinguish from hobbies and concern with objects of monetary or sentimental value] |
|         |     | Difficulty throwing things away, saving bits of paper, string, etc. |
|         |     | Other (Describe) |

**Excessive Games/Superstitious Behaviors**

|         |     | [distinguish from age appropriate magical games] |
|         |     | (e.g., array of behavior, such as stepping over certain spots on a floor, touching an object/self certain number of times as a routine game to avoid something bad from happening.) |
|         |     | Other (Describe) |
REDUCING OBSESSIONS/COMPULSIONS

Current  Past Rituals Involving Other Persons

The need to involve another person (usually a parent) in ritual (e.g., asking a parent to repeatedly answer the same question, making mother perform certain meal time-rituals involving specific utensils).*___ ___ Other (Describe) ____________________________

Miscellaneous Compulsions

___ ___ Mental rituals (other than checking/counting)
___ ___ Need to tell, ask, or confess
___ ___ Measures (not checking) to prevent harm to self___; harm to others___; terrible consequences ___
___ ___ Ritualized eating behaviors *
___ ___ Excessive list making *
___ ___ Need to touch, tap, rub *
___ ___ Need to do things (e.g., touch or arrange) until it feels just right) *
___ ___ Rituals involving blinking or staring *
___ ___ Trichotillomania (hair-pulling) *
___ ___ Other self-damaging or self-mutilating behaviors *
___ ___ Other (Describe) ____________________________

TARGET SYMPTOM LIST FOR COMPULSIONS

Compulsions (Describe, listing by order of severity, with #1 being the most severe, #2 second most severe, etc.):

1. __________________________________________

2. __________________________________________

3. __________________________________________

4. __________________________________________
**QUESTIONS ON COMPULSIONS (ITEMS 6-10)** "I AM NOW GOING TO ASK YOU QUESTIONS ABOUT THE HABITS YOU CAN'T STOP." (Review for the informant(s) the Target Symptoms and refer to them while asking questions 6-10).

6A. **Time Spent Performing Compulsive Behaviors**
- How much time do you spend doing these things?
- How much longer than most people does it take to complete your usual daily activities because of the habits?
  (When compulsions occur as brief, intermittent behaviors, it may be impossible to assess time spent performing them in terms of total hours. In such cases, estimate time by determining how frequently they are performed. Consider both the number of times compulsions are performed and how many hours of the day are affected.)
- How often do you do these habits?
  [In most cases compulsions are observable behaviors (e.g., handwashing), but there are instances in which compulsions are not observable (e.g., silent checking).]

0 - NONE

1 - MILD (spends less than 1 hr/day performing compulsions), or occasional performance of compulsive behaviors

2 - MODERATE (spends from 1 to 3 hrs/day performing compulsions), or frequent performance of compulsive behaviors

3 - SEVERE (spends more than 3 and up to 8 hrs/day performing compulsions), or very frequent performance of compulsive behaviors

4 - EXTREME (spends more than 8 hrs/day performing compulsions), or near constant performance of compulsive behaviors (too numerous to count).

6B. **Compulsion-free Interval**
- How long can you go without performing compulsive behavior?
  [If necessary ask: What is the longest block of time in which (your habits) compulsions are absent?]

0 - NO SYMPTOMS

1 - MILD long symptom-free interval, more than 8 consecutive hrs/day symptom-free

2 - MODERATE moderately long symptom-free interval, more than 3 and up to 8 consecutive hrs/day symptom-free.

3 - SEVERE short symptom-free interval, from 1 to 3 consecutive hrs/day symptom free

4 - EXTREME less than 1 consecutive hr/day symptom-free
7. **Interference due to Compulsive Behaviors**
   - How much do these habits get in the way of school or doing things with friends?
   - Is there anything you don't do because of them?
     (If currently not in school, determine how much performance would be affected if patient were in school.)
   
   **0 - NONE**
   
   **1 - MILD** slight, interference with social or school activities, but overall performance not impaired
   
   **2 - MODERATE** definite interference with social or school performance, but still manageable
   
   **3 - SEVERE** causes substantial impairment in social or school performance
   
   **4 - EXTREME** incapacitating

8. **Distress Associated with Compulsive Behavior**
   - How would you feel if prevented from carrying out your habits?
   
   **0 - NONE**
   
   **1 - MILD** only slightly anxious/frustrated if compulsions prevented, or only slight anxiety/frustration during performance of compulsions.
   
   **2 - MODERATE** reports that anxiety/frustration would mount but remain manageable if compulsions prevented. Anxiety/frustration increases but remains manageable during performance of compulsions.
   
   **3 - SEVERE** prominent and very disturbing increase in anxiety/frustration if compulsions interrupted. Prominent and very disturbing increase in anxiety/frustration during performance of compulsions.
   
   **4 - EXTREME** incapacitating anxiety/frustration from any intervention aimed at modifying activity. Incapacitating anxiety/frustration develops during performance of compulsions.
9. Resistance Against Compulsions
• How much do you try to fight the habits?
  (Only rate effort made to resist, not success or failure in actually controlling the compulsions. How much
the patient resists the compulsions may or may not correlate with his ability to control them. Note that this
item does not directly measure the severity of the compulsions; rather it rates a manifestation of health, i.e.,
the effort the patient makes to counteract the compulsions. Thus, the more the patient tries to resist, the less
impaired is this aspect of their functioning. If the compulsions are minimal, the patient may not feel the
need to resist them. In such cases, a rating of "0" should be given.)

  0 - NONE  Makes an effort to always resist, or symptoms so minimal doesn't need to actively
             resist.
  1 - MILD   Tries to resist most of the time.
  2 - MODERATE  Makes some effort to resist
  3 - SEVERE  Yields to almost all compulsions without attempting to control them, but does so
               with some reluctance.
  4 - EXTREME completely and willingly yields to all compulsions

10. Degree of Control over Compulsive Behavior
• How strong is the feeling that you have to carry out the habit(s)?
• When you try to fight them what happens?
  (For the advanced child ask:)
• How much control do you have over the habits?
  (In contrast to the preceding item on resistance, the ability of the patient to control his compulsions is
closely related to the severity of the compulsions.)

  0 - COMPLETE CONTROL experiences pressure to perform the behavior, but usually able to exercise
      voluntary control over it
  1 - MUCH CONTROL  moderate control, strong pressure to perform behavior, can control it only
                     with difficulty
  2 - MODERATE CONTROL little control, very strong drive to perform behavior, must be carried to
            completion, can only delay with difficulty
  3 - LITTLE CONTROL  no control, drive to perform behavior experienced as completely
                     involuntary and overpowering, rarely able to delay activity (even
                     momentarily)
**CHILDREN'S YALE-BROWN OBSESSIVE COMPULSIVE SCALE**

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>Date</th>
<th>CYBOCS TOTAL (add items 1-10)</th>
<th>Patient ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rater</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. **TIME SPENT ON OBSESSIONS**

   0 1 2 3 4

1b. **OBSESSION-FREE INTERVAL**

<table>
<thead>
<tr>
<th>No Symptoms</th>
<th>Long</th>
<th>Moderately Long</th>
<th>Short</th>
<th>Extremely Short</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

2. **INTERFERENCE FROM OBSESSIONS**

   0 1 2 3 4

3. **DISTRESS OF OBSESSIONS**

   0 1 2 3 4

4. **RESISTANCE**

   Always resists
<table>
<thead>
<tr>
<th>Complete control</th>
<th>Much control</th>
<th>Moderate control</th>
<th>Little control</th>
<th>No control</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. **CONTROL OVER OBSESSIONS**

<table>
<thead>
<tr>
<th>OBSESSION SUBTOTAL (add items 1-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ]</td>
</tr>
</tbody>
</table>

6. **TIME SPENT ON COMPULSIONS**

   0 1 2 3 4

6b. **COMPULSION-FREE INTERVAL**

<table>
<thead>
<tr>
<th>No Symptoms</th>
<th>Long</th>
<th>Moderately Long</th>
<th>Short</th>
<th>Extremely Short</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

7. **INTERFERENCE FROM COMPULSION**

   0 1 2 3 4

8. **DISTRESS FROM COMPULSION**

   0 1 2 3 4

9. **RESISTANCE**

   Always resists
<table>
<thead>
<tr>
<th>Complete control</th>
<th>Much control</th>
<th>Moderate control</th>
<th>Little control</th>
<th>No control</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4</td>
<td></td>
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</tr>
</tbody>
</table>

10. **CONTROL OVER COMPULSIONS**

    | COMPULSION SUBTOTAL (add items 6-10) |
    | [ ]                                |

19. **RELIABILITY**

   EXCELLENT = 0  
   GOOD = 1  
   FAIR = 2  
   POOR = 3

EXCELLENT = no reason to suspect data unreliable; GOOD= factor(s) that may adversely affect reliability;  
FAIR= factor(s) that definitely reduce reliability; POOR= very low reliability.
3. **Distress Associated with Obsessive Thoughts**
   - How much do these thoughts bother or upset you?
     (Only rate anxiety/frustration that seems triggered by obsessions, not generalized anxiety or anxiety associated with other symptoms.)
     - 0 - NONE
     - 1 - MILD  infrequent, and not too disturbing
     - 2 - MODERATE frequent, and disturbing, but still manageable
     - 3 - SEVERE very frequent, and very disturbing
     - 4 - EXTREME near constant, and disabling distress/frustration

4. **Resistance Against Obsessions**
   - How hard do you try to stop the thoughts or ignore them?
     (Only rate effort made to resist, not success or failure in actually controlling the obsessions. How much patient resists the obsessions may or may not correlate with their ability to control them. Note that this item does not directly measure the severity of the intrusive thoughts; rather it rates a manifestation of health, i.e., the effort the patient makes to counteract the obsessions. Thus, the more the patient tries to resist, the less impaired is this aspect of his functioning. If the obsessions are minimal, the patient may not feel the need to resist them. In such cases, a rating of "0" should be given.)
     - 0 – NONE makes an effort to always resist, or symptoms so minimal doesn't need to actively resist.
     - 1 - MILD  tries to resist most of the time
     - 2 - MODERATE makes some effort to resist
     - 3 - SEVERE yields to all obsessions without attempting to control them, but does so with some reluctance
     - 4 – EXTREME completely and willingly yields to all obsessions

5. **Degree of Control Over Obsessive Thoughts**
   - When you try to fight the thoughts, can you beat them?
   - How much control do you have over the thoughts?
     (In contrast to the preceding item on resistance, the ability of the patient to control his obsessions is more closely related to the severity of the intrusive thoughts.)
     - 0 - COMPLETE CONTROL usually able to stop or divert obsessions with some effort and concentration.
     - 1 - MUCH CONTROL sometimes able to stop or divert obsessions
     - 2 - MODERATE CONTROL rarely successful in stopping obsessions, can only divert attention with difficulty
     - 3 - LITTLE CONTROL experienced as completely involuntary, rarely able to even momentarily divert thinking
     - 4 - NO CONTROL
Appendix D
D: Modified Functional Assessment Interview

Section A: Describing the behaviour

What does the behaviour look like when it is happening?

II: Duration  How long does it last.
III: Intensity  How damaging or destructive is the Behaviour(s)?

<table>
<thead>
<tr>
<th>Describe the behaviour</th>
<th>I. Frequency</th>
<th>II. Duration</th>
<th>III. Intensity</th>
</tr>
</thead>
</table>
| For example: The Behaviour is *Hitting*  
Describe as: *She strikes out and hits people as they walk past her.* | For example: On average twice a day. | For example: On average 3-4 seconds | For example: The behaviour often results in bruising and upsetting her peers. |

Section B: Describe Setting Events that Predict the Problem Behaviour

1. What **Medications** is the person currently taking and how may these affect their behaviour?

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

**Prescribed By & When:** ________________________________
2. Are there any *Medical or Physical Conditions* that the person experiences that may affect their behaviour? (For example: allergies, seizures, problems related to menstruation...)

3. Describe any *Sleep Patterns or Eating Routines/Diets* of the person and the extent to which these may affect their behaviour.
4. Briefly list the person=s **typical daily schedule** of activities. 
Check the boxes by those activities the person enjoys and those activities associated with the problem behaviour.

<table>
<thead>
<tr>
<th>Time</th>
<th>Enjoys</th>
<th>Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00am</td>
<td>___</td>
<td>___</td>
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<tr>
<td>7:00am</td>
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<td>8:00am</td>
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**BEDTIME**

5. To what extent are the activities on the daily schedule **predictable** for the person with regard to what will be happening, when it will occur, with whom and for how long?

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

6. Do they have the opportunity during the day to **make choices** about their activities?

*Describe:*

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

7. Does the person typically seem bothered in situations that are more **crowded and noisy**?

*Describe:*

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

8. What is the pattern of **staffing support**?

______________________________________________________________________________

9. Does the behaviour occur more or less when an activity is being done alone? ____
   One person providing support ______
   Group setting ______
Describe:
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

Section C:
Describe immediate antecedent events that predict when the behaviour is likely and not likely to occur.

1. **Time of Day:** When are the Behaviours *most and least likely* to happen?

   **Most Likely:**
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

   **Least Likely:**
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

2. **Settings:** Where are the Behaviours *most and least likely* to happen?

   **Most Likely:**
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

   **Least Likely:**
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

3. **Social Contact:** With whom are the Behaviours *most and least likely* to happen?

   **Most Likely:**
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

   **Least Likely:**
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
4. **Activity:** What activities are *most and least likely* to produce the Behaviour?

**Most Likely:**

________________________________________________________________________

________________________________________________________________________

**Least Likely:**

________________________________________________________________________

________________________________________________________________________

5. Are there any *other situations* or events during which this behaviour is *likely to occur* that is not listed above? If so, please describe each situation or event.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Section D: Describing the Consequences for the Behaviour

Please fill in the following chart for each situation that the problem behaviour is likely to occur during:

<table>
<thead>
<tr>
<th>Situation</th>
<th>What does he/she get?</th>
<th>(And/or) What does he/she avoid?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Does the person receive a favored object, activity, person’s attention, physical sensation, etc. by performing the behaviour?</td>
<td>Does he/she avoid doing a disliked activity, object, person, physical sensation, etc. by performing the behaviour?</td>
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Section E: Summary Sheet For The Modified Functional Assessment Interview For Mediators

**Directions:** Summarize the information you have gathered in the previous pages of the *Modified Functional Assessment Interview*. You will do this by inserting the information in each corresponding section.

**Rationale:** The completion of this form will give the correspondent a visual layout for what the behaviour looks like, what triggers/predicts it, and what maintains it or what makes the child/client want to perform it.

| This is what my child’s/client’s behaviour looks like: Summarize/list the information gathered in Section A of the Modified Functional Assessment Interview. | This is what triggers/predicts the occurrence of the behaviour: Summarize/list the information gathered in Section C of the Modified Functional Assessment Interview. | This is why my child/client continues to perform the behaviour: Summarize/list the information gathered in Section D of the Modified Functional Assessment Interview. |
Appendix E

E: Event Recording Sheet to be Utilized by Parents or Teachers

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Occurrences of Behaviour</th>
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<tbody>
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</table>
### Appendix F

**F: ABC Recording Sheet**

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>People/Person Involved</th>
<th>Antecedent</th>
<th>Behaviour</th>
<th>Consequence</th>
<th>Possible Function</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

Name: [Redacted]  
Behaviour: [Redacted]
Appendix G
G: Follow-up Interview

1. Do you think your child’s obsessive-compulsive tendencies have increased or decreased since we ended our sessions?

2. Can you tell me about how often and for how long your he/she is engaging in those tendencies?

3. Have you put him/her in another therapies or began other medications since the end of our sessions?

4. How are you feeling now about the work we did?
Appendix H

H: Preference Assessment
Appendix I
I: 10-Point Rating Scale

Name: __________________________

Circle the number that matches what is going on with your obsessive-compulsive tendencies at the end of each of our sessions.

1. I don’t notice my obsessions or compulsions at all. They do not bother me or get in the way of me doing other activities.

2. Obsessive compulsive tendencies are hardly around at all. I don’t spend much time focused on them, and they don’t get in the way of whatever I want and need.

3. Obsessive compulsive tendencies are there, but I spend only a little time on my obsessive-compulsive tendencies every day.

4. Obsessive-compulsive tendencies are easy to resist and doesn’t really cause me or anyone else a big problem.

5. I spend a couple hours of my day engaging in my obsessive-compulsive tendencies. It is hard to get them out of my head, but they are not keeping me from doing other things.

6. I spend a big part of my day focused on my obsessions or engaging in compulsions. It’s hard not to think about them and what they do to me.

7. Obsessive-compulsive tendencies pretty much rule my day. It is very challenging to get anything else done, except obeying my obsessive-compulsive tendencies commands.

8. It often feels like I spend my whole day thinking about my obsessions or engaging in my compulsions.

9. I can’t do anything without my obsessions and compulsions getting in the way. They take over my day.

10. Obsessive-compulsive tendencies make it difficult to get through the day. I am constantly thinking about them or engaging in the compulsions.
Appendix J

J: Graph Used to Rank Level of OC Tendencies
Name: ________________________________

Graphing Your Progress

Level of Obsessions/Compulsions

Session Number
Appendix K

K: Obsessions vs Compulsions Game with Answers

Participants were asked to label the following as an obsession or a compulsion.

- Worrying that you or something/someone/somewhere is contaminated. (O)
- Worrying something bad will happen if you leave the house. (O)
- Worrying about catching an illness. (O)
- Thinking that everything needs to be arranged in a certain order. (O)
- Worrying about causing harm to yourself or others. (O)
- Intrusive violent thoughts. (O)
- Worrying that something terrible will happen unless you check repeatedly. (O)
- Worrying that you have caused someone else to be unhappy. (O)
- Having the unpleasant feeling that you are about to shout out something rude in public. (O)
- Excessive washing of one’s hands or body. (C)
- Excessive cleaning of clothes or rooms in the house. (C)
- Checking that items are arranged ‘just right’ and constantly adjusting inconsequential items, such as pens on a table, until they are aligned to feel ‘just right’ as opposed to looking aligned. (C)
- Mental rituals or thought patterns such as saying a particular phrase, or counting to a certain number, to ‘neutralize’ an obsessional thought. (C)
- Avoiding particular places, people or situations to avoid an obsessive thought. (C)
- Repeatedly opening and sealing letters / greetings cards that one has just written, maybe hundreds of times. (C)
- Constant checking of light switches, handles, taps, locks etc. (C)
- Saying out loud (or quietly) specific words in response to other words. (C)
- Pulling on your hair. (C)
Appendix L
L: Example of the Visual Cycle

Thoughts
Create
Feelings

Behavior
Reinforces
Thoughts

Feelings
Create
Behavior
Appendix M

M: Time of Day Analysis of Participant A's Behaviour

Time of Day Analysis of Participant A's Behaviours
Appendix N

N: Participant A’s Level of OC Tendencies with Trend Lines

Trend line phase 3:

\[ Y = -0.5x + 13 \]

\[ R^2 = 0.91304 \]
Appendix O

O: Participant B’s Level of OC Tendencies with Trend Lines

Trend line phase 3:

\[ Y = -0.9006x + 13.224 \]

\[ R^2 = 0.75486 \]
Appendix P

P: Participant A’s Level of OC Tendencies with PEM Calculations

The dashed line across both phases represents the median of the data. Using the PEM method, eight out of the eight data points in phase 3 are below the median phase 2 point. Therefore, the PEM is \((8/8 \times 100)\% = 100\%\).
Appendix Q

Q: Participant B’s Level of OC Tendencies with PEM Calculations

The dashed line across both phases represents the median of the data. Using the PEM method, four out of the 6 data points in phase 3 are below the median phase 2 point. Therefore, the PEM is \((\frac{4}{6} \times 100) = 66.6\%\).
Phase 2
91% of the data points in phase 2 are within 25% of the median and therefore the data is stable.
10/11=.91

Phase 3
50% of the data points in phase 3 are within 25% of the median and therefore the data does not show stability.
4/8=.5
Appendix S

S: Participant B’s Level of OC Tendencies with Stability Calculations

Participant B's Level of OC Tendencies

Phase 2
66% of the data points in phase 2 are within 25% of the median and therefore the data does not show stability.
4/6 = .66

Phase 3
33% of the data points in phase 3 are within 25% of the median and therefore the data does not show stability.
2/6 = .33