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Early Intervention in Pediatric Obsessive-Compulsive Disorder: A Longitudinal Study

by

Chloe E. Boxer

Submitted to Scripps College in Partial Fulfillment  
of the Degree of Bachelor of Arts

Professor Wood

Professor Groscup

December 9, 2022

**Early Intervention in Pediatric Obsessive-Compulsive Disorder: A Longitudinal Study**

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PSYC 191: Senior Thesis in Psychology

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December 9, 2022

### **Abstract**

OCD is a psychological disorder that causes significant distress for millions of people, but it is under-researched and often misunderstood by both the general population and clinicians. In pediatric OCD, life outcomes like symptom severity and duration of the disorder are typically negatively impacted. Previous research has demonstrated that early intervention of pediatric OCD has positive outcomes, but the adverse side effects of common medications along with the lack of comprehensive effectiveness in traditional psychotherapies for OCD suggest that new and potentially better options must be explored. A 2x4 Mixed Model ANOVA design will compare CBT and EMDR treatments administered between the ages of 6 and 12, with assessments at intake and the end of treatment, and with attempted follow-ups at ages 18 and 25. It is hypothesized that CBT and EMDR will both be effective treatments for pediatric OCD. More specifically, it is hypothesized that CBT will be more effective than EMDR when comparing the severity of symptoms at the end of treatment to the severity of symptoms at intake and that EMDR will be more effective than CBT at maintaining fewer symptoms when comparing patients at age 18 and age 25 between the two treatment groups. This research will potentially improve the lives and well-being of people of all ages with OCD, raise awareness for the disorder and its detrimental effects on functioning, and provide a greater understanding of the course of pediatric OCD into adulthood for the current scholarly base.

## **Early Intervention in Pediatric Obsessive-Compulsive Disorder: A Longitudinal Study**

Although Obsessive-Compulsive Disorder (OCD) is a distressing and prevalent psychological disorder, it is relatively underdiagnosed and misdiagnosed among clinical populations. Furthermore, it is generally misunderstood by average people and even some mental health professionals. Pediatric OCD, which presents itself early in childhood or adolescence, presents a unique set of challenges for the treatment and management of the disorder. After a brief overview of OCD as a disorder, the cognitive model of OCD will be explored as an introduction to an investigation of the frontline psychotherapy treatment for OCD, Cognitive Behavioral Therapy (CBT). A more detailed examination of the distinguishing aspects of pediatric OCD and the benefits of early intervention will then be conducted, followed by an overview of Eye Movement Desensitization and Reprocessing (EMDR) treatment and its possible efficacy in the treatment of pediatric OCD. The purpose of the current research is to explore the effectiveness of CBT and EMDR in the treatment of pediatric OCD and analyze the benefits and outcomes of both treatments over time, particularly from childhood and adolescence to adulthood.

OCD is an often debilitating, complex, and lifelong psychological disorder that is characterized by the presence of obsessions and compulsions (APA, 2013). Obsessions are recurrent, intrusive, and unwanted thoughts, urges, or images. Compulsions are repetitive behaviors or mental acts that an individual feels they must perform. For an official diagnosis of OCD, obsessions must be present, but compulsions are not necessarily required. However, the most severe cases of OCD typically include both obsessions and compulsions. Additionally, obsessions and compulsions must cause significant distress or impairment in functioning in most

individuals and occupy a notable amount of time to meet DSM-5 diagnostic criteria (APA, 2013).

The lifetime prevalence of OCD is estimated to be between 1-2% worldwide and OCD is often comorbid with other psychological disorders, including anxiety disorders, depressive disorders, and bipolar and related disorders (Okuda and Simpson, 2015). OCD symptoms typically persist without treatment, and most individuals with OCD experience significant life impairment. OCD can develop at any age, but it typically presents in adolescence or early adulthood. However, the emergence of OCD in childhood is possible and it often corresponds with a poorer prognosis including increased symptom severity, higher rates of comorbidity with other psychological disorders, and a longer duration of OCD. Various elements can lead to the development of OCD, regardless of the age of onset, including environmental, biological, social, and sociocultural factors. In particular, genetics, brain abnormalities, and stressful life events are some of the more common contributors to OCD.

Historically, the most common therapeutic interventions for OCD have included psychotherapies and psychiatric medications. Cognitive behavioral therapy (CBT) that includes exposure and response prevention is the usual psychological treatment of choice and selective serotonin reuptake inhibitors (SSRIs) are the typical best option for medications (Purdon, 2021). When used together, psychotherapies and medications have the highest success rates. However, research suggests that while higher doses of SSRIs are associated with greater efficacy in the treatment of OCD, these benefits are counterbalanced by the adverse side effects often experienced by individuals taking these medications (Bloch et al., 2010). Furthermore, a large percentage of patients are entirely unresponsive to treatment with SSRIs, which inversely reduces remittance rates and is counterintuitive to the primary goal of OCD treatment (Pallanti et

al., 2004). Due to the number of patients who still do not respond to the current frontline treatments, a more thorough investigation of cognitive behavioral therapy and the theories behind it is required, in addition to a deeper exploration into more scarcely researched, but possibly viable, treatment options, like Eye Movement Desensitization and Reprocessing (EMDR).

### **The Cognitive Model of OCD**

The cognitive basis of OCD includes unwanted thoughts, images, or impulses, misguided expectations or interpretations, and irrational assumptions or beliefs (OCCWG, 1997). These cognitive concepts are central to the understanding and treatment of OCD. Without obsessions, which are primarily characterized by intrusive cognitions, a diagnosis of OCD is not possible. Due to this emphasis on the cognitive aspect of OCD, it is essential to consider why people with OCD harbor irrational thoughts and how these thoughts affect their everyday functioning. Aaron Beck's cognitive model identifies key components of how cognitions cause psychological and emotional problems, and it also supplies the basic theory behind the first-line treatment of OCD, Cognitive Behavioral Therapy (CBT). Paul Salkovski further refined Beck's model to highlight the unique aspects of OCD and how cognitions are inextricably linked to obsessions and compulsions.

The key and the most applicable component of Beck's cognitive model for OCD is the cognitive specificity hypothesis. It proposes that an individual's dysfunctional beliefs lead to emotional problems because these misguided cognitions affect how life experiences are interpreted (Beck, 1976, as cited in McHugh O'Leary, 2007). The individual's interpretation also depends on their past experiences and mood at the time of the event. When Beck initially theorized this, there was no particular emphasis placed on OCD; instead, it was grouped with

other anxiety disorders. However, the general principle of dysfunctional beliefs can easily be linked to OCD, as obsessions are particularly driven by irrational and misguided thoughts that can often result in clinical compulsions.

Salkovski expanded on Beck's theory to specifically address OCD and it was proposed that intrusive thoughts are actually cognitive stimuli rather than responses to external sources. When considering people with OCD, Salkovski proposed that the responses to these stimuli are usually related to beliefs about personal responsibility for harm to the self or others. This high sense of individual responsibility leads to the development of clinical obsessions which are often subsequently accompanied by compulsions, the two cornerstones of OCD (Salkovski, 1985, 1989, as cited in McHugh O'Leary, 2007). While obsessive-compulsive symptoms are relatively common in the general population, the same cannot be said for diagnosable OCD (Fullana et al., 2010). These more common symptoms will usually resolve in people without OCD. The aforementioned cognitive models have contributed to the development of Cognitive Behavioral Therapy (CBT), which is the primary psychotherapy treatment for individuals diagnosed with OCD.

### **Cognitive Behavioral Therapy**

CBT is the most common and first-line treatment for OCD in adults and numerous studies and literature reviews support CBT's efficacy for OCD (Franklin and Foa, 2002). More specifically, CBT with Exposure and Response Prevention (ERP) provides the highest efficacy, with about 75% of patients experiencing some reduction of symptoms after being administered the treatment properly. However, patient adherence to the therapy is vital to the success of the treatment, which is evident when considering the typical design of CBT (Koran and Simpson, 2013, as cited in Okuda and Simpson, 2015). CBT's general goal is to help patients identify how



irrational and intrusive thoughts negatively affect their feelings and behaviors (Scogin and Shah, 2012). Because of the emphasis on irrational and intrusive thoughts, which are common characteristics of obsessions, and behaviors that often present as compulsions, CBT is a viable, and often effective, treatment option for OCD.

CBT can be administered effectively by a trained therapist in about 20 sessions. In the first two sessions, the therapist should establish rapport with the client, identify areas of most distress, provide education on the treatment, give a general outline of the process, emphasize the importance of self-monitoring and at-home practice, and finally elicit reactions to the sessions. Sessions three through five focus on relaxation training and not completing at-home assignments. During sessions six through eight, therapists should review homework given to the patients and teach problem-solving strategies. Session nine should continue with the patient's homework, address any non-completion, and the therapist may also teach the patient sleep hygiene strategies. Session ten involves more review but also instruction on methods for stopping thoughts, controlling triggering external stimuli, and scheduling "worry" time. In sessions eleven and twelve, assertiveness and communication skills should be taught, a role play occurs with the patient, and homework is assigned to practice in real life. During sessions thirteen and fourteen, the therapist should discuss how to increase pleasant activity scheduling, and during sessions fifteen and sixteen, mindfulness and acceptance of uncontrollable events should be addressed. Session seventeen begins the move toward termination of treatment, where the therapist should discuss the importance of applying the newly learned skills to daily life. The final three sessions serve as a review, a discussion of progress, and a reaction to the therapy process. When administered sufficiently, CBT can have positive impacts on adult patients' lives, including the reduction of symptoms and improved quality of life.

## **Distinguishing Components of Pediatric OCD**

When considering pediatric OCD specifically, there is much more to consider during diagnosis and treatment. Genetic factors are critical to consider when discussing pediatric OCD and heredity plays a major role in OCD etiology, in combination with a variety of environmental factors (Nicolini et al., 2009). High rates of comorbidity exist for both children and adults with a higher genetic risk of OCD, which was supported by The Brown Longitudinal Obsessive Compulsive Study. The Brown Study was the first comprehensive investigation into the course of OCD over time using longitudinal methods (Pinto et al., 2006). The research found that OCD typically has a gradual onset and progresses continuously regardless of the age of onset. There is usually also a significant delay between the onset of symptoms and the beginning of treatment, despite OCD causing substantial impairment in social relationships and work functioning. Pediatric, or early-onset, OCD is characterized by the development of symptoms before adulthood. Participants with pediatric OCD have significantly higher comorbidity rates, the types of symptoms first presented are different, and the rates of current obsessions and compulsions are higher (Pinto et al., 2006). Similarly, pediatric OCD is associated with less recovery, increased severity of symptoms, and a longer duration of the disorder (Skoog and Skoog, 1999).

Family history of OCD plays a unique role in pediatric OCD and is essential to both consider and understand when evaluating patients (Brakoulias et al., 2016). There is an earlier age of onset of OCD in most patients with a family history of OCD, which could be accounted for through learned behaviors from family members, especially with hoarding and cleaning symptoms (Brakoulias et al., 2016). More specifically, family accommodation often contributes to the development of OCD, in cases with family history and cases without (Lebowitz et al., 2012). Family accommodation encompasses ways family members engage in the performance of

rituals, avoid anxiety-inducing situations, or modify daily routines to help a relative with OCD. Unfortunately, accommodation is common in OCD and is strongly correlated with increased OCD symptom severity. There has been significant improvement for some individuals with OCD when treatment involves reductions in family accommodation and therapies targeting accommodation could improve outcomes for children and adults with OCD (Lebowitz et al., 2012). This information necessitates the exploration of early intervention for pediatric OCD.

### **Early Intervention in the Treatment of Pediatric OCD**

The negative life outcomes of people with pediatric OCD inspire the consideration of how early intervention can play a positive role in treatment. Early intervention often lessens symptom severity, shortens the duration of the disorder and its often debilitating effects, and perhaps even leads to meaningful recovery in some individuals. Many factors including the availability of effective treatments and the role of environmental factors in OCD make it vital for early intervention programs to be implemented (Preti et al., 2022). However, the research on the efficacy of early intervention in the treatment of pediatric OCD is extremely limited. Due to the high rates of comorbidity that young children with OCD experience, it is imperative that the proposed research be conducted.

Pediatric OCD often has a pre-pubertal onset of symptoms, with some children experiencing symptoms at five or six years of age. Familial heredity and accommodation can play major roles in the development of these cases and other environmental factors can also be triggering. Because OCD is commonly misdiagnosed or left untreated for a significant time, the early intervention framework must be further explored, especially given the negative outcomes predicted by the duration of an untreated disorder. Pediatric OCD affects the social, psychological, and emotional functioning of both individuals and their families, which provides

yet another important reason for early intervention (Preti et al., 2022). Finally, pediatric OCD has high rates of about seventy percent for continuing into adulthood, which could be positively addressed through early intervention methods including CBT and perhaps even newer and previously unresearched treatments like EMDR (Flament et al., 1991).

### **Overview of Eye Movement Desensitization and Reprocessing (EMDR)**

Eye Movement Desensitization and Reprocessing (EMDR) is a relatively new, but effective treatment used primarily for Post-Traumatic Stress Disorder (PTSD). This structured psychotherapy process was developed by Francine Shapiro and was originally designed to alleviate the distress caused by traumatic memories (Shapiro, 1989, as cited in EMDR Institute, 2020). EMDR therapy involves multiple phases that facilitate the accessing and reprocessing of problematic memories, which relieves distress and reframes cognitions (EMDR Institute, 2020). The ultimate hypothesis for EMDR is that once negative thoughts are accessed, information processing is enhanced, which then allows for new and healthier associations to be made between the traumatic cognitions, and more adaptive cognitions (Shapiro, 1995). During this therapy, patients directly engage with upsetting memories and cognitions in short, sequential doses while simultaneously focusing on some external stimulus (EMDR Institute, 2020). This process of bilateral stimulation can take many forms, including the most commonly used lateral eye movements. Over 30 positive controlled outcome studies have been completed on EMDR for treating PTSD and it has been found as an effective form of treatment for trauma by both the American Psychiatric Association and the World Health Organization (EMDR Institute, 2020).

Despite bilateral stimulation being the most well-known aspect of EMDR therapy, eight phases contribute to the entire approach. Phase One involves the evaluation of patients and the development of a treatment plan. Phase Two requires therapists to ensure their clients have

coping mechanisms for emotional distress and various techniques may be taught to patients to ready them for the targeting of memories. Phases Three through Six focus on identifying specific targets and processing them. Clients identify four things to complete the bilateral stimulation associated with these phases. They must choose a strong visual image related to the memory, a negative belief about themselves, related emotions and any body sensations, and finally, a more positive belief about themselves. Ratings are assigned to the negative emotions and the positive belief. The therapist then instructs the client to focus on the identified image, negative belief, and negative emotions and sensations. This focus coincides with the use of some type of bilateral stimulation by the therapist, which is determined by the therapist to best meet their client's needs, in addition to the length of time each stimulation is given. The client is instructed to simply notice what they think and feel.

After each stimulation, the therapist asks the client to clear their mind and notice what comes to mind, whether it be a thought, image, emotion, or sensation. The focus for the next stimulation is determined by the therapist and these sets continue. Therapists must ensure their clients remain focused on the process when they become distressed, distracted, or frustrated. Once the client no longer experiences distress from the negative cognition, the therapist prompts them to identify the positive belief initially chosen at the start of the session. This positive belief then becomes the focus. Phase Seven involves closure, where the therapist asks the client to keep a weekly log of any cognitions that arise and clients use self-relaxation techniques learned in Phase Two. The final phase, Phase Eight, examines the current state of progress and distress. A comprehensive review of past trauma, current situations causing distress, and the possibility of issues arising in the future are conducted, and, depending on the patient, the process ends or restarts with a new focus (EMDR Institute, 2020).

### **EMDR in the Treatment of OCD**

While EMDR has primarily been used to treat PTSD for the past few decades, there is an emerging body of evidence for its efficacy for OCD. According to the cognitive model, OCD is caused by upsetting cognitions that illicit further obsessions and compulsions. Two of EMDR's primary goals are to reformulate cognitions and alleviate distress, which are two outcomes essential in the treatment of OCD. Two randomized controlled trials found EMDR to be effective in the treatment of OCD when compared to exposure and response prevention (ERP) and medications (Böhm, 2019). A review of nine studies found that EMDR reduced symptoms from baseline in all studies, and that it may be as effective as ERP and more effective than SSRIs (Talbot, 2021).

In the treatment of OCD, the use of EMDR would focus on upsetting obsessions that often lead to compulsions and how the intrusive cognitions make the client feel. During the bilateral stimulation, the client would be encouraged to think about the upsetting nature of their thoughts and consider a healthier, improved alternative. Through this process, the client would potentially and hopefully discover a new way to process their irrational thoughts, which will subsequently decrease the distress caused by the obsessions and compulsions. CBT, the first-line treatment for OCD, has some similarities to EMDR but it emphasizes behavioral changes rather than cognitive shifts like EMDR. Because behavioral changes typically decline after prolonged periods and there is often a reemergence of some symptoms after CBT treatment, EMDR may provide a better alternative with its focus on the permanent altering and reprocessing of cognitions. In regards to the two treatments' usage in clinical settings, they have comparable completion rates and clinical outcomes in one randomized controlled trial with adults (Marsden et al., 2018). The sole support for EMDR in the treatment of pediatric OCD comes from a case

study that found a substantial decrease in symptoms using the three-throwed, past, present, and future, EMDR approach (Cusimano, 2018). Despite the evidence for EMDR's usefulness in treating OCD being limited, it is still promising and worth further exploration, especially concerning treating pediatric OCD.

### **Study Overview and Aims**

Previous research indicates that OCD is a difficult psychological disorder to endure and address with treatment. The disorder is defined by intrusive and disturbing cognitions that often lead to compulsions carried out to alleviate distress. CBT is the first-line treatment for OCD and SSRIs also show some efficacy. With pediatric OCD, genetics and family history must be considered because the young age of onset is typically correlated with increased symptom severity, less recovery, and a longer duration of the disorder. However, early intervention methods including CBT show promise for pediatric OCD and are essential in treating young children with the debilitating symptoms OCD causes.

Although previous research has demonstrated that EMDR is an effective treatment for PTSD, its efficacy for OCD is largely unknown, particularly for the treatment of pediatric OCD. However, with EMDR's emphasis on cognitive shifts that involve reprocessing intrusive thoughts, it has great potential for effectively treating pediatric OCD. There has been no previous research investigating the effective usage of EMDR in children diagnosed with OCD and the long-term effects of the treatment are also entirely unknown for pediatric OCD. While there has been extensive research on CBT and OCD, there is still a relatively limited body of evidence for CBT in the treatment of pediatric OCD. There has also been no direct comparison between CBT and EMDR of a longitudinal nature particularly in children, which are two of the key components of the following proposed study.

The proposed study will investigate the effectiveness of CBT and EMDR in the treatment of pediatric OCD and determine the long-term benefits and outcomes of both treatments. Participants will be children diagnosed with OCD and they will be randomly assigned to complete either CBT or EMDR treatment. Assessments of symptom severity will be completed at intake and the end of treatment, and follow-up assessments will be attempted for each participant at ages 18 and 25. It is hypothesized that CBT and EMDR will both be effective treatments for pediatric OCD. More specifically, it is hypothesized that CBT will be more effective than EMDR when comparing the severity of symptoms at the end of treatment to the severity of symptoms at intake and that EMDR will be more effective than CBT at maintaining fewer symptoms when comparing patients at age 18 and age 25 between the two treatment groups. These hypotheses support the nature of EMDR providing lasting cognitive shifts rather than CBT's often temporary behavioral changes. Because OCD is a life-long disorder, the possibility of a treatment providing continuing relief through adapted cognitive processing must be further explored.

## **Method**

### **Participants**

Participants will be children diagnosed with OCD between the ages of 6 and 12 in the United States. Other than age and a diagnosis of OCD, no other demographic restrictions, including but not limited to gender, ethnicity, or religion, will be placed on participants. A power analysis using a small estimated effect size, sourced from a study comparing CBT and EMDR in adults, yielded a necessary pool of 350 participants for a proper between-group comparison at the age of 25 follow-ups (Marsden, 2018). Due to an expected attrition rate of 33%, 525 total participants will be recruited at the beginning of the study. The expected attrition rate of 33%



accounts for uncompleted follow-ups due to either a loss of contact with participants or the choice of participants to opt out of the study. Participants will be drawn from a population of children at an outpatient treatment center at a university with graduate-level studies. The study will be advertised at the treatment center and recommended to patients and families who meet the criteria of age and an OCD diagnosis. Upon selection for the study and the completion of informed consent by the parents and informed assent by the child participants, random assignment will determine whether participants will be treated with CBT or EMDR. An equal number of participants will be randomly assigned to each treatment group, although unequal attrition rates between the two groups could cause final participant numbers to be slightly varied.

## **Materials**

### *Experimental Treatments*

#### *CBT*

The CBT treatment used in this study will consist of 20 sessions and it will be carried out by a trained post-doctoral student. While the general layout previously outlined will be used, the treatment will rely heavily upon the collaboration between the therapist, the child patient, and the parents or guardians. The majority of the education on the treatment will be provided to the parents or guardians of the child participant. Additionally, the at-home exercises will be supervised by the parents, and to determine whether there is true adherence to the treatment, the parents will be asked about the completion of CBT homework, along with the child. However, the parents or guardians will not be present during the actual sessions and debriefings will occur after each session on current progress, struggles, and any homework. The final discussion of progress and reactions to the therapy process will be conducted with the parents or guardians and the patient.

### *EMDR*

The EMDR treatment provided in this study will consist of 16 sessions, with the inclusion of the eight traditional phases. It will be completed by a trained post-doctoral student, and it will be adjusted slightly to focus on obsessions caused by OCD and to account for use with child patients. The evaluation and development of the treatment plan will be completed by the therapist in collaboration with the parents or guardians of the patient. After this collaboration, the majority of the treatment will be conducted solely between the therapist and the patient.

Upsetting obsessions will be identified to be the focus of the bilateral stimulation process. The patient will be asked to choose an upsetting image related to their obsession, a related negative belief, any emotions or bodily sensations that arise, and finally, a more positive belief about their obsession. If the patient becomes distressed during any point of the EMDR process, the therapist will attempt to calm them and will even terminate the process during that particular session if necessary. Thorough debriefings will occur after each session with the parents and guardians, along with a final review after treatment.

### *Measures*

#### *Yale-Brown Obsessive Compulsive Scale (Y-BOCS) and Children's Version (CY-BOCS)*

The Yale-Brown Obsessive Compulsive Scale (Y-BOCS) is an instrument used to assess the symptom severity of OCD in adults. The Y-BOCS serves as the basis for the CY-BOCS, the Children's Yale-Brown Obsessive Compulsive Scale, which is a comprehensive measure used to aid in the diagnosis of OCD and evaluate symptoms and their severity, particularly in children and adolescents ages 6 to 17. The CY-BOCS will determine eligibility for participation in the study, establish a symptom severity baseline for all participants, and create a more personalized, guided treatment for each child. It will also be administered at the end of treatment and used to

determine symptom severity post-treatment. The Y-BOCS will be administered at each participant's age 18 and 25 follow-ups. Both versions of the test must be administered by either a clinician or trained interviewer and the CY-BOCS is typically conducted with both the child and parents or guardians present, while the Y-BOCS is administered with a single adult patient. The interviewing strategy and process differ for all children, depending on age and developmental level, but it is more cohesive and standardized for adults. Reliability for the CY-BOCS will be ensured by having the same informant (parent or guardian) present during each session and a small group of trained post-doctoral students will always administer the tests. Additionally, the same post-doctoral student will administer the test in most cases, and this will only change out of absolute necessity given an emergency or other unavoidable issue.

While this section specifically details the administration of the CY-BOCS, the same general principles apply to the Y-BOCS, but with the Y-BOCS, only an adult patient is present. To administer the CY-BOCS, the interviewer first reviews the definitions of obsessions and compulsions with the child and parent or guardian. They then conduct a detailed investigation of the child's symptoms with the Compulsions Checklist and Obsessions Checklists serving as guides. Once the checklists are complete, a list of the four most severe compulsions and the four most severe obsessions must be noted on the Target Symptom List. After creating the Target Symptom List, the severity items are completed for obsessions and compulsions, with ratings for time spent, distress, resistance, interference, and degree of control. These ratings should reflect the interviewer's best estimate from all available information from the past week, with an emphasis on the Target Symptoms. All information is then combined to estimate the score for each item and the total CY-BOCS score is a sum of items 1-10. All final ratings are reported as whole integers and total scores of 0 to 7 are considered subclinical, 8 to 15 are mild, 16 to 23 are

moderate, 24 to 31 are severe, and 32 to 40 are extreme. The Y-BOCS is rated, summed, and scored identically to the CY-BOCS. The Y-BOCS, particularly, has an extremely high interrater reliability ( $ICC = .98$ ) and internal consistency ( $\alpha = .89$ ), which can likely be applied to the CY-BOCS due to the similarities in administration and scoring between the two measures (Marsden, 2018).

### *Demographic Variables*

Basic demographic information will be collected at the beginning of the study from each patient and their parents or guardians. Demographic information for the patients will include their birthdate, gender, race, and ethnicity. The parents or guardians will be asked to provide their age, race, ethnicity, gender, marital status, income, education, and employment status. Contact information, including phone number, email, and mailing address, will also be collected. The demographic information will allow for the determination of the generalizability of the results. The contact information will permit the researchers to attempt to conduct necessary follow-ups.

### **Procedure**

This study will use a 2 (CBT or EMDR) x 4 (Intake, End of Treatment, Age 18 Follow-Up, and Age 25 Follow-Up) mixed groups design. At the beginning of the study, informed consent will be completed by the parents or guardians of the child patient, who will provide their informed assent, and demographic information will be collected. Twelve post-doctoral students will train in both CBT and EMDR treatment protocols. Participants will be randomly assigned to either the CBT or EMDR treatment group, and they will be randomly assigned to one of the twelve clinicians. All participants will complete treatment in person at the university medical center associated with the study. The first administration of the CY-BOCS will occur with the clinician, the child, and their informant. Participants in the CBT group will

complete a 20-session treatment, and this amount of sessions allows for proper adherence to traditional CBT protocol. Participants in the EMDR group will complete a 16-session treatment, and this session number allows for roughly two sessions to be afforded to each of the eight phases of EMDR treatment. After each participant's treatment, the clinician will complete the CY-BOCS for a second time with the child and their informant. Each participant's symptom severity and age will be recorded upon completion to accurately perform follow-ups. Contact information for the children and their families will also be collected. An initial follow-up will be attempted by the primary researchers, who will request to administer the Y-BOCS either in person or through a secure video call. A second follow-up will be attempted at age 25. Both administrations of the Y-BOCS will be conducted by the researchers due to the staggered timing and delayed nature of the follow-ups. Neither follow-up will be mandatory and it is expected that some participants will not be reachable or willing to participate further. The study will conclude upon the attempted completion of all follow-ups.

### **Ethical Considerations**

All participants will receive psychological treatment during this study and will likely benefit from reduced symptoms and distress. Participants will also learn various coping mechanisms that will remain useful during their entire childhood and adult lives. A thorough investigation into the efficacy of EMDR in the treatment of OCD will benefit the scholarly knowledge base because it currently has limited research into EMDR for OCD. Society will also be more educated about the true nature of OCD, which may decrease the vast misunderstanding and stigmatization of OCD. The most direct and apparent benefits will be present for the participants, however, who will ultimately learn how to manage and live with their OCD throughout their lives.

While this study will present multiple benefits to participants, scholarly knowledge, and society, it will be accompanied by various risks that will be considered and accounted for. To accurately determine the efficacy of both CBT and EMDR, engagement in these therapies will be crucial for the study. This study will involve the collection of some private health information and confidential data, which will be stored securely and in separate files on a password-protected computer that is only accessible to the researcher and assistants. Participants will also be assigned numbers to safeguard their identities. All confidential data will be disposed of five years after the completion of the study.

Due to the lack of research on pediatric OCD, all participants will complete the treatment stage of this study when they are minors. This will require a more thorough informed consent process with their parents or legal guardians and an assent form with understandable language will be presented to the children. Additionally, all treatment will be carried out by a small group of post-doctoral students who have received extensive and identical training in CBT and EMDR. This will ensure protocols for both treatments are adhered to. This study will not involve any deception and is truly voluntary. Although the children will not be made entirely aware of the study's purpose due to their age, parents will be provided a detailed and thorough informed consent which will outline the conditions described above. All participants will be debriefed at the end of each stage of the study, and a full and final debriefing will take place at the age 25 follow-up. Partial debriefings at the time of each assessment are necessary due to attrition. If parents and guardians or children decide not to complete the study, there will be no consequence and they will easily be allowed to exit the study, with all their data disposed of properly.

While treatment for OCD can be triggering and even distressing, the treatments implemented in this study will not present more risk to participants than they would experience

in their everyday life. Unfortunately, due to the nature of OCD, any situation can be triggering for certain individuals, which is unavoidable outside of treatment. Despite the potentially distressing topics therapy will address, the long-term benefits of any treatment for OCD outweigh having none whatsoever. Participants will likely experience a significant reduction of symptoms during and after treatment, and there is little risk of worsening symptoms. This will be ensured by providing thorough training methods to all engaging in these therapies. Ultimately, the lifetime benefits expected from this study far exceed the potential harm to the child participants.

### **Anticipated Results**

#### **Data Analysis Strategy**

To analyze the hypothetical data collected in this study, a 2x4 Mixed Model ANOVA will be necessary to evaluate the data and test all hypotheses. The dependent variables evaluated in this research will be each participant's scores on the Yale-Brown Obsessive Compulsive Scales (Children's and Adult's Version). All participants, regardless of treatment group, will have their scores compared using a within-participants design from intake, the end of treatment, an age 18 follow-up, and the final follow-up at age 25. A between-participants examination of the differences in scores over time between participants in the CBT treatment group and participants in the EMDR treatment group will accompany this analysis. More specifically, Hypothesis 1 will analyze the scores on both the CY-BOCS and Y-BOCS with the treatment group variable, Hypothesis 2 will analyze the scores on the CY-BOCS at intake and the end of treatment with the treatment group variable, and Hypothesis 3 will use the scores on the Y-BOCS at age 18 and age 25 and the treatment group variable.

## **Hypotheses and Rationale**

Three primary hypotheses have been formulated for this study and they include main effects and interactions. Hypothesis 1 predicts that CBT and EMDR will both be effective treatments for pediatric OCD. Due to the previously demonstrated effectiveness of CBT for pediatric and adult OCD in research, it is expected that the participants in this study who are treated with CBT will show improvement in symptom severity. Despite the limited research on EMDR for OCD, the existing results with adults and case studies with children suggest there is a significant possibility of EMDR decreasing symptom severity. Because CBT causes more immediate behavioral changes and EMDR results in a slower, but more permanent, cognitive shift, Hypothesis 2 proposes that CBT will be more effective than EMDR when comparing the severity of symptoms at the end of treatment to the severity of symptoms at intake. However, Hypothesis 3 inversely claims that EMDR will be more effective than CBT at maintaining fewer symptoms when comparing patients from the end of treatment to the age 18 and age 25 follow-ups.

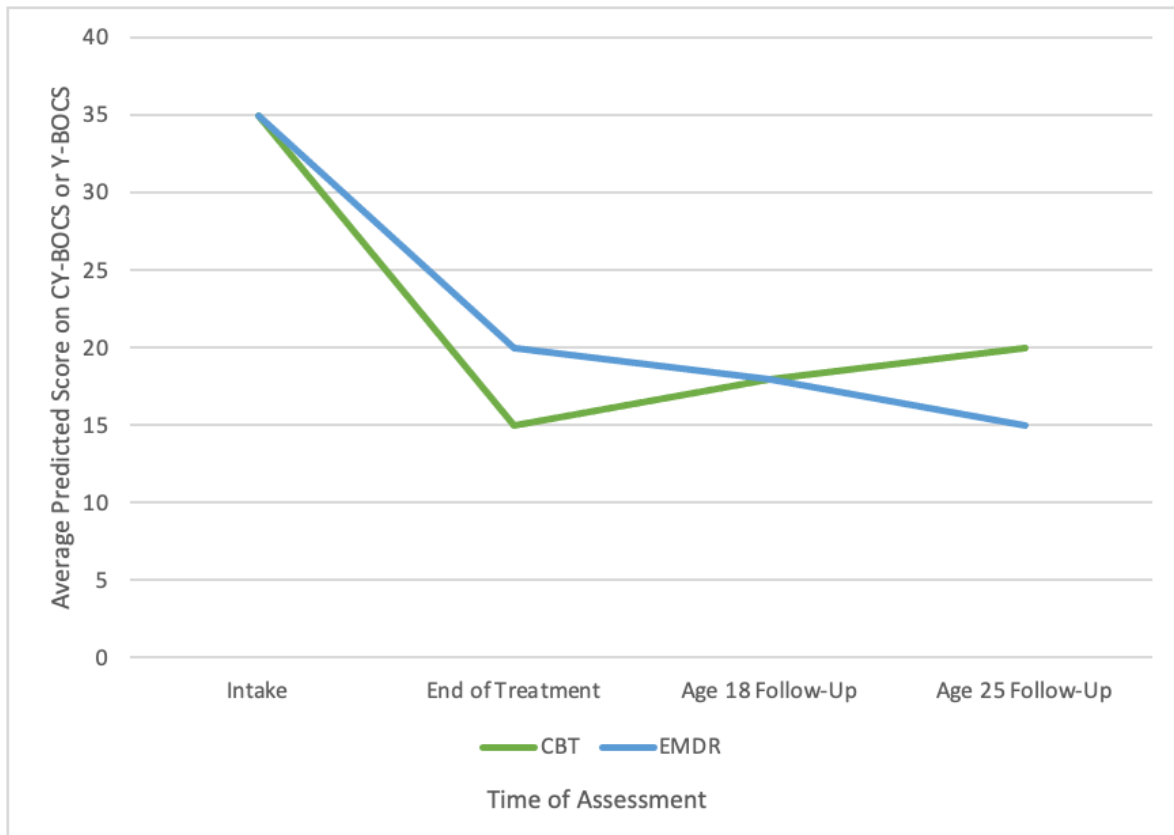
The expected trend includes predicted average scores on the CY-BOCS and Y-BOCS and will vary among individual participants (See Figure 1). However, it is hypothesized that the general trend shown will persist across participants in both treatment groups. The long-term effectiveness of EMDR displayed in the figure above is expected due to the more permanent cognitive shift produced through EMDR, rather than the often temporary and waning behavioral changes seen with CBT. However, it is expected that both treatments will lead to a decrease in symptom severity from the baseline to the age 25 follow-up. This will ensure all participants receive standard-of-care treatment and no participants will forfeit the opportunity to experience a



significant amount of increased symptoms solely based on their randomly assigned treatment group.

### Figure 1

*Anticipated Trends of Symptom Severity Graph*



### Scholarly Merit

Current research on pediatric OCD, and OCD in general, is particularly lacking when compared to most other psychological disorders. The research that does exist disproportionately emphasizes a small group of treatments, namely CBT, exposure therapy, and medications, especially SSRIs. There is also limited substantial evidence for any clear causes of OCD, especially in young children, and the research that does exist primarily focuses on family history, genetics, and environment. Unfortunately, pediatric OCD is even more underresearched and

misunderstood than OCD in adults. This is likely a result of the underdiagnosis and misdiagnosis of children with OCD, which is amplified by the limited knowledge of many psychological professionals on the early presentation of the disorder. The lack of comprehensive research poses a serious problem for scholars and researchers who wish to examine full-bodied literature on the causes of pediatric OCD, effective treatments, and how an early diagnosis and development of the disorder affects patients into adulthood.

The present study would expand scholarly knowledge on OCD with an emphasis on the course of pediatric OCD into adulthood. CBT will be further investigated and compared to EMDR, which has never been empirically researched with children diagnosed with OCD. The initial exploration of EMDR in this study as a possibly efficacious treatment for pediatric OCD could provide evidence for future research to be built upon. While there is growing research on the benefits of EMDR for PTSD, this treatment must be further investigated for treating other psychological disorders. EMDR could be especially viable for OCD due to its significant cognitive component, and the lack of substantial research on it, particularly with children, makes it the perfect candidate for further exploration. Additionally, there are no side effects of EMDR, unlike the adverse consequences often caused by the frontline medications often prescribed during OCD treatment.

This study's emphasis on pediatric OCD will reinforce and expand on the existing literature focused on the benefits of early intervention. Although some research on early intervention has been conducted, a comprehensive longitudinal study spanning more than 5 to 10 years and with a large number of participants has yet to be conducted for pediatric OCD. It is well-known that early intervention typically improves symptoms and general life outcomes, but the course and development of OCD into adulthood and beyond is still largely unknown.

However, this is the particular gap this study aims to address. Ultimately, the necessity of early intervention would be revealed through this study and it would serve as a benchmark for further research to be conducted on the topic of effectively treating pediatric OCD.

### **Broader Impacts**

Although OCD does not directly affect a majority of the population, there is still a significant group of individuals and their families who endure the effects of the disorder daily. Those who do live with OCD typically experience serious impairment in their everyday functioning and feel consistent distress caused by their obsessions and compulsions. Even people who are not affected by OCD should understand that this is necessary research to improve the lives of millions of people struggling with the disorder. This research will potentially improve the symptoms and life experiences of participants, but it will also spread awareness and reduce stigma surrounding both OCD and mental health in general. When even one individual is supported through a process of treatment and subsequently experiences improved mental health, there is a widespread effect on the people connected to them, as well as an increased ability to participate and contribute to society. Additionally, society, in general, will be positively impacted by this research because OCD will be more deeply understood and a more seamless, open environment will be created for children and adults with OCD.

No particular regional community will be especially impacted by this research; however, the information collected through the study will allow a better understanding of an underrepresented group in the mental health field. Research is severely lacking on OCD, especially pediatric OCD, and the proposed study would allow for more general knowledge to be garnered on how to best support children diagnosed with OCD. Data and results from this study could inform school systems on how to properly treat their young students with OCD, and it

could also encourage more awareness and care to be taken when labeling children as “perfectionists.” This research will illustrate the necessity of collecting and recognizing all the facts and lived experiences of children and adults that may lead to a diagnosis of OCD, rather than instead dismissing these differences as simply quirky or something people will get over. Ultimately, OCD is not a disorder to avoid or take lightly; rather, the signs must be addressed and handled properly, which this research will demonstrate.

Most importantly, this research will improve the lives and well-being of children with OCD. These children often feel utterly alone, hopeless, and misunderstood, which only exacerbates their symptoms and harms their well-being as they grow up into adults. It is unacceptable that so many children with OCD are misdiagnosed or never diagnosed, simply because there is not enough research, education, and awareness surrounding this often debilitating, life-altering disorder. This research will always be intended to better the lives of children who are suffering and confused as to why they feel, think, and act the way they do. These children will be shown that having OCD is not a life sentence of pain and that it does not make them any less worthy of success and love. Finally, they will be taught how to experience fulfilling lives through treatment that will emphasize coping, acceptance, and harnessing the strength that already lives within them.

OCD is a disorder that is nearly impossible to fully grasp without living with it yourself. Despite the general understanding of OCD in the mental health community, the lack of viable research on pediatric OCD and truly successful treatments must be addressed. However, the proposed study will not simply widen the literature on OCD and positively impact society. It will change and exponentially enhance the lives and experiences of children with OCD. Above all else, though, finding and administering the best treatment possible to people with OCD, of all

ages, will provide hope to all who have wondered if they will ever feel normal, or if they will ever get better. Ultimately, it is for every person with OCD that endures it so boldly and courageously every day of their lives that the fight for a greater understanding of the disorder and treatments must persist.

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