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EMOTION REGULATION AS A PREDICTOR OF PEDIATRIC OBSESSIVE-  
COMPULSIVE SYMPTOMS

A Thesis  
Presented in partial fulfillment of requirements  
For the degree of Master of Arts  
in the Department of Psychology  
The University of Mississippi

by

BRITTANY S. SAPP

May 2019

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## ABSTRACT

Research findings suggest that emotion regulation (ER) is a key component in the maintenance and development of psychopathology. However, there is a paucity of research assessing ER and Obsessive-Compulsive (OC) symptoms, particularly how ER relates to OC tendencies in children. Due to the pervasive nature of both ER difficulties and OC symptoms across major life domains (i.e., familial, social, academic) and the lasting impact of these problems into adulthood, further research is needed to better understand this connection. The present study investigated this relation in a clinical sample of 472 youth (ages 10 – 17) who completed a packet of self-report measures as a part of the intake process at a psychiatric facility in Mississippi. This study hypothesized the following: 1) Greater ER difficulties would predict pediatric OC symptoms, holding demographic variables constant, 2) Replicating previous research, gender differences would be seen with experience of ER difficulties and OC symptoms such that girls would be more likely to demonstrate poor ER, and boys would experience more OC symptoms than their counterparts, and 3) Gender would moderate the effects of ER on OC symptoms. Correlational analyses indicated that age and OC symptoms ( $r = -.21, p < .001$ ), as well as gender and ER difficulties ( $r = -.27, p < .001$ ) were significantly correlated, respectively. ER difficulties were also significantly correlated to OC symptoms ( $r = .10, p < .001$ ). Following hierarchical regression, age, but not gender, was significantly predictive of OC symptoms. As hypothesized, ER difficulties were also

predictive of OC symptoms when age and gender were held constant, contributing to 9.8% of the variance. Additionally, a moderation analysis indicated that gender moderated the effects of ER difficulties ( $p < .05$ ), contributing 1% of the variance to the overall model. These findings lend support to ER as a transdiagnostic factor contributing to the experience of pediatric OC symptoms in a clinical population, especially among girls. Future research should continue the investigation of factors influencing the onset, maintenance, and severity of pediatric OC symptoms, including transdiagnostic treatment targets, which may lead to improved assessment, early intervention, and enhanced treatment outcomes of OCD.

## LIST OF ABBREVIATIONS AND SYMBOLS

ER	Emotion Regulation
OC	Obsessive-Compulsive
OCD	Obsessive-Compulsive Disorder
DERS	Difficulties in Emotion Regulation Scale
RCADS	Revised Children's Anxiety and Depression Scales

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## **I. INTRODUCTION**

### **i. Pediatric Obsessive-Compulsive Disorder**

Obsessive-Compulsive Disorder (OCD) is defined as a psychiatric disorder consisting of obsessions and/or compulsions that are emotionally distressing and interfere with one's normal functioning (American Psychiatric Association (APA), 2000).

Obsessions are described as intrusive and excessive thoughts, images, or impulses (e.g., contamination, symmetry, doubting) that usually result in the afflicted person engaging in ritualistic behaviors (i.e., compulsions) in response. Compulsions can be either overt behaviors (e.g., washing, checking, ordering) or covert mental acts (e.g., counting, silently repeating words or prayers) that are performed to alleviate emotional distress brought on by obsessions. Those with OCD feel driven to perform these compulsive behaviors, which can be time consuming (i.e., more than an hour per day) and often lead to emotional and functional impairment in occupational/academic, home, and social environments (APA, 2000; Boileau, 2011; Dembo, 2014; Lebowitz, Storch, MacLeod, & Leckman, 2015; Stern, Nota, Heimberg, Holaway, & Coles, 2014). OCD impacts both children and adults, alike, with few differences in symptom expression between the two, other than what can be attributed to level of development (Geller, 2006; Stein, 2002). In children, examples of Obsessive-Compulsive (OC) symptoms are such things as excessive worry over being dirty or contracting some type of illness (i.e., contamination fear) leading to frequent hand-washing, efforts to keep a "lucky" object with them or

perform a particular task a certain number of times to prevent the occurrence of some negative event (i.e., magical/superstitious thoughts), or fear that they will cause unintentional harm to themselves or others (i.e., harm-related obsessions) resulting in repetitive praying for forgiveness of these thoughts (Wu & Storch, 2016).

Formal diagnosis of OCD is seldom made prior to adulthood (Zohar, 1999); however, research indicates that many of those with adult OCD began experiencing symptoms in childhood and adolescence. In fact, around 19% of children may experience subclinical symptoms (Valleni-Basile, Garrison, Jackson, Waller, McKeown, Addy & Cuffe, 1994), which often go unnoticed until their symptoms and behavior become disruptive enough to impact their family lives (Hudziak, Althof, Stanger, van Beijsterveldt, Nelson, Hanna, Boomsma, & Todd, 2006). According to recent estimates, prevalence of pediatric OCD occurs in approximately 0.5% to 4% of children (Dembo, 2014; Geller, 2006; Heyman, Fombonne, Simmons, Ford, Meltzer, & Goodman, 2001; Valderhaug & Ivarsson, 2005; Valleni-Basile et al., 1994). From the limited research, it seems that prevalence increases throughout the course of childhood, reaching its peak by late adolescence (Hudziak et al., 2006). The average age of OCD onset is estimated to be between 7.5 and 12.5 years (AACAP, 2012; Boileau, 2011; Geller, 2006) with 40-75% of cases being chronic in nature (Micali, Heyman, Perez, Hilton, Nakatani, Turner, & Mataix-Cols, 2010; Skoog & Skoog, 1999; Stewart, Geller, Jenike, Pauls, Shaw, Mullin, & Faraone, 2004; Valderhaug et al., 2005). Additionally, studies have found between 30-80% of adults diagnosed with OCD reported symptoms beginning in childhood or adolescence (Boileau, 2011; Subramaniam, Soh, Vaingankar, Picco, & Chong, 2013; Valderhaug et al., 2005). However, there is uncertainty among professionals as to what

level of symptomatology constitutes an OCD diagnosis; for instance, when OCD symptoms first begin, or when symptoms first reach the level of clinical impairment (do Rosario-Campos, Leckman, Mercadante, Shavitt, Prado, Sada, Zamignani, & Miguel, 2001). Likewise, the literature varies according to defining the age of “early onset” OCD (do Rosario-Campos et al., 2001). Therefore, such considerations directly impact the determination of diagnostic criteria, as well as the age of onset, making childhood OCD difficult to recognize. Further contributing to the issue of underdiagnosis is perhaps the lack of pediatricians’ training in identifying OC symptoms in children (Hudziak et al., 2006). Pediatricians are primarily the first line of healthcare for children, and limited psychiatric training may serve as a potential hindrance to the diagnosis and adequate treatment of those with OC symptoms. Consequently, with childhood age of onset and indication of underdiagnosis of OCD during early adolescence, specific attention to childhood OCD is warranted (Heyman et al., 2001; Sheppard, Chavira, Azzam, Grados, Umaña, Garrido, & Mathews, 2010).

OCD symptomatology is heterogeneous in nature, and the impact it poses on a child’s functioning is widely variable (Heyman et al., 2001; Valleni-Basile et al., 1994; Wu et al., 2016). With its pervasive impact on major life domains, quality of life of both the child and those around him is extensively affected (Wu et al., 2016), which can have deleterious and ongoing effects throughout the lifetime. Children diagnosed with OCD often experience difficulty in familial, social, and academic domains (Peris, Bergman, Change, Jaffer, & Piacentini, 2008; Piacentini, Bergman, Keller, & McCracken, 2003; Wu et al., 2016) which can drastically interfere with the developmental process (Freeman, Garcia, Coyne, Ale, Przeqorski, Himle, Compton, & Leonard, 2010; Piacentini

et al., 2003). Symptoms manifest in a variety of ways, such as problems with inattention, decision-making, externalizing behaviors, and emotional regulation (Jacob, Morelen, Suveg, Jacobsen, & Whiteside, 2012). Attempting to cope with these complex difficulties can lead to a life of seclusion and strained relationships, interfering with one's ability to function in the home (Cooper, 1996; Piacentini et al., 2003; Toro, Cervera, Osejo, & Salamero, 1992; Valderhaug et al., 2005), at school (Toro et al., 1992), and when interacting with peers (Allsopp & Verduyn, 1990; Storch, Ledley, Lewin, Murphy, Johns, Goodman, & Geffken, 2006; Toro et al., 1992). According to the 2012 American Academy of Child and Adolescent Psychiatry (AACAP), peer difficulties occur in about 55% to 100% of OCD patients (Dembo, 2014). This can have a lasting impact into adulthood, leading to social isolation and even unemployment, which is estimated to occur in approximately 45% of adults diagnosed with OCD (AACAP, 2012; Dembo, 2014).

Functional difficulties within the above-stated domains occur in various and widely differing ways, all of which are disruptive to a child's life. With regard to the impact to home life, studies have shown that coercion and the controlling of family members through the use of disruptive behavior (e.g., rage attacks, aggressive outbursts, tantrums) commonly results in family accommodation of the child's rituals (Jacob, et al., 2012; Johnco, 2016; Lebowitz et al., 2015). Accommodation, in turn, serves to maintain the child's compulsive behavior and has been linked to poor outcomes (Caporino, Morgan, Beckstead, Phares, Murphy, & Storch, 2012). Conflict and tension within the household then increase, thereby, further exacerbating the child's disruptive behavior and severity of symptoms (Jacob et al., 2011; Johnco, 2016). Additionally, when children

engage in ritualistic behavior, they can become what is described as “stuck” in their rituals (e.g., repeatedly rereading passages, rewriting words, checking; Fischer-Terworth, 2013), resulting in pervasive slowness in performing tasks. This slowness may lead to excessive tardiness to school, difficulty completing tasks or homework, and missing assignments (Lewin, Caporino, Murphy, Geffken, & Storch, 2010; Piacentini et al., 2003).

Obsessions may pose other areas of difficulty in the school environment with regard to problems concentrating or being continuously distracted (Fischer-Terworth, 2013). Overt expression of symptoms may also contribute to these children being socially rejected by their peers due to peers’ difficulty understanding such behaviors (Lewin et al., 2010). It is suggested that those with OCD tend to avoid circumstances or stimuli that may evoke anxiety (e.g., sharing supplies with others, touching doorknobs) for fear of experiencing the anxiety or that their compulsions may be noticed by others, which can frequently lead to avoidance of school and/or situations involving peers (Fischer-Terworth, 2013; Lewin et al., 2010). Overall, the experience of childhood OCD can lead to marked functional difficulties and significant distress across domains for the child and family.

## **ii. Emotion Regulation**

Emotions (e.g., fear, anxiety) associated with OCD are often viewed by the individual as negative, uncomfortable, or threatening in some way (Foa & Kozak, 1986), and various efforts may be taken to reduce or evade the experience of such emotions. The process of modulating the reaction to emotions is termed Emotion Regulation (ER) and is understood as underlying many forms of psychopathology (Amstadter, 2008; Cicchetti,

Ackerman, & Izard, 1995; Cisler & Olatunji, 2012). Many define ER as the ability to regulate, or control, one's emotions in effective, adaptive, and socially acceptable ways in the midst of emotionally evoking situations (Jacob et al., 2012; Suveg & Zeman, 2004). Gross (1998) defines ER as the process by which a person affects when and how one experiences particular emotions. Further, he proposes a process model involving five points in the emotion regulation process, including (a) situation selection (i.e., approaching or avoiding particular people, places, or objects), (b) situation modification (i.e., attempts to alter a situation in order to modify its emotional influence), (c) attention deployment (e.g., distraction, concentration, rumination, worry), (d) cognitive reappraisal (i.e., modifying cognitive interpretations of emotional stimuli), and (e) response modulation (i.e., expressive suppression of experiential, behavioral, or physiological responses). ER strategies can be employed in response to both negative and positive emotions in efforts to either increase or decrease the frequency, intensity, and duration of said emotions (Strauss, Ossenfort, & Whearty, 2016) and can be either implicit (i.e., automatic and occurring outside of awareness) or explicit (i.e., those of conscious effort and awareness) in nature (Gyurak, Gross, & Etkin, 2012).

The regulating of emotions directly impacts an individual's psychological, physical, and social wellbeing (Butler & Randall, 2013) as it applies to all situations in daily life and has a function in the socialization process that begins at an early age (Amstadter, 2008). Because it is necessary for individuals to regulate emotions in nearly every aspect of life, inability to effectively do so, termed emotion dysregulation, may result in considerable problems. Deficits associated with ER include difficulties in the following: emotional acceptance (i.e., willingness to experience emotion), ability to

participate in goal-directed behavior (i.e., behavior aimed toward completing a task), emotional clarity (i.e., ability to understand one's own emotions), and impulse control (i.e., ability to resist urges to act in a particular way; Salters-Pedneault, Roemer, Tull, Rucker, & Mennin, 2006). Such deficits have been shown to be related to the development of psychopathology (Amstadter, 2008; Cicchetti et al., 1995). According to Gross and Levenson (1997), dysregulation of emotion is involved in most of the mood, anxiety, and personality disorders. Substantial evidence indicates that those with emotional disorders often engage in such regulatory strategies as emotional avoidance and expressive suppression as opposed to examining (i.e., reappraising) the aspects of the situation that elicit their emotions (Blalock, Kashdan, & Farmer, 2016; Hofman, Sawyer, Fang, & Asnaani, 2012). In fact, Mennin, Holaway, Fresco, Moore, and Heimberg (2007) suggest that poor emotional awareness, negative reactivity to emotions (i.e., beliefs about negative consequences of emotions), and maladaptive emotion regulation strategies are common to individuals who experience emotional dysregulation, particularly those with anxiety disorders (Suveg & Zeman, 2004).

ER strategies can be both adaptive (e.g., problem-solving, reappraisal, acceptance) and maladaptive (e.g., suppression, avoidance, rumination, worry; Aldao, Nolen-Hoeksema, Scheizer, 2010; Blalock et al., 2016). The regular use of maladaptive strategies in response to anxiety emotions, as well as the limited use of more adaptive strategies, plays a role in the onset and maintenance of anxiety disorders (Amstadter, 2008; Cisler & Olatunji, 2012). For instance, Generalized Anxiety Disorder (GAD) is a disorder in which individuals engage in excessive worry (i.e., attending to cognitive information) as a strategy of emotion avoidance to control (i.e., keep some negative event



from occurring and/or ready oneself in advance for the event) or suppress (i.e., lessen physiological reactions to the feared stimulus/event) unpredictable emotional experiences (Borkovec, Alcaine, & Behar, 2004; Mennin, 2004; Mennin, Heiberg, Turk, & Fresco, 2002). Additionally, Mennin and colleagues found that those with GAD reported higher emotional intensity, increased negative reactivity to emotional experiences, greater difficulty in the recognition, description, and acceptance of their emotions, less ability to self-soothe when faced with negative emotions, and overall more difficulty managing their emotional reactions when compared to non-clinical controls (Mennin, 2004; Mennin et al., 2002; 2005). Expounding upon these findings, Salters-Pedneault, et al. (2006), found participants with GAD to have poorer impulse control, decreased goal-directed behavior, and limited use of adaptive regulation strategies when experiencing emotional distress than non-GAD participants.

Panic Disorder (PD), a condition associated with recurrent sudden and unexpected panic attacks, is yet another anxiety disorder suggested to have underlying ER deficits. Those with PD have a tendency to use maladaptive strategies to control negative feelings in general (e.g., anger, sadness, anxiety), as well as exhibit deficits in labeling emotions (Baker, Holloway, Thomas, Thomas, & Owens, 2004). A study by Tull (2006) found emotion dysregulation to be a significant predictor of panic symptom severity, suggesting that limited emotional understanding and access to effective regulation strategies lead to the intensity of which individuals with PD mistake somatic sensations (e.g., rapid heart rate) as catastrophic and threatening. On a broader level, research by Tull and Roemer (2007) indicated that those with nonclinical uncued panic attacks, aside from those with Panic Disorder, reported increased avoidance of emotional experiences, poor emotional

awareness, and lack of emotional acceptance compared to individuals without a history of panic attacks. Furthermore, findings also have suggested that these individuals employ ER methods of experiential avoidance not only with negative, but also with positive emotions as well.

Another common anxiety disorder, Social Phobia (SP) involves the persistent fear of being evaluated, embarrassed, humiliated, or rejected by others in social situations (APA, 2000). According to Goldin, Manber, and Hakimi (2009), emotion dysregulation is a primary feature of SP and that those affected by the disorder are likely to attend to negative misinterpretations of their own performances, while minimizing adaptive aspects of social interactions (Blalock et al., 2016). The literature further indicates that people with SP often engage in greater use of emotional suppression and decreased use of cognitive reappraisal than their healthy counterparts (Blalock et al., 2016; Goldin et al., 2009).

### **iii. Emotion Regulation and OCD**

Just as the presence of emotion dysregulation in the above-mentioned anxiety disorders has been empirically evidenced, these difficulties have been associated with OCD symptomatology as well. Abramowitz and Jacoby (2015) outline specific ER strategies featured in OCD, such as engaging in compulsive rituals, avoidance, and neutralizing as means of controlling or reducing anxiety and fear symptoms. Avoidance is seen in the majority of OCD cases as an attempt to refrain from coming into contact with some sort of feared stimuli or situation that may provoke anxiety symptoms or intrusive thoughts. Neutralizing, like ritualizing, is a term used to refer to behavioral or mental actions employed to reduce anxiety or fear. However, unlike compulsive rituals,

neutralizing methods are not performed excessively and do not follow specific rules (Abramowitz et al., 2015).

Both constructs (ER and OCD) are pervasive across important areas of life (i.e., familial, academic, social) and impact a child's ability to function within many important developmental and relational domains on a daily basis. For instance, like OCD, ER affects a child's ability to learn effectively in the classroom (Kwon, Hanrahan, & Kupzyk, 2016), positively interact with others and socialize with peers (Cooper, 1996; Cyders et al., 2008; Murphy, Shepard, Eisenberg, & Fabes, 2004), and engage in goal-directed behavior (Gilliam, Pappmeyer, Morein-Zamir, Sahakian, Fineberg, Robbins, & de Wit, 2011; Salters-Pedneault, Roemer, Tull, Rucker, Mennin 2006), all of which can have meaningful consequences for a child.

Research highlights the importance of effective ER strategies involved in academic success (Trentacosta & Izard, 2007). Emotions impact learning and achievement (Buric, Soric, & Penezic, 2016; Pekrun, Goetz, Titz, & Perry, 2002) in that they influence cognitive and behavioral engagement with the material, motivation to learn, and academic performance (Ahmed, van der Werf, Kuyper, & Minnaert, 2013; Buric et al., 2016; Davis & Levine, 2013; Pekrun et al., 2002). This influence is largely explained by the emotional function of filtering out what one deems as irrelevant or neutral environmental information and focusing attention on information related to the emotional stimulus at hand. Studies have shown that information linked to emotion is typically learned and remembered better than that of neutral information (i.e., academic material; Davis et al., 2013; Peterson, 2002; Peterson & Bell, 1996). When attention is directed to emotionally stimulating information, attention becomes a limited cognitive

resource, and ER strategies must be employed in order to redirect focus (Davis et al., 2013). Further, Rice, Levine, and Pizarro (2007) found that children instructed to regulate emotions of sadness were better able to remember details from an educational film than children attending to their sad feelings. In fact, Davis et al. (2013) assert that those who can adaptively regulate their emotions have intellectual advantages over those with difficulties in using such strategies. Based on these assertions, since children with OCD encounter a number of anxiety- or fear-provoking stimuli throughout a typical day to which maladaptive strategies are often applied, it would seem that they have substantially limited cognitive resources to devote to learning academic material, as well as decreased motivation for such.

Regarding motivation, specifically that oriented toward achieving some goal or avoiding some unpleasant outcome, Bagozzi, Baumgartner, and Pieters (1998) highlighted the function of emotions when managing one's actions in pursuit of said goal or escape from said outcome (i.e., goal-directed behavior). According to Salters-Pedneault et al. (2006), the dysregulation of emotions impairs a person's ability to behave in a goal-directed manner or finish tasks, as seen through impulsivity and failure to engage in goal-directed behavior when distressed. In fact, Gillian et al. (2011) found that OCD compulsions often become habit-forming and exert control over one's ability to flexibly engage in goal-directed behavior. Since a number of events or stimuli may lead to considerable distress for a child with OCD, it is easy to see how an impaired ability to orient toward desired behavior in various situations could pose a severe detriment to daily life.

Not only do ER difficulties impact a child's ability to learn, achieve goals and behave desirably, but also the way they socialize and interact with their peers is greatly affected. Research demonstrates that emotion regulation is related to the development of socially adaptive behavior (Graziano, Reavis, Keane, & Calkins, 2010) and that those with poor emotion regulation are more likely to be rejected by their peers, experience higher levels of loneliness, and are subject to more peer victimization (Blair, Gangel, Perry, O'Brien, Calkins, Keane, & Shanahan, 2016; Eisenberg, Fabes, Bernzweig, Karbon, Poulin, & Hanish, 1993). Conversely, adaptive ER capabilities are associated with positive peer engagement and a greater likelihood of peer acceptance (Blair et al., 2016; Trentacosta et al., 2007).

Related to ER, OC individuals engage in various cognitive strategies to reduce immediate distress; however, such strategies tend to maintain the OC symptoms. Research shows that those with OCD experience dysfunctional interpretations related to unwanted thoughts (e.g., contamination, harm to someone they care about), which in turn amplifies their level of distress connected to those thoughts (Abramowitz, Whiteside, Kalsy, & Tolin, 2003; Fergus & Bardeen, 2014). Wells and Davies (1994) suggest five strategies used to control intrusive thoughts: 1) distraction (e.g., thinking positive thoughts, keeping busy), 2) social control (e.g., discussing distressing thoughts with others, finding out how others deal with such thoughts), 3) worry (e.g., focusing on worries from the past, replacing the thoughts with other minor worries), 4) punishment (e.g., getting angry at oneself for having the thoughts, telling oneself thinking the thought again will result in a negative consequence), and 5) reappraisal (e.g., reinterpretation of the thoughts). It seems that individuals with OCD tend to use distraction less often and

the other four strategies more often than those without OCD (Amir, Cashman, & Foa, 1997). Special emphasis is placed on worry and punishment, as it appears OCD individuals frequently engage in these strategies the most, while healthy individuals exhibit limited use of these (Abramowitz et al., 2002; Amir et al., 1997). As noted above, some of these same cognitive strategies (i.e., distraction, worry, and reappraisal) are in line with Gross' (1998) model of ER and are hallmarks of the various anxiety disorders previously mentioned (e.g., GAD, PD, SAD), among others.

While limited information on the association between ER and pediatric OCD exists, recent research has begun to illuminate the connection between ER and OC symptoms in adults. Stern, et al. (2014) found that elevations in OC symptoms were significantly related to poor emotional clarity and fear of both negative and positive emotions. Several studies have investigated the nature of the impact of ER on, as well as specific ER strategies used to manage, OC symptoms (Calkins, Berman, Wilhelm, 2013; Cyders & Smith, 2008; Fergus et al., 2014; Goldberg, Cardoner, Alonso, Lopez-Sola, Real, Hernandez-Ribas, Jimenez-Murcia, Subira, Segalas, Menchon, Soriano-Mas, 2016; Jacob et al., 2012; Starcevic et al., 2011; Stern et al., 2014; Veale, 2004).

Emotional avoidance is an ER factor shown in many facets of OCD, such as in expressive suppression, impulsivity, and compulsive behaviors. Veale (2004) points out that, although not included in the diagnostic definition of the disorder, avoidance is an essential part of OCD. In addition, Stern et al. (2014) suggested that an underlying desire to avoid the experience of emotion leads to the use of compulsions and neutralizing as a means of eliminating or reducing discomfort (i.e., 'not just right feeling'), anxiety, or fear associated with obsessive thoughts. In a 2011 study, 124 adults with OCD were assessed

for OCD-related avoidance. Of these participants, approximately 60% endorsed avoidance, with about 80% and 50% engaging in contamination and aggressive obsession-related avoidance, respectively (Starcevic et al., 2011). This study also found that avoidance significantly predicted increased OC symptom severity.

Recent studies have also investigated the pathway associated between ER and adult OC symptoms. In line with the Foa and Kozak's (1986) emotion processing theory, those with OCD experience intrusive and distressing thoughts or images which lead to feelings of discomfort, anxiety symptoms, or the fear of some undesirable outcome. Attempts to prevent or escape such feelings or emotions, engender the use of compulsions, neutralizing, expressive suppression, or some other maladaptive ER strategy, which serves to alleviate or decrease these unwanted emotions in the short term. However, over time, symptom severity increases due to the failure of the individual to realize his ability to cope with these unwanted emotions. Calkins et al. (2013) explain that efforts to decrease emotional discomfort paradoxically increase the amount of attention given to distressing thoughts and emotions, thereby, creating a cycle of worsening symptoms. In OCD, the use of compulsions prevents confrontation with the feared stimuli as well as opportunities to learn new patterns of responding. The belief that one is incapable of dealing with these emotions is then reinforced, increasing the likelihood of engaging in compulsions in the future.

The exact nature and pathway of ER and OC symptoms has yet to be determined. Expressive suppression has been connected to both reduced positive and elevated negative emotions (Fergus et al., 2014; Gross, 2013) Further, a study by Fergus et al. (2014) demonstrated that expressive suppression, impulsivity, and poor emotional

understanding were uniquely associated with each OC symptom dimension (i.e., contamination, responsibility for harm, unacceptable thoughts, and symmetry), many of which were individually related to increased attention to and acknowledgement of emotions. Such findings suggest that greater symptom elevation may be due to high emotional awareness and low emotional clarity. Others believe ER difficulties could exacerbate emotional reactivity, thereby, intensifying thought intrusion and resulting in increased and prolonged negative emotional states (Cisler & Olatunji, 2012; Fergus et al., 2014). In addition, distress may be heightened by poor emotional understanding thus increasing the use of dysfunctional ER strategies (Fergus et al., 2014). Such maladaptive strategies have been linked to poor impulse control in those with OCD when experiencing negative emotions (Cyders et al., 2008). A 2016 study investigating individuals' with OCD variable use of ER strategies suggested that the relation between ER and OC symptoms is not a direct pathway, but rather, is mediated by individual affect and cognitive rigidity. This study provided evidence for the existence of networks of both direct and indirect pathways among these constructs (Goldberg et al., 2016).

As indicated above, considerable links between ER strategies and OC symptoms in adults have been demonstrated. Taken collectively, such evidence for the association between the two, along with the significance of ER in other anxiety disorders, suggests that ER could play a similar role in the development and maintenance of OCD in childhood. In a study by Jacob et al. (2012) comparing emotion-related functioning between youth with OCD and youth with other anxiety disorders, findings yielded lower levels of ER in the OCD group. However, this study is one of the few that focuses on ER and childhood OCD. Due to limited research in this area of study, further investigation is



needed to advance knowledge in this domain. The present study investigated the relation of ER difficulties and pediatric OC symptoms, hypothesizing that greater ER difficulties would significantly predict OC symptoms in this clinical pediatric sample.

Additionally, research suggests gender differences exist related to emotion dysregulation, providing that girls have a tendency to experience more difficulty managing negative emotions than boys (Bender, Reinholdt-Dunne, Esbjorn, & Pons, 2012; Suveg & Zeman, 2004). A study by Bender et al. (2012) also found that difficulties in ER accounted for higher self-reported anxiety scores in girls than in boys. Furthermore, pediatric research findings suggest that OC symptoms are predominantly found in boys with retrospective studies indicating that adult males are more likely to report early onset OCD than females (Bogetto, Venturello, Albert, Maina, & Ravizza, 1999; Mancebo, Garcia, Pinto, Freeman, Przeworski, Stout, et al., 2008). Therefore, it was secondarily hypothesized that gender differences would be seen in this sample similar to previous research in that girls will exhibit greater ER difficulties and that boys will demonstrate higher OC symptoms than their counterparts. In addition, it was also hypothesized that gender would significantly moderate the effects of ER on OC symptoms.

## II. METHODOLOGY

### i. Participants

The present study used archival data from a questionnaire study approved by the University of Mississippi Institution Review Board (IRB). Participants were a clinical sample of children and adolescents who were patients at a psychiatric residential treatment center in central Mississippi. Patients at this facility are admitted due to serious emotional disturbance, as well as mental health and substance abuse disorders. As part of their ongoing treatment, self-report measures were administered to the patients to assess symptom presentation at intake and measure treatment effectiveness. Participants' ( $N = 472$ ) ages ranged between 10 and 17 ( $M = 14.33$ ,  $SD = 1.51$ ) and approximately half were female (49.8%). The ethnic breakdown was as follows: 50.0% Black, 39.8% White, 3.8% identified as Multiethnic, and 3.2% identified as Other.

### ii. Measures

*Revised Child Anxiety and Depression Scale, 25-Item Version (RCADS-25).*

The RCADS-25 (Muris, Meesters, & Schouten, 2002) is a short-form version of the 47-item self-report RCADS (Chorpita, Yim, Moffit, Umemoto, & Francis, 2000) questionnaire that assesses areas of potential anxiety and depressive symptoms in youth. This measure contains six subscales (i.e., Social Phobia, Panic Disorder, Generalized Anxiety Disorder, Major Depressive Disorder, Separation Anxiety Disorder, and Obsessive-Compulsive Disorder), which are consistent with dimensions of anxiety and

depressive disorders as delineated in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). Using a 0-3 rating scale, where 0 is “never,” 1 is “sometimes,” 2 is “often,” and 3 is “always,” respondents rate the frequency of which each item applies to them. Elevation of scores on corresponding subscales may indicate presence of a particular anxiety or depressive disorder. The RCADS has been found to have good internal consistency ( $\alpha_s = 0.78 - 0.88$ ), as well as adequate convergent, discriminant, and factorial validity (Chorpita, Moffitt, & Gray, 2005). Specifically, the current study utilized the OCD scale ( $\alpha_{\text{OCD}} = .82$ ) of the RCADS to screen for OC symptoms. Using the above-mentioned rating scale, the OCD scale asks questions consistent with DSM-IV criteria for Obsessive-Compulsive Disorder, such as “I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order)”. In the present study, the RCADS<sub>OCD</sub> scale demonstrated an internal consistency of  $\alpha_{\text{OCD}} = 0.61$ , lower than the previously reported psychometrics .

*Difficulties in Emotion Regulation Scale (DERS).*

The DERS (Gratz & Roemer, 2004) is 36-item self-report measure, which assesses difficulties in emotion regulation. Using a 5-point Likert scale, ranging from 1-5, where 1 is “almost never” (0-10%), 2 is “sometimes” (11-35%), 3 is “about half the time” (36-65%), 4 is “most of the time” (66-90%), and 5 is “almost always” (91-100%), respondents indicate the extent to which each item applies to them. Higher scores suggest greater difficulties with emotion regulation. The DERS demonstrates good psychometric properties as reflected by high internal consistency ( $\alpha = 0.93$ ) and good test-retest reliability from 4 to 8 weeks with a 0.88 reliability coefficient at the end of 8 weeks. The

DERS also has favorable construct and predictive validity (Gratz & Roemer, 2004). For the current study, excellent internal consistency was demonstrated ( $\alpha = 0.92$ ).

### **iii. Procedure**

Predoctoral psychology interns approached children at the residential treatment facility and asked them to complete self-report measures via paper and pencil as part of ongoing clinical procedures. Standard consent for such research participation at the residential center was completed by parents/guardians upon patient admission. Potential participants had the right to assent or decline participation at the time of assessment solicitation. For the present study, only data consisting of demographics, RCADS, and DERS measures were used in analyses.

### III. RESULTS

#### i. Preliminary Analyses

Data were collected from 788 patients. Upon initial data screening, 184 participants were found to have more than 5% missing data and were excluded from further analyses. For participants with less than 5% missing data, missing data were replaced with a predicted score based on a linear trend for respective points. An additional 42 participants were removed following testing for outliers using Mahalanobis distance. Finally, only those patients with complete responses for both the RCADS and DERS measures were included, resulting in a total of four hundred seventy-two patients included in the analyses ( $N = 472$ ).

Correlational analyses were run to identify any relations between the constructs of interest and demographic variables (i.e., ER, OC symptoms, age, gender). A summary of preliminary correlations can be found in Table 1. As expected, OC symptoms (as measured by higher OC scores on the RCADS) and ER difficulties (as measured by higher DERS-total scores) were significantly correlated ( $r = .32, p < .001$ ) in a positive direction, suggesting that more severe levels of OC symptoms were related to greater ER difficulties. Additionally, OC symptoms were significantly correlated with age ( $r = -.21, p < .001$ ), indicating that younger participants had a tendency to experience greater severity of OC symptoms than older participants. ER difficulties were significantly related to gender in a negative direction ( $r = -.27, p < .001$ ), meaning that females

reported experiencing more difficulty regulating their emotions than males. Conversely, age did not have significant correlations with ER scores ( $r = .05$ ), nor was gender significantly associated with OC symptoms ( $r = -.05$ ). Based on the correlational findings, age was used as a covariate in subsequent analyses.

## **ii. Primary Analyses**

### ***Hierarchical Regression Analysis***

A hierarchical regression analysis was used to assess the hypothesis that poor ER would predict OC symptoms above and beyond demographic variables of interest. A summary of this analysis can be found in Table 2. In the regression analysis, Step 1 included demographic variables (i.e., age, gender), while Step 2 included ER (i.e., DERStotal). The results indicated that demographic variables contributed significantly to the regression model [ $F(2, 362) = 4.36, p < .01$ ], accounting for 2% of the variance. Specifically, age was found to be a significant predictor of OC symptoms [ $\beta = -.13, t(366) = -2.52, p < .01$ ], suggesting that younger children experience greater OC symptoms. Interestingly, gender was not found to be a unique predictor of OC symptoms. In step 2, when ER was added, results suggested that it also contributed significantly to the model [ $\Delta F(1, 365) = 41.20, p < .001$ ], accounting for an additional 10% change of the total variance in OC symptoms. This suggests that children and adolescents with greater ER difficulties [ $\beta = .33, t(365) = 6.42, p < .001$ ] are more likely to experience OC symptoms, even when age and gender are held constant.

### ***Gender differences in Emotion Regulation and Obsessive Compulsive Symptoms***

Independent samples t-tests were used to test the hypothesis that gender differences would be seen related to both ER difficulties and OC symptoms. In particular,

it was hypothesized that girls would exhibit greater ER difficulties and boys would show more OC symptoms than their counterparts. As expected, results indicated that girls did, in fact, show more ER difficulties than boys [ $t(369) = 5.35, p < .001$ ]. However, contrary to the hypothesis, groups did not significantly differ on OC symptoms by gender. Table 3 includes a summary of these findings.

### ***Gender as a Moderator of Emotion Regulation and Obsessive-Compulsive Symptoms***

A moderation analysis was used to test the hypotheses that gender would moderate the effect of ER on OC symptoms. Based on the finding that age was negatively correlated with OC symptoms, age was used as a covariate in the analysis. Findings are included in Figure 1. The overall moderation model accounted for 13% of the variance [ $F(4, 364) = 13.92, p < .001$ ], and a significant main effect of ER on OC symptoms [ $b = .03, t(364) = 6.53, p < .001$ ] indicated that as ER difficulties increase, OC symptoms also increase. However, a main effect of gender on OC symptoms was not significant [ $b = -.01, t(364) = -.02, p = .98$ ]. With regard to age as a covariate, results indicated that it significantly contributed to the model in a negative direction [ $b = -.18, t(364) = -2.18, p < .01$ ], suggesting that younger children are likely to experience greater OC symptoms than older adolescents. Further, the ER X Gender interaction term was significant ( $B = -0.02, SE = 0.01, p = .04$ ), contributing 1% of the variance to the model [ $\Delta R^2 = .01, F(1, 364) = 4.34, p = .04$ ]. This suggests that, although gender was not a predictor of OC symptoms alone, it did conditionally moderate the effects of ER. Specifically, it appears that ER is more predictive in girls [ $b = .04, t(364) = 6.02, p < .001$ ] than boys [ $b = .02, t(364) = 3.10, p < .01$ ] depending on level of OC symptomatology; however, both were significant.

#### **IV. DISCUSSION**

Numerous studies have implicated ER difficulties as influencing the development and maintenance of various psychopathologies (Amstadter, 2008; Cicchetti, et al., 1995; Cisler & Olatunji, 2012); however, few have examined its relation to OC symptoms, particularly in regard to pediatric samples. This study investigated the relation of ER and pediatric OC symptoms, as well as potential covariates of each, in a clinical population of children and adolescents.

Results of the preliminary analysis revealed that age was negatively correlated with OC symptoms, suggesting that younger ages are associated with greater OC symptom scores. This finding is consistent with research indicating that those with early onset OCD tend to have greater symptom severity and higher rates of comorbid disorders than those with late onset symptoms (Nakatani, Krebs, Micali, Turner, Heyman, & Metaix-Cols, 2011; Taylor, 2011). The current sample consisted of youth within a psychiatric residential treatment facility, a level of care often associated with greater severity of psychiatric symptoms. Furthermore, OC symptoms are often mistaken or trivialized as part of normal developmental stages in young children (Nakatani et al.,



2011; Stengler, Olbrich, Heider, Dietrich, Riedel-Heller, & Jahn, 2013), and there is evidence supporting that those with early onset OCD usually do not seek treatment until approximately 11 years after symptom onset (Stengler et al., 2013). As such, children with OCD often go undiagnosed and untreated until later adolescence or even adulthood. Therefore, it is possible that younger children in this sample would have been less likely to have received any prior treatment for OC symptoms than older participants; thereby, increasing younger children's likelihood to lack the tools necessary to adaptively cope with OC concerns. In addition, research has identified stressful life events as environmental risk factors to the manifestation of OC symptoms (APA, 2000; Piacentini, Langley, Roblek, 2007). Perhaps, younger children may be more sensitive to the effects of stress associated with being admitted to a residential facility, especially if they have a limited treatment history preceding admission. Although correlational analyses revealed age and OC symptoms to be negatively associated, this effect was small. This suggests that while there is some relation between age and OC symptoms, other factors, such as those previously mentioned, could be influencing this effect. Consequently, investigating potential covariates of age may continue to clarify the heterogeneous manifestation of symptoms across different OCD presentations.

Contrary to the secondary hypothesis, gender was not related to OC symptoms. According to the literature, adults with OCD are only slightly more likely to be female, and early onset OCD is more often seen in males (APA, 2000). These gender differences in OCD expression have been vastly speculated; however, much is still uncertain. From a behavioral and emotional standpoint, women have been shown to be more susceptible to elevated negative affectivity (e.g., anger, disgust, fear, anxiety), increased worry and

rumination (e.g., “I might contract a serious illness,” “Someone I care about may get sick or hurt”), and more likely to respond to emotional distress with avoidance strategies (e.g., cleaning, washing, checking). Similarly, women typically engage in more self-focused attention and are more attuned to internal sensations (e.g., increased heart rate, shortness of breath), leading to greater overestimation of threat (Martoni, Salgari, Galimberti, Cavallini, & O’Neill, 2015).

On the other hand, there is a male preponderance for childhood OCD, which seems to have a strong biological basis. For instance, males are more susceptible to cerebral damage as a result of adverse events during the perinatal period (e.g., maternal substance use, use of forceps during delivery, breech presentation; Geller, Wieland, Carey, Vivas, Petty, Johnson et al., 2008; Mathis, Alvarenga, Funaro, Torresan, Moraes, Torres, et al., 2011). Additional support lies in the evidence for gender differences in the development of primary brain structures (i.e., caudate nucleus and orbitofrontal cortex) associated with OCD. Research has also begun to shed light on gender-related genetic and hormonal characteristics associated with heterogeneous symptom presentation, and gender differences have been evidenced among various OCD symptom subtypes. For example, it has been shown that females are more prone to contamination obsessions and cleaning rituals, while males tend to suffer more often from symmetry obsessions and ordering, checking, and repeating compulsions (Mathis et al., 2011).

As hypothesized, gender was negatively correlated with ER difficulties, demonstrating a moderate effect. Consistent with previous literature (Bender et al., 2012; Suveg & Zeman, 2004), this finding indicates that girls have a tendency to experience more difficulties regulating their emotions than boys. The literature points to various

explanations for this difference, including internalizing versus externalizing behavior, specific regulatory strategies used, and neurological processes involved in emotion regulation. That is, girls have been shown to be better at inhibiting inappropriate externalizing behaviors in response to difficult emotions, instead internalizing their emotional difficulties and engaging in more maladaptive coping strategies than boys. Findings by Bender et al. (2012) revealed that females are typically more emotionally aware, yet have less emotional clarity, greater nonacceptance of negative emotions, and more difficulty accessing effective coping, often engaging in singular coping strategies, as opposed to males. As previously mentioned, females engage in more ruminative and worry behaviors and are more likely to overestimate threat (Martoni et al., 2015). Females are also prone to increased levels of negative affectivity and negative self-focused attention (Martoni et al., 2015; Zlomke & Hahn, 2010). Regarding neurological emotional processing, males have been shown to exhibit greater cognitive control in relation to negative affect (Koch, Pauly, Kellermann, Seiferth, Reske, Backes, et al., 2007). An fMRI study by Koch et al., (2007) indicated that women had significantly stronger brain activation in the insula, amygdala, and the orbitofrontal cortex (OFC), brain regions involved in processing negative emotion. In fact, research has consistently demonstrated that decreased activity in the amygdala and OFC are associated with effective ER. Results from the present study support the extant literature and emphasize the need to consider the influence of gender with regard to the identification and expression of emotional disorders.

As expected and consistent with literature on adult populations, ER was moderately correlated with OC symptoms, suggesting that as ER difficulties increase, OC

symptoms also increase. This relation was tested further using a hierarchical regression, which also included age and gender. Results identified age, but not gender, as a significant predictor of OC symptoms. Based on preliminary analyses that gender was not correlated to OC symptoms, this finding was not surprising. When ER was entered into the regression model, it was found to be predictive of OC symptoms above and beyond demographic variables. As hypothesized, this finding provides further support that youth with greater ER difficulties are more likely to experience OC symptoms even when age and gender are held constant. ER has been identified as a transdiagnostic construct contributing to the development and the maintenance of numerous psychopathologies (Amstadter, 2008; Cicchetti, Ackerman, & Izard, 1995; Cisler & Olatunji, 2012), including OCD in adult populations (Abramowitz & Jacoby, 2015). However, children with OCD are likely to experience problems regulating their emotions, as well. These children may engage in various avoidance strategies (e.g., avoiding situations or stimuli, use of mental distraction) aimed at downregulating or preventing the emotional discomfort associated with the experience of intrusive, distressing thoughts or images. Depending on the nature of the symptoms, various compulsions (e.g., checking, cleaning, ordering) or neutralizing behaviors (overt or mental strategies) may be employed to manage or alleviate distress. Unfortunately, the use of these strategies often serves to maintain and increase the intensity of OC symptoms over time (Calkins et al., 2013).

Supporting previous analyses in the current study, moderation analyses demonstrated that a main effect of gender on OC symptoms was not significant. Although the literature points to a male preponderance of OC symptoms in childhood, it seems that this sample did not reflect such gender differences. A possible explanation for such could

be that, as previously mentioned, gender differences are also often seen within particular symptom subtypes of the disorder. The OCD subscale of the RCADS asks about more general symptomatology (e.g., “I have to do something in just the right way to stop bad things from happening); therefore, it is likely that questions asking more specifically about types of symptoms would have captured these gender differences. Future research investigating gender differences within this disorder might consider assessing for domain-specific OC symptoms.

Additionally, analyses demonstrating that age had a significant main effect on OC symptoms corroborated findings that younger participants likely experienced greater OC symptoms. These results are consistent with those from a meta-analysis by Taylor (2011) suggesting early onset OCD is an etiologically distinct subtype from late onset OCD. For instance, those who experience early onset (i.e., 11 years-old mean onset) often experienced greater OC symptom severity, higher rates of comorbidity, and tended to have more first-degree relatives with the disorder, along with a number of other biological differences. As such, younger children within the current study, constituting as experiencing early onset OC symptoms, would likely report greater symptom severity than their older counterparts. Other studies have provided additional support for neurobiological differences between early onset and late onset OCD subtypes (Miguel, Leckman, Rauch, do Rosario-Campos, Hounie, Mercadante, Chacon, & Pauls, 2005). As initial OC symptoms beginning in childhood tend to be more severe, often go untreated until symptoms become chronic, and can impact life well into adulthood, the current findings emphasize the need for early identification of OC symptoms. Stengler et al. (2013) mention that those suffering with OCD often do not seek help for such until after

an average of 7-10 years following experience of the first symptoms, with those suffering from early onset symptoms seeking help approximately 11 years after the first signs. This delay in help-seeking is often associated with parents and healthcare professionals' tendency to trivialize and attribute symptoms as normal child development. As such, an increased awareness and training of how these symptoms manifest in young children and what the initial signs are for both mental health and primary care professionals is important. Specifically, children are often first seen by pediatricians who have the opportunity to identify early signs and refer accordingly, and also to educate parents on what is and is not part of normal child development. However, the literature indicates a lack of consensus as to what constitutes early onset OC symptomatology, as criteria for such are equivocal at the present time. Therefore, the present study's finding in support of previous evidence for early onset symptoms beginning as young as 10 years-old, is an important one.

Lastly, as hypothesized, although gender was not predictive of OC symptoms alone, it did moderate the effects of ER on OC symptoms. More specifically, results indicated that the relationship between ER and OC symptoms was moderated by gender (being slightly more predictive in girls than boys). This is consistent with research by Bender et al. (2012), which found emotion dysregulation to be more predictive of anxiety in girls than boys. Although various explanations have been speculated and continue to be unclear, the present findings support gender differences in ER and suggest that this can influence the likelihood of youth to experience OC symptoms.

Overall, the present study expanded previous research in the pediatric psychology area, demonstrating that ER difficulties are significantly associated with the experience of

OC symptoms in children. However, it was not without limitations. First, this study assessed symptomatology with self-report measures. Although the measures are psychometrically sound, a structured clinical interview would be important for determining true presence and absence of specific psychopathology, as well as the degree to which participants are experiencing such (i.e. clinical or sub-clinical). With more in-depth study of clinical pediatric samples, perhaps agreement of early onset OCD criteria across the healthcare field as a whole might be achieved. Additionally, although using a residential sample, the study provided only an initial snapshot into the OC symptom presentation. A longitudinal study assessing ER and changes in OC symptoms over the duration of treatment would provide a deeper understanding of this relation, particularly in females with ER difficulties. For instance, such a study might focus on treating emotion dysregulation in general, as this construct has been repeatedly implicated as a transdiagnostic factor underlying many psychological disorders. In addition, OCD has been cited as being highly comorbid with various tic, mood, and behavioral disorders. Targeting transdiagnostic factors such as ER difficulties may be useful in alleviating comorbid symptoms simultaneously. Furthermore, the success of OCD treatments has been equivocal. For example, while the treatment of OCD has been successfully achieved in some cases, approximately 50% of patients continue to experience impairing residual symptoms (Abramowitz, Blakely, Reuman, & Buchholz, 2018). Unfortunately, what works for one is not necessarily effective for all, therefore, targeting ER difficulties in children may be successful at reducing residual impairment and possibly lead to improved treatment outcomes in the long term.

The present study aimed to demonstrate the relation between ER difficulties and OC symptoms in a clinical pediatric sample, as this is an understudied population and prevalence rates of childhood OCD have, until recently, been underestimated. Recent literature has begun to illuminate etiological differences in early versus late onset OCD, suggesting that the former tends to be more severe, more chronic, and highly comorbid with other disorders. Furthermore, OC symptoms can be detrimental to many areas of a child's life, negatively impacting their interactions with their family, their capacities to learn and develop, and their abilities to cultivate meaningful social relationships. These difficulties may worsen over time and functional deficits can carry over into adulthood. While effective treatments for OCD have been identified, there remains a large portion of those treated for such who continue to experience impairment. Findings from the current study suggested that ER does, in fact, influence pediatric OC symptoms, particularly in girls. Such findings could have implications for advancements in the assessment and early identification of these symptoms, as well as improved OCD treatment outcomes. Future directions should focus on continuing to identify transdiagnostic constructs underlying this disorder and work to further parse apart factors related to the experience and symptom presentation of pediatric OCD.



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## LIST OF TABLES

Table 1. *Summary of Preliminary Correlational Analyses.*

	Gender	OC Symptoms	ER
Age	-.13**	-.21**	.05
Gender	1	-.05	-.27**
OC Symptoms	-.05	1	.32**
ER	-.27**	.32**	1

*Note:* ( $N = 472$ ); OC Symptoms = Obsessive-Compulsive Symptoms; ER = Emotion Regulation;  $p < .001$ \*\*\*;  $p < .01$ \*;  $p < .05$ \*



Table 2. *Summary of Hierarchical Regression Analysis for Variables Predicting OC Symptoms.*

Variable	$\Delta R^2$	$\Delta F$	$t$	$\beta$	$p$	Sig $\Delta F$
Step 1:	.023	4.36				.01
Age			-2.52	-.13	.01	
Gender			-1.68	-.09	.09	
Step 2:	.10	41.20				.000
DERS-total			6.42	.33	.000	

*Note:* ( $N = 363$ );  $\beta$  = Standardized beta weight provided for hierarchical multiple regression; DERS-total = Difficulties in Emotion Regulation Scale

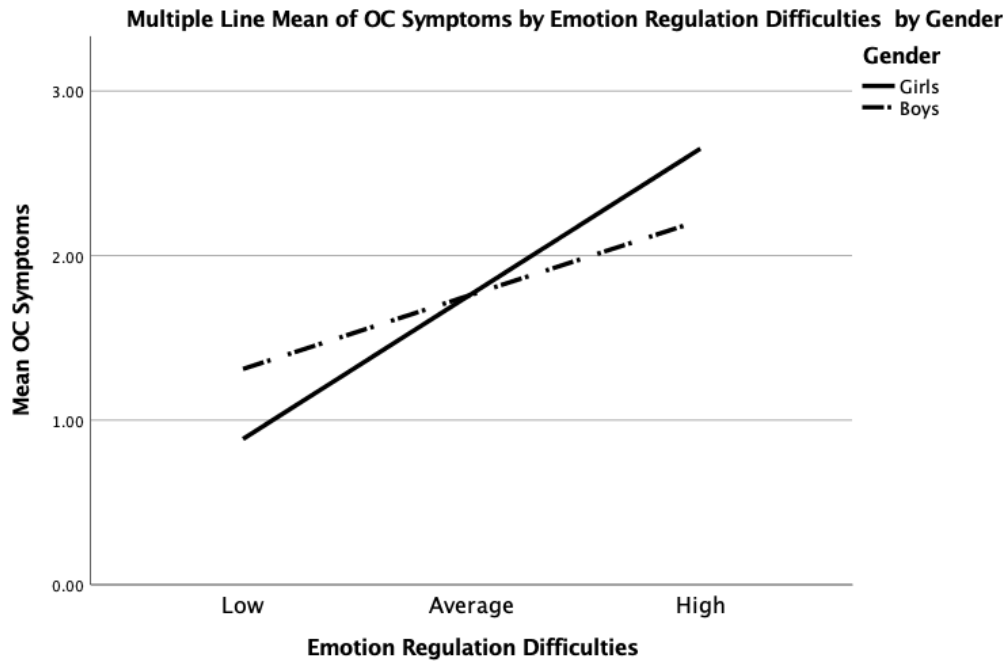
Table 3. *Summary of Independent Samples T-Tests of Gender Differences.*

	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
DERS-total			5.35	369	.000
Girls	89.99	23.82			
Boys	76.47	24.82			
RCADSocd			1.11	557	.27
Girls	2.14	2.19			
Boys	1.94	1.99			

*Note:* DERS-total = Difficulties in Emotion Regulation Scale; RCADSocd = Obsessive-Compulsive Symptoms

## LIST OF FIGURES

Figure 1. *Gender as a Moderator of the Relationship between Emotion Regulation and OC Symptoms.*



## VITA

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### **EDUCATION**

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- 2016 – present      **Doctor of Philosophy, Clinical Psychology (expected May 2021)**  
**University of Mississippi, University, MS**  
Thesis: *Emotion Regulation as a Predictor of Pediatric Obsessive-Compulsive Symptoms*  
Major Advisor: Danielle Maack, Ph.D.
- 2012 – 2013      **Master of Science, Mental Health Counseling**  
**Mississippi College, Clinton, MS**
- 2009 – 2011      **Bachelor of Arts, Psychology**  
**University of Mississippi, University, MS**
- 2008 – 2009      **Associate of Arts**  
**Pearl River Community College, Poplarville, MS**

### **RESEARCH EXPERIENCE**

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- Master's Thesis, ADEPT Lab**  
**Emotion Regulation as a Predictor of Pediatric Obsessive-Compulsive Symptoms**  
University of Mississippi, University, MS      2016 – present  
Supervisor: Danielle Maack, Ph.D.
- Investigated the role of emotion regulation in predicting the presence of obsessive-compulsive symptoms in children and adolescents.
- Research Assistant, ADEPT Lab**  
University of Mississippi, University, MS      2016 – present  
Supervisor: Danielle J. Maack, Ph.D.

- **Pregnancy Initiative**
  - Recruited pregnant and postpartum patients at the OBGYN Associates of Tupelo and Oxford OBGYN to take part in a study investigating levels of anxiety, depression, nausea and vomiting, disgust, and quality of sleep
  - Provided mental health feedback to nurses and physicians
- **Emetophobia Study**
  - Assisted in the development of Behavioral Avoidance Tasks (BATs) used in a study examining behavioral avoidance associated with the fear of vomiting

**Research Assistant, Department of Psychiatry and Human Behavior**

University of Mississippi Medical Center, Jackson, MS

2015 – 2016

Supervisor: Laura J. Dixon, Ph.D.

- Recruited and assessed pregnant women in a study examining anxiety sensitivity as a vulnerability factor of anxiety and mood disorders in pregnant women

**Research Assistant, Department of Psychology**

University of Mississippi, University, MS

2011

Supervisor: Marilyn Mendolia

- Assisted in the examination of the recognition of facial expression of emotions

**PROFESSIONAL PRESENTATIONS**

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***ORAL PRESENTATIONS***

**Sapp, B. S., Maack, D. J., & Young, J. N.** (2019, April). *Emotion regulation and obsessive-compulsive symptoms: The moderating effects of gender*. Data blitz presented at the 6<sup>th</sup> annual UM Conference of Psychological Science in University, MS.

**Sapp, B. S. & Maack, D. J.** (2018, October). *Pregnancy glow, easier said than done: Feasibility of an in-house support group*. Oral presentation presented at the Three Minute Thesis (3MT) competition in University, MS.

**Sapp, B. S. & Maack, D. J.** (2018, September). *Sleeping for two: Does sleep quality predict suicidality in pregnancy?* Data blitz presented at the 69<sup>th</sup> annual convention of the Mississippi Psychological Association in Biloxi, MS.

**Sapp, B. S. & Maack, D. J.,** (2018, April). *Does quality of sleep predict suicidality in pregnancy*. Data blitz presented at the 5<sup>th</sup> annual UM Conference of Psychological Science in University, MS.

**Sapp, B. S.** (2017, October). *Pediatric OCD and emotion dysregulation*. Oral presentation presented at the Three Minute Thesis (3MT) competition in University, MS.

Maack, D. J. & **Sapp, B. S.** (2017, September). *Pregnancy glow (or gloom?): Preliminary findings of psychiatric concerns in pregnancy and how to promote integrated care*. Oral presentation presented at the 68<sup>th</sup> annual convention of the Mississippi Psychological Association in Biloxi, MS.

**Sapp, B. S.**, Maack, D. J., & Young, J. N. (2017, April). *Does emotion regulation predict pediatric obsessive-compulsive symptoms?: Preliminary findings*. Data blitz presented at the 4<sup>th</sup> annual UM Conference of Psychological Science in University, MS.

### **POSTER PRESENTATIONS**

Frantz, D., **Sapp, B. S.**, & Maack, D. J. (2019, April). *Does education matter? Assessing potential relations between education and depressive symptoms in pregnancy*. Poster presented at the 6<sup>th</sup> annual UM Conference of Psychological Science in University, MS.

Garner, B., **Sapp, B. S.**, & Maack, D. J., (2019, April). *Maternal age as it relates to depression and nausea in pregnancy*. Poster presented at the 6<sup>th</sup> annual UM Conference of Psychological Science in University, MS.

**Sapp, B. S.**, Maack, D. J., & Young, J. N. (2017, September). *Did I regulate my emotions? Check and re-check: The relation between emotion dysregulation and pediatric obsessive-compulsive symptoms in a clinical sample*. Poster presented at the 68<sup>th</sup> annual convention of the Mississippi Psychological Association in Biloxi, Mississippi.

Prendergast, K.L., **Sapp, B. S.**, and Maack, D.J. (2017, April). *Pregnancy practice makes perfect?: The effect of gravidity on anxiety, disgust, and emetophobia symptoms*. Data blitz presented at the Annual UM Conference for Psychological Sciences in University, MS.

Scott, S. M., Tynes, B. L., Zhao, M. S., Pineau, D., Wickenhauser, M. E., **Sapp, B. S.**, & Maack, D. J., (2016, October). *Bible burning, dog fighting, and partner violence: Is moral disgust a real construct? Piloting a multi-method assessment of moral disgust*. Poster presented at the 50<sup>th</sup> annual convention of the Association for Behavioral and Cognitive Therapies in New York, NY.

Zhao, M., Maack, D. J., Tynes, B., Scott, S. M., Pineau, D., **Sapp, B. S.**, & Wickenhauser, M. E. (2016, October). *Disgust domains and fear of contamination*

*predict safety behavior usage in an analogue sample.* Poster presented at the 50<sup>th</sup> annual convention of the Association for Behavioral and Cognitive Therapies.

**Sapp, B. S.,** Dixon, L. J., Viana, A. G., Tull, M. T., & Collier, C. C. (2016, September). *An Examination of the associations among socio-demographics, and stress, depression, and anxiety in pregnant women.* Poster presented at the 67<sup>th</sup> annual convention of the Mississippi Psychological Association in Biloxi, Mississippi.

## **CLINICAL EXPERIENCE**

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### **Psychology Intern**

Stonewater Adolescent Recovery Center, Oxford, MS 2018 – present  
Supervisor: Scott Gustafson, Ph.D.

- Conducted psychological assessments on each incoming patient, including cognitive and personality assessments as needed
- Facilitated group psychotherapy using Dialectical Behavior Therapy (DBT) techniques with a population of adolescents struggling with alcohol and drug addiction
- Provided individual therapy using evidence-based Cognitive Behavioral Therapy (CBT) techniques (e.g., mindfulness, cognitive restructuring)

### **Psychology Intern**

The Baddour Center, Senatobia, MS 2017 – 2018  
Supervisor: Shannon Hill, Ph.D., BCBA-D

- Administered a range of assessments on a population of adults with intellectual disabilities, including neurocognitive and functional behavior assessments
- Provided group psychotherapy with an emphasis on DBT skills with a group of adult women with intellectual disabilities
- Delivered individual behavioral therapy on an as needed basis with adults with intellectual disabilities
- Assisted in the development of a Direct Service Professional (DSP) Support Group for those responsible for the direct care of The Baddour Center residents

### **Graduate Student Therapist**

Psychological Services Center, University, MS 2017 – present  
Supervisors: Danielle Maack, Ph.D.

Stefan Schulenburg, Ph.D.

John Young, Ph.D.

- Delivered individual therapy to children and adults, as well as parent training, using evidence-based CBT techniques (e.g., exposure, mindfulness, cognitive restructuring)
- Conducted structured clinical interviews, such as the Mini International Neuropsychiatric Interview-5.0 (MINI-5.0) and -6.0 (MINI-6.0) for adults and



the Children's Interview for Psychiatric Syndromes, child (CHIPS) and parent (P-CHIPS) versions

- Administered additional self-report measures to assist in monitoring treatment progress

### **Clinical Practicum**

University of Mississippi, University, MS

2016 – present

Supervisors: Danielle Maack, Ph.D.

Stefan Schulenberg, Ph.D.

- Attended weekly supervision meetings to review patient cases
- Engaged in peer consultation of patient cases
- Observed CBT techniques for children and adults

### **Day Treatment Specialist**

Mississippi Children's Home Services, Flowood, MS

November 2015 – August 2016

Supervisor: Heather Statham, LPC

- Managed and developed individualized treatment plans for a caseload of approximately 10 children, ages 7-10
- Implemented behavioral modification techniques in the classroom setting
- Introduced, monitored, and evaluated use of appropriate social skills
- Advocated for patient needs within academic and home settings

### **Outpatient Clinic Therapist**

Mississippi Children's Home Services, Flowood, MS

February 2015 – October 2015

Supervisor: Pete Bishop, LPC

- Managed a caseload of approximately 50 children and adolescents, ages 2-16
- Administered clinical assessments and diagnostic interviews and developed individualized treatment plans
- Implemented PracticeWise treatment protocols consisting of CBT techniques within therapeutic practice as part of collaborative project lead by Dr. John Young, Ph.D.
- Facilitated individual and family therapy on weekly and biweekly bases and educated caregivers in appropriate behavior modification/parenting skills

### **Behavior Specialist/Therapist**

Region 8 Mental Health Services, Hazlehurst, MS

May 2014 – February 2015

- Maintained a caseload of approximately 20, including 8 adolescent day treatment patients
- Implemented behavioral modification techniques in the classroom setting
- Introduced, monitored, and evaluated the use of effective social skills
- Coordinated with other mental health service providers, guardians, and school authorities to discuss treatment needs and progress

### **Therapist**

Region 8 Mental Health Services, Hazlehurst, MS

January 2014 – May 2014

- Developed patient treatment plans, goals, and interventions for a caseload of approximately 60, ages 30-60+
- Conducted home visitations for individual/family therapy sessions
- Provided therapeutic support for children and adolescents via the school setting

**Case Manager**

Brentwood Behavioral Healthcare, Jackson, MS May 2013 – January 2014

- Provided case management to entire facility of 105 beds as needed, including child, adolescent, and adult units, as well as intensive outpatient and partial hospitalization programs
- Implemented inpatient treatment goals and developed hospital discharge planning
- Coordinated discharge outpatient and residential treatment

**Clinical Intern**

Brentwood Behavioral Healthcare, Jackson, MS January 2013 – December 2013

- Facilitated daily group therapy sessions of approximately 10 – 12 individuals
- Conducted patient interviews/assessments, as well as patient-family conferences

**LICENSURE AND CERTIFICATIONS**

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<b>Licensed Professional Counselor</b>	2016 – present
<b>National Certified Counselor</b>	2015 – present

**HONORS AND ASSOCIATIONS**

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<b>Finalist at the 3MT Competition</b>	
University of Mississippi	2017

<b>Professional Membership</b>	
Mississippi Psychological Association	2017 – present

<b>Gamma Beta Phi Honor Society</b>	
University of Mississippi	2010 – 2011

<b>Phi Theta Kappa Honor Society</b>	
University of Mississippi	2009 – 2011
Pearl River Community College	2008 – 2009