THE RELATIONSHIP BETWEEN OBSESSIVE-COMPULSIVE DISORDER AND PARENTING STYLES

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ABSTRACT

THE RELATIONSHIP BETWEEN OBSESSIVE-COMPULSIVE DISORDER AND PARENTING STYLES

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Background: Parenting styles have been associated with obsessive-compulsive disorder. While an authoritative parenting style is generally associated with lower psychopathology rates, an authoritarian and a permissive parenting style are generally not. The goal of this study was to investigate the effects of authoritative, authoritarian, and permissive parenting styles on obsessive-compulsive (OC) symptom severity.

Methods: A total of 111 participants (M_{age} = 28.68; *SD* = 6.668) completed an online survey containing a series of demographic questions and two assessments: the Parental Authority Questionnaire (PAQ) and the Florida-Obsessive Compulsive Inventory (FOCI). Multiple regression analyses were conducted to analyze the relationship between parenting style and OC symptom severity.

Results: On average, participants raised by authoritarian parents reported higher OC symptom severity compared to participants raised by authoritative and permissive parents. However, only a maternal authoritative parenting style was associated with lower OC symptom severity.

Conclusions: An authoritarian parenting style was associated with higher OC symptom severity compared to authoritative and permissive parenting styles. Treatment considerations for OCD

should include a more systemic (e.g., F-CBT) approach. Further research is needed to examine the relationship between authoritative and permissive parenting on OC symptom severity. This dissertation is available in open access at AURA, https://aura.antioch.edu/ and OhioLINK ETD Center, https://etd.ohiolink.edu

Keywords: obsessive-compulsive disorder, parenting styles, regression analyses, Parental Authority Questionnaire, Florida Obsessive-Compulsive Inventory

Dedication

To my family and partner

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CHAPTER I: INTRODUCTION

Researchers have long debated what makes one individual more vulnerable than another to particular behaviors, cognitions, and illnesses (both physical and psychological). Initially, doctors, scientists, and even psychologists believed that human behavior and mental illness was influenced solely by biological factors. For instance, Freud, a prominent psychoanalyst in the 18th century, believed that certain mental conditions (e.g., hysteria) were the result of a biological weakness within the individual (Singh, 2012). Prior to the 1960's and 1970's, the medical model was the guiding framework for diagnosing mental health conditions. Starting in the 1960's, groups began advocating against the biological model of mental illness and asserted that mental health (or lack thereof) can be influenced by environmental factors, such as family environment (Singh, 2012).

Currently, due to evidence-based research, scientists are emphasizing the relationship between genetic (nature) and environmental (nurture) factors in human development (Belsky & Pluess, 2008; Singh, 2012). The notion of nature versus nurture has shifted towards a more encompassing model of conceptualizing mental health and illness such as the biopsychosocial model. Formulated in the late 1970's by George Engerl, an internist and psychiatrist, the biopsychosocial model states that illness can be better understood using a holistic approach that includes an individual's biological, psychological, and social spheres, rather than using each of these dimensions alone (Borrel-Carrió et al., 2004).

Although biology is an important factor guiding our mental health (Johnston & Edwards 2002; McCrae et al., 2000), more research is emerging on the influence of environmental stressors (e.g., parenting or adverse childhood events) on genetic expression, and consequently its effects on human development (Belsky & Pluess, 2008; McCrae et al., 2000). For instance,

research suggests that adverse childhood experiences (ACE's) and trauma can influence mental health (e.g., anxiety, depression, and somatic complaints), cognitions (e.g., memory), and physical health (e.g., sleep and weight; Anda et al., 2006). One example that supports the impact of environmental factors on genes (i.e., epigenetics) is depression. Research suggests that when exposed to adverse events, individuals exhibiting homozygosity (two identical alleles of a gene) of the serotonin transporter gene are at greater risk of experiencing depressive episodes throughout their lifetime than individuals with allele heterozygosity (two different alleles of a gene) when exposed to adverse events. Still, when homozygous individuals were not exposed to adverse events or had a supportive environment, they were less likely to develop depression in comparison to individuals with different allelic combinations (Belsky & Pluess, 2008).

This interplay between genes and the environment is central to the diathesis stress model, which holds that an individual's circumstances can lead to the expression of a particular disorder if the threshold for activation for that individual is surpassed (Belsky & Pluess, 2008; Coles et al., 2012; Real et al., 2011). Conceptualize this interplay between genes and the environment as a light switch to be turned on or off by a finger. The switch (genes) may be activated by environmental factors (a finger) to turn on or off a mental illness (the light). For instance, consider an individual who has a genetic predisposition to develop bipolar I or II disorder due to a high incidence of that mental disorder in their family. The genetic predisposition (i.e., the on-off switch) will always be present in that particular individual's genetic coding. However, the individual's environment may put pressure on that switch, and ultimately either cause the gene (flip the switch) to become active (on) or inactive (off).

One key environmental factor that may affect gene expression is parenting style (particularly attachment between child and parent). There are four main parenting style

typologies: 1) authoritative, 2) authoritarian, 3) permissive, and 4) neglectful (Baumrind, 1966, 1967; Kuppens & Ceulemans, 2018). These four parenting styles, in turn, influence a child's biopsychosocial development such as self-esteem, social skills, academic performance, and both mental, and physical health (Calzada et al., 2012; Jago et al., 2010; Kuppens & Ceulemans, 2018; Pinquart, 2016; Sebire et al., 2016; Singh, 2017). When the relationship between parent and child is not warm or nurturing, detrimental effects on an individual's well-being may occur because parenting styles are a crucial factor in the cognitive, affective, behavioral, and psychological development of a child (Calzada et al., 2012; Jago et al., 2010; Kuppens & Ceulemans, 2018; Sebire et al., 2016). While healthy parenting styles can have a buffering effect on a child's genetic predispositions for a particular medical or mental condition, unhealthy parenting styles may exacerbate them (Maccoby, 2000). For instance, research suggests that a relationship exists between the four main parenting typologies (authoritative, authoritarian, permissive, and neglectful) and adolescent mental health (Lamborn et al., 1991). Along the same lines, Affrunti and Woodruff-Borden's (2015) research indicates that parental overcontrol, a restrictive involvement in the child's life, may lead the child to develop an inaccurate representation of which stimuli is threatening or not. This parental overinvolvement, in turn, can compromise a child's perceived ability to cope with their environmental demands, which is a core feature of obsessive-compulsive (OC) symptomatology.

Obsessive compulsive disorder (OCD) is characterized by the presence of repetitive, intrusive, unwanted, and distressing thoughts, images, or urges (i.e., obsessions), which are then neutralized by repetitive, ritualistic, and time-consuming covert or overt behaviors (i.e., compulsions). Common obsessions include fears of contamination or of harm to self or others, symmetry (such as arranging things in a particular way), and religious, sexual, or aggressive

thoughts. Common compulsive behaviors include excessive washing, counting, ordering, reassurance, and praying (Doron & Kyrios, 2005; Doron et al., 2012; Jenike, 2004; Kozak & Foa, 1997; Lack, 2012; Paul et al., 2016; Rahimi et al., 2015; Rezvan et al., 2012; Rodgers et al., 2015; Veale & Roberts, 2014). OCD affects both men and women equally in adulthood, but the prevalence rate in childhood is greater for boys than for girls (Lack, 2012; Taylor, 2005). The comorbidity rate in patients diagnosed with OCD is high; approximately 75% of patients are diagnosed with a secondary mental disorder such as anxiety or depression (Bienvenu et al., 2012; Doron & Kyrios, 2005; Lack, 2012).

The etiology of OCD is still being studied, but genetic, developmental, psychological, neurological, and medical factors can all contribute to the development of OC symptomatology (Doron & Kyrios, 2005; Rahimi et al., 2015; Veale & Roberts, 2014). While cultural factors do not explain a strong proportion of the variance in the etiology of OCD, upbringing practices such as parenting styles, do influence OC symptomatology through the development and maintenance of maladaptive belief schemas in the child and throughout adulthood (Doron & Kyrios, 2005; Lack, 2012). In fact, several research articles suggest that one putative risk factor for the development of OCD is parenting style (e.g., Black et al., 2003; Krebs et al., 2019; Wilcox et al., 2008). Researchers have found that parental behaviors impact an individual's personality. For example, displaying affection and emotional warmth, and avoiding excessive protection, control, and criticism have been associated with a healthier personality style. On the contrary, parental rejection and control have been associated with different psychopathology, such as anxiety, depression, oppositional behaviors, schizophrenia, substance abuse, and eating disorders (Alonso et al., 2004).

Given that parenting styles have shown to impact a child's biopsychosocial development, understanding the relationship between different parenting styles and OC symptom severity may help enhance treatment effectiveness, increase remission rates, or help in the development of new treatment interventions.

The Present Study

In line with the research that suggests a relationship exists between different parenting styles and an individual's cognitive, psychological, social, emotional, and behavioral development, the purpose of this study is to investigate the relationship between the three different parenting styles delineated by Baumrind (authoritative, authoritarian, and permissive) and OC symptom severity. This research study will only focus on these three aforementioned parenting styles and not the fourth style (neglectful) due to not being able to find a reliable and valid self-report measure to assess the neglectful parenting style. Understanding the relationship between different parenting styles and OC symptom severity can enhance our understanding of OCD and thus shed light on new therapeutic interventions that may enhance treatment effectiveness.

CHAPTER II: LITERATURE REVIEW

This literature review consists of two main sections. The first section is devoted to exploring the following information about OCD:

- background information about OCD
- obsessions and compulsions
- obsessive-compulsive symptom categories
- mental disorders commonly misconstrued as OCD
- mental health disorders commonly diagnosed with OCD
- theorized causes of OC symptomatology

The second section is dedicated to exploring the four main parenting styles. This section will review:

- the four main parenting styles
- the relationship between the four parenting styles and perfectionism
- possible correlational mechanisms between parenting styles and OC symptomatology

OCD: Background

OCD is a chronic, and often a debilitating, and severe mental health disorder that affects approximately 1-3% of the U.S. population (Lewin et al., 2014; Reynolds et al., 2013; Thompson-Hollands et al., 2014). Furthermore, according to the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed., text rev; *DSM-5-TR*; American Psychiatric Association, 2022), the U.S. OCD 12-month prevalence is 1.2%. OCD is commonly diagnosed between late childhood (between ages 8 and 12) and early adulthood (between ages 19 and 35), but may be diagnosed as young as 3 to 4 years old (Del Casale et al., 2011; International OCD Foundation, 2020b; National Institute of Mental Health, 2019; Taylor, 2005). In fact, according to Bipeta et

al. (2014), 80% of adults who meet the criteria for OCD were diagnosed during childhood. While the majority of OCD cases before age ten are usually seen in men, women are usually diagnosed with OCD after age ten. An OCD diagnosis after age 30 happens less frequently regardless of gender (Ruscio et al., 2010). OC symptoms that develop early in childhood are more frequently present with a tic disorder (such as Tourette's Syndrome), attention-deficit-hyperactivity disorder (ADHD), and a lower insight level. Moreover, individuals whose OC symptoms emerged in childhood, compared to people whose symptoms' onset presented later in life (adolescence or early adulthood), are more likely to have a first-degree relative with OCD or a tic disorder (Tourette's disorder, persistent (chronic) motor or vocal tic disorder, provisional tic disorder; Taylor, 2005).

The onset of OC symptomatology is usually gradual, and it is common for patients diagnosed with OCD to experience a wave of symptoms that oscillate between less severe to more severe symptomatology. This oscillation of OC symptomatology is influenced by environmental factors, such as precipitating events (Franklin & Foa, 2011). While some researchers suggest that there is an equal prevalence of OCD among men and women (Doron & Kyrios, 2005; Doron et al., 2012), others have found a higher prevalence of OC symptomatology among women (López-Pina et al., 2015). Along the same lines, a research article by Fenske and Pettersen (2015) suggests that women who are pregnant or in the postpartum period are 1.5 to two times more likely to experience OCD compared to other women.

There is limited research on the OCD prevalence rates in the transgender and non-gender binary population (e.g., LGBTQ+). However, research suggests that, overall, individuals who do not fall under the gender-binary dichotomy (i.e., man or woman) are at greater risk of developing or experiencing a psychological disorder as children or adults (Aparicio-García et al., 2018;

Becerra-Culqui et al., 2018; Reisner & Hughto, 2019). A study by Oswalt and Lederer (2018) on a college student sample revealed that students who self-identified as transgender were more likely to develop OCD (i.e., odd ratios [OR]) compared to their gender-conforming counterparts (*OR* = 2.04 vs. 0.59, respectively). Furthermore, the same study revealed that, overall, 8% of transgender students experienced OCD compared to 2.2% of cisgender females and 1.3% of cisgender males. More research is needed for the transgender and non-gender binary population, as there are more than 1.4 million adults in the U.S. that do not identify with the gender binary assigned by society (Reisner & Hughto, 2019).

Cross-culturally, research suggests that OCD is common across different cultures in terms of age of onset, comorbidity, and gender distribution (American Psychiatric Association, 2022). However, while the literature suggests that cultural factors do not explain a strong proportion of the variance in the etiology of OCD, both cultural and regional factors shape both symptom content (i.e., obsessions) and expression (i.e., compulsions; American Psychiatric Association, 2022; Lack, 2012). For instance, a research study by Varela et al. (2004) revealed that, compared to Caucasian-non-Hispanic families, families of Mexican-descent displayed more authoritarian behaviors. However, there were no significant differences between these two groups in terms of authoritative parental practices. A different study by Rodríguez et al. (2009) found that Latino families showed high levels of responsiveness and demandingness, and moderate levels of autonomy. A possible explanation for the influence on culture on parental practices is that cultural norms delineate what is acceptable and what is not (Gafoor & Kurukkan, 2014). Some researchers refer to this as ethnic socialization, which refers to the process by which parents educate and interact with their children in a manner consistent with their cultural values and norms (Calzada's et al., 2012).

People diagnosed with OCD experience an overall decreased quality of life (Meyer et al., 2014; Subramanian et al., 2013) due to frequent challenges in academic, family, and psychosocial functioning (Lack, 2012; Masi et al., 2009; Park et al., 2013; Thompson-Hollands et al., 2014). Since OCD is a chronic psychological disorder, complete remission is the exception rather than the rule (Dougherty et al., 2004).

OCD: Obsessions

According to the *DSM-5-TR*, *obsessions* are defined as,

> recurrent and persistent thoughts, urges or images that are experienced, at some time during the disturbance, as intrusive and unwanted, and that in most individuals cause marked anxiety or distress.
>
> The individual attempts to ignore or suppress such thoughts, urges, or images, or to neutralize them with some other thought or action (i.e., by performing a compulsion; American Psychiatric Association, 2022, p. 265).

Obsessions could be further divided into *autogenous* and *reactive*. The former refers to obsessive content that presents itself with or without identifiable triggers, are experienced as repugnant and distressing (i.e., ego dystonic), and are typically related to unacceptable sexual, moral, aggressive images, impulses, or images. Even though individuals with this type of obsession typically acknowledge the 'irrationality' of the obsession, how much a person believes in a particular obsession differs from individual to individual (usually assessed on a scale from 1 to 10). The latter, on the other hand, refers to obsessive content that is perceived as rational (i.e., ego syntonic), which is typically related to concerns about contamination, order, loss, and accidents. The rational aspect of this type of obsession should not be confused with the fact that some individuals may still perceive their obsessions as excessive and irrational. For example, take the

fear of becoming ill if you do not wash your hands before eating. People without OCD may experience this fear, since it is rational. However, individuals with contamination obsessions who have this fear, expect an excessive and irrational outcome, such as contracting a terminal illness, if they do not wash their hands prior to eating (Abramowitz et al., 2014; Altun et al., 2017; Doron & Kyrios, 2005; Taylor, 2005).

Research suggests that obsessions emerge from maladaptive beliefs and appraisals of stimuli, such as the following: 1) overemphasis of personal responsibility, 2) thought rumination, 3) thought control (constant preoccupation with what one is thinking), 4) overestimation of threat, 5) intolerance of uncertainty, and 6) focus on perfection (Doron & Kyrios, 2005; Doron et al., 2012; Paul et al., 2016). Three main factors are associated with these six maladaptive beliefs: 1) overestimation of threat and responsibility, 2) need to control one's thoughts, and 3) perfectionism and certainty (Abramowitz et al., 2014).

Some researchers argue that a neutral stimulus can become obsessive if it triggers an individual's insecurities in a particular self-concept domain. For instance, when a particular 'normal' thought triggers an individual's vulnerable weak spot (e.g., morality), and they experience heightened anxiety levels, that thought has the potential of endangering the individual's self-worth and becoming dangerous. It is important to note, however, that the idea of OC symptomatology being the result of a vulnerable self-concept does not fully capture the etiology of OCD (Doron & Kyrios, 2005).

It is important to distinguish between *impulses* and obsessions; the former are gratifying behaviors, while the latter are not, regardless of their relieving functions (Veale & Roberts, 2014). Furthermore, it is also important to differentiate between normal and clinical obsessions. An important note about obsessive thoughts is that they follow along a continuum. In other

words, people who are not mentally ill may experience occasional ‘normal’ obsessive thoughts; they only become pathological when they interfere with day-to-day life functioning. In order for a particular obsessive thought to become an obsession (and turning into maladaptive negative thoughts), the content of the thought must be salient enough for the individual to regard it as dangerous and stressful (Salkovskis, 1985).

OCD: Compulsions

According to the *DSM-5-TR*, *compulsions* are defined as,

> repetitive behaviors (e.g., hand washing, ordering, checking) or mental acts (e.g., praying, counting, repeating words silently) that the individual feels driven to perform in response to an obsession or according to rules that must be applied rigidly.
>
> These behaviors or mental acts are aimed at preventing or reducing anxiety or distress, or preventing some dreaded event or situation; however, these behaviors or mental acts are not connected in a realistic way with what they are designed to neutralize or prevent, or are clearly excessive. (American Psychiatric Association, 2022, p. 265)

A compulsion is differentiated from a *tic* if it is performed to ameliorate anxiety/fear rather than to diminish an unpleasant somatic sensation (Veale & Roberts, 2014). Compulsions can be divided into covert and overt. *Covert* compulsions are mental acts or rituals (e.g., praying or counting) that cannot be observed by others. *Overt* compulsions, on the other hand, are observable behavioral acts (e.g., excessive cleaning or checking). Common compulsions include the following: 1) checking, 2) cleaning, 3) washing, 4) praying, 5) symmetry (i.e., ordering), 6) hoarding (i.e., excessive collection of items), and 7) counting (OCD-UK, 2019). Compulsions should not be confused with subtle repetitive behaviors that are guided by normative doubt or

pleasurable practice. For example, praying is not a compulsion per se, regardless of the frequency of the prayer, if the purpose behind it is pleasure and religious/spiritual practice rather than to neutralize an obsession or to reduce anxiety. Research suggests that certain types of compulsive behaviors are associated with particular obsessions. For instance, individuals with ego-dystonic obsessional content frequently resort to covert or illusory compulsions (such as praying), which are aimed at reducing the anxiety to suppress and reduce the psychological discomfort produced by obsessions. Individuals that struggle with ego-syntonic obsessions, on the other hand, resort to overt compulsive behaviors (such as excessive cleaning) that aim at reducing the probability of the obsessional content (such as becoming sick) from happening (Doron & Kyrios, 2005; Taylor, 2005).

According to Salkovskis (1985), compulsive behaviors have three main ramifications. First, neutralizing is a coping strategy that diminishes the stress that results from the obsessional content. Second, neutralizing behaviors act as a negative reinforcement: the more a patient engages in them, the more difficult it is for them to break the cycle. Third, neutralizations, in the long run, act as triggering stimuli. In other words, since these behaviors are aimed at reducing distress or stopping something bad from happening, patients will be triggered to resort to such neutralizing behaviors (such as excessive hand-washing) in the future to ameliorate their obsessions.

OCD: Symptom Conceptualization

As discussed in the previous two sections, OCD is characterized by the presence of both obsessions and compulsions. OC symptomatology can be classified in different categories based on their obsessive and compulsive content (i.e., OC symptom categories). For instance, some researchers conceptualize OCD as being composed of five main OC symptom categories: 1)

obsessional content about contamination with washing/cleaning compulsion, 2) obsessional content about doubts with checking compulsions, 3) pure obsessional (also known as Pure O) content (e.g., religious, sexual, somatic with mental [covert] rituals), 4) obsessional content about symmetry and arranging with ordering compulsions, and 5) obsessional content about hoarding and collecting a variety of different items (Abramowitz et al., 2003; Rodgers et al., 2015; Starcevic & Brakoulias, 2008; Taylor, 2005; Williams et al., 2011). The contamination/washing-cleaning OC symptom category can be further conceptualized as *contact* contamination or *mental* contamination. The former involves physical contact with a contaminated object, which can lead to feeling fear and revulsion. This type of contamination leads to avoidance and escape behaviors. The latter, on the other hand, is defined as an internal sense of dirtiness, which can lead to feeling anxious or morally uneasy. Cleaning and avoidance are not as effective as in contact contamination (Rachman, 2004). Furthermore, some researchers argue that this OC symptom category can be conceptualized as being driven by fear of becoming ill, disgust of being in contact with a contaminated object, or the combination of both (Starcevic & Brakoulias, 2008).

Other literature suggests that OCD is composed of two main OC symptom categories. The first category, *pure obsessional*, refers to aggressive, sexual, or religious obsessions with no overt compulsive behavioral acts. The second category, *aggressive*, can be further conceptualized as an *unintentional harm* (doubt/checking) or *impulsive harm* (sexual, religious, or impulsive behaviors). The pure obsessional category has been associated with covert compulsive rituals (i.e., mental rituals such as reassurance-seeking; Williams et al., 2011). Furthermore, some researchers conceptualize OC symptomatology through a dimensional framework of compulsive/impulsive, motoric/obsessional, and insight. The *compulsive/impulsive*

dimension involves covert or overt behavioral patterns that are aimed at preventing something (e.g., excessive hand washing to prevent illness) or behaviors that result in constant gratification, respectively. The *motoric/obsessional* dimension involves involuntary, neurobiologically-based motor movements or only the presence of obsessions with little to no compulsive behavior, respectively. The last dimension, *insight*, refers to the degree that an individual believes that their thoughts or impulses are rational or irrational (Abramowitz & Houts, 2002). It is important to note, however, that a dimensional approach to OC symptomatology makes it harder to differentiate between OCD and other OCD-like disorders (such as impulse-related disorders).

Research studies suggest that, typically, OC symptomatology tends to be more stable in adults. In other words, adults' OC symptomatology remains within the same OC symptom category (Starcevic & Brakoulias, 2008; Taylor, 2005). These OC symptom categories are not mutually exclusive; a person can fall into one or both categories. For example, an individual presenting with religious obsessions and mental compulsions might also have fears of contamination and excessive hand-washing (Rodgers et al., 2015). Furthermore, in terms of the interaction between OCD and gender, research suggests that while cleaning OC content is more prevalent in women, forbidden thoughts and symmetry OC content is more prevalent in males (American Psychiatric Association, 2022).

OCD: Differential Diagnoses

In the realm of psychotherapy, and in other areas that require assessing or diagnosing, there is always the potential for clinicians to make a type I error (rejecting the null hypothesis when in fact it is true) such as wrongly diagnosing someone with OCD (i.e., the null hypothesis would be that an individual does not meet criteria for OCD). The diagnosis of OCD can be blurred by other OCD-like features characteristic of other disorders, such as:

- attention-deficit/hyperactivity disorder
- anorexia nervosa
- anxiety disorders
- autism spectrum disorders
- depressive disorders (e.g., major depressive disorder)
- excessive preoccupation about one's body appearance (e.g., body dysmorphic disorder)
- illness anxiety disorder
- impulse control disorders (e.g., trichotillomania or skin picking),
- neurologically-based involuntary movements (e.g., Tourette's syndrome)
- psychotic disorder
- somatic symptom disorder (Abramowitz & Houts, 2002; Fenske & Pettersen, 2015)

Consequently, it is imperative that clinicians assess for other mental health disorders with similar symptom presentations as OCD (Ruscio et al., 2010). (For a more detailed review on the aforementioned diagnoses, please refer to the *DSM-5-TR*.)

OCD: Comorbidity

Comorbidity is defined as the simultaneous co-occurrence of two or more mental health disorders, such as a simultaneous diagnosis of OCD and an anxiety disorder (e.g., social anxiety; Valderas et al., 2009). Research suggests that OCD is a highly comorbid clinical disorder, with the most comorbid diagnoses being the following:

- alcohol abuse (in adults)
- attention-deficit/hyperactivity disorder
- behavioral problems (in children)
- eating disorders

- generalized anxiety disorder
- grooming disorders (e.g., nail biting)
- illness anxiety disorder
- major depressive disorder
- personality disorders (e.g., obsessive compulsive personality disorder [OCPD])
- social anxiety disorder
- tic disorders (e.g., Tourette's)
- trichotillomania (American Psychiatric Association, 2022; Bienvenu et al., 2012; Doron & Kyrios, 2005; Kozak & Foa, 1997; Lack, 2012)

A study by Ruscio et al. (2010) on the epidemiology of OCD revealed that out of the subsample of 2073 participants diagnosed with OCD, 75.8% were diagnosed with an anxiety disorder (e.g., social phobia), 63.3% were diagnosed with a mood disorder (e.g., bipolar disorder), 55.9% were diagnosed with an impulse-control disorder (e.g., attention-deficit/hyperactivity disorder), and 38.6% were diagnosed with a substance use disorder (e.g., alcohol dependence). Furthermore, a study by Fenske and Pettersen (2015) suggests that the most common comorbid conditions associated with OCD include anxiety disorders (75.8%; e.g., panic disorder or specific phobias), mood disorders (63.3%, in particular major depressive disorder), impulse control disorders (55.9%), and substance use disorders (38.6%).

Research suggests that different OC symptomatology is associated with different comorbid disorders. For instance, symmetry/ordering symptomatology frequently co-occurs with tic disorders, bipolar disorder, obsessive-compulsive personality disorder (OCPD), panic disorder and agoraphobia; contamination/cleaning OC symptomatology frequently co-occurs with eating disorders; and hoarding symptomatology is associated with personality disorders,

especially those under cluster C (avoidant, dependent, or OCPD; Lack, 2012; Storch et al., 2010). Furthermore, the presence of a secondary diagnosis usually exacerbates people's OC symptomatology and reduces their quality of life. For instance, research suggests that the presence of certain comorbid disorders, such as depression, post-traumatic stress disorder, substance use disorder, and impulse control disorder increases the likelihood and risk of suicidal behaviors (Fenske & Pettersen, 2015).

OCD: Etiology

The exact etiological causes of OCD are yet to be determined. However, research has linked the development of OCD to genetics, psychoneuroimmunology, neurophysiology, environmental stressors, early-life experiences, and parenting (Doron & Kyrios, 2005; Kradin, 2014; Rezvan et al., 2012; Timpano et al., 2010).

Genetics

Research suggests that OCD may in part be passed from parents to their children via genes, the basic unit of inheritance. Heritability percentages range from 10% to 16% for OCD probands compared to 1.9% to 3% for the control group (Nestadt et al., 2010). Twin studies have revealed that the heritability of OCD in monozygotic twins is between 37% and 65%, leaving the remaining 35% and 63% of variance to non-shared factors such as environmental factors (Purty et al., 2019). Furthermore, the concordance rates of OCD between monozygotic (MZ) twins are 68% compared to 31% for dizygotic (DZ) twins (Nestadt et al., 2010).

Genetic research like the aforementioned studies can be conducted through candidate gene studies and gene linkage studies. *Candidate gene studies* examine associations between variations of a particular gene and an observed phenotype, while *genetic linkage studies* examine which chromosomal regions present themselves in families (Purty et al., 2019). Candidate gene

studies have focused on the dopaminergic, glutamatergic, and serotonergic neurotransmitter systems. Neurotransmitters are neurochemicals that neurons use to communicate with each other (Maiese, 2019). Dopamine is a neurotransmitter that is responsible for processes such as learning, motor control, reward, emotion, executive functioning. Glutamate is an amino-acid that acts as an excitatory neurotransmitter in the central nervous system (CNS; includes the brain and spinal cord). Serotonin (5-HT or 5-hydroxytryptamine) is a neurotransmitter that is responsible for physiological processes such as mood, sleep, and appetite (Genetics Home Reference, 2017; Maiese, 2019; Scheffler & Pillarisetty, 2019; Tausk et al., 2008).

In terms of the serotonergic system, the most studied gene has been the gene that codes the serotonin transporter protein (*SLC6A4*), with the variant in the promoter region (5 HTTLPR) being investigated the most. The 5HTTLPR region exists in either short (S) or long (L) allelic form based on the number of repeat nucleotides, which are the chemical building blocks of DNA (Adenine [A], Cytosine [C], Guanine [G], and Thymine [T]). Adenine pairs with thymine, and guanine with cytosine (National Human Genome Research Institute, n.d.). Studies have revealed that there is a single-nucleotide polymorphism (SNP; variation of a single base pair) between the L allele and A and G. The L(A) allelic combination has shown to increase the expression of a particular gene, while the L(G) and S allele suppress the expression of a particular gene. Studies have revealed that the L(A) allelic combination is associated with OCD. Another gene that has been studied is the 2A serotonin receptor (*HTR2A*), and in particular, two of its SNPs: rs6311 (G/A) and rs6313 (T/C). Research studies have yielded mixed results on the association between allele A of rs6311 and allele T of rs6313 and the development of OC symptomatology (Bandelow et al., 2016; National Human Genome Research Institute, n.d.; Nestadt et al., 2010; Purty et al., 2019).

In terms of the glutamatergic system, research suggests that a reduced transport of glutamate to the postsynaptic neuron may be responsible for the pathology of OCD. For instance, the results of studies on the association between the gene that codes the postsynaptic glutamate transporter protein (*SLC1A1*) and OCD have been mixed. Other gene studies have revealed a possible association between a SNP in the *SLC1A1* gene (rs10491734) and the development of early-onset OCD (Purty et al., 2019).

In terms of the dopaminergic system, studies have yielded mixed results on the association between dopamine and OCD. The gene that has gathered more evidence is the *DRD4* gene, and in particular, a VNTR sequence in the 7R and 2R allele. Other researchers have found associations between the *SLC6A3* and *DRD3* and in earlier-onset OCD (Nestadt et al., 2010; Purty et al., 2019).

Genetic linkage studies have focused on the 9p24 region on chromosome 9 and have shown positive associations with OCD, which also holds the *SLC1A1* gene (glutamate transporter). Other gene linkage studies have found associations between chromosome 3 (region 3q27-28) and chromosome 14 (region 14q23-32 for hoarding OCD; Nestadt et al., 2010; Purty et al., 2019). For instance, a study by Samuels et al. (2007) found an association between chromosome 14 and hoarding behavior in OCD. Other linkage gene studies have found promising associations between the following: (1) the enzyme catechol-O-methyltransferase (COMT; involved in DA degradation), (2) monoamine oxidase A (MAO-A; an enzyme that breaks down serotonin, norepinephrine, epinephrine, and dopamine), (3) the locus of the brain derived neurotrophic factor (BDNF; promotes growth and survival in neurons, and synaptic plasticity), (4) the glutamate NMDA subunit receptor gene, (5) the gamma-aminobutyric acid (a major inhibitory neurotransmitter in the brain) type B receptor 1 (GABBR1; over-transmitted at

the A-7265G polymorphism), and (6) the myelin oligodendrocyte glycoprotein (MOG; important in the myelination process) gene and OCD (Binder & Scharfman, 2004; Genetics Home Reference, 2017; Johns & Bernard, 1999; Maiese, 2019; Nestadt et al., 2010).

Overall, research suggests that, on average, the genetic influence on the development of OCD only accounts for 50% of the variance, leaving the remaining 50% to other factors such as adverse events, stressors, or dysfunctional upbringing styles (Bandelow et al., 2016). Moreover, it is important to note that these studies are preliminary and not conclusive causal correlations.

Psychoneuroimmunology

Psychoimmunology is the study of the relationship between the immune, endocrine, central, and peripheral nervous systems (Tausk et al., 2008). It is an area of research that has studied the relationship between infectious agents (e.g., streptococcus) and the development and onset of OCD-like features. These streptococcal infections damage the basal ganglia and its associated structures (Taylor et al., 2006). For instance, Group A Beta-Hemolytic Streptococcus (GABHS) infections (e.g., Sydenham's chorea, acute rheumatic fever) may contribute to the development of OCD (Taylor, 2005). In fact, 70% of the patients with Sydenham's chorea show OC symptomatology (Blier et al., 2006; Komor, 2012). These early-onset OCD-like symptomatology, which indicate an infectious, metabolic, or toxic etiology, are known as childhood acute neuropsychiatric symptoms (CANS), pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections (PANDAS), Pediatric Acute-onset Neuropsychiatric Syndrome (PANS; Fenske & Pettersen, 2015). While PANDAS are caused by *Streptococcus pyogenes* [Group A Strep], PANS are caused by other infectious agents such as the H1N1 flu virus, Lyme disease, mononucleosis, and mycoplasma (International OCD Foundation, 2020a). The mechanisms by which streptococcal infections induce OC

symptomatology is via inflammation of the basal ganglia. In fact, neuroimaging has shown that participants with PANDAS show enlargement in brain structures that compose the basal ganglia (caudate, putamen, and globus pallidus). However, OC symptomatology resulting from streptococcal infections explains only approximately 10% of the variance in early onset OCD. Furthermore, while OCD usually gradually develops in adolescence or early adulthood, streptococcal- or other infectious agent-induced OC symptoms are abrupt, acute, and frequently in line with post-streptococcal and infectious symptomatology (International OCD Foundation, 2020a; Taylor, 2005).

Neurophysiology

Neurophysiology is the study of how different brain structures and the peripheral nervous system function (Fuller & Bone, 2005). The exact neurophysiological mechanisms of OCD are still being studied, yet ample research evidence suggests that the cortico-striato-thalamo-cortical (CSTC) network is involved in the neurophysiology of OCD (Bornheimer, 2015; Dougherty & Greenberg, 2011; Ortiz et al., 2016). The brain areas that comprise the CSTC network include the orbitofrontal cortex (OFC), the anterior cingulate cortex (ACC), the striatum, and the thalamus (Fullana et al., 2017; Lapidus et al., 2014; Ortiz et al., 2016).

The first cortical area in the CSTC, the OFC, is divided into two different areas relative to its location to the brain: posteromedial (pmOFC) and anterolateral (alOFC). The pmOFC modulates affect, motivation, and other paralimbic functions, while the alOFC mediates cognitive processes and response inhibition (Ducharme et al., 2016). Furthermore, research has shown that the mOFC is associated with the processing of positive valence of stimuli, regulation of affective content, reward processing, and extinction recall, while the lOFC is associated with the processing of the negative valence of stimuli, ritualized responses, and obsessions. People

diagnosed with OCD show hyperactivation of the lOFC and hypoactivation of the mOFC (Ducharme et al., 2016; Milad & Rauch, 2012).

The second cortical brain area comprising the CSTC is the anterior cingulate cortex (ACC). The ACC is also divided into different areas relative to the brain's topography: dorsal (involved in cognitive processes related to conflict and error monitoring, and fear conditioning), rostral (in charge of mediating effect), caudal (involved in cognitive processes), and ventral (involved in emotional regulation; Brennan et al., 2015; Bush et al., 2000; Del Casale et al., 2011; Ducharme et al., 2016; Matsumoto et al., 2010). One of the ACC's most important roles in the pathophysiology of OCD is that of error and conflict monitoring, both of which can lead to OC behavior if this system is overactivated and has disrupted connections with other structures such as the striatum (Jayarajan et al., 2015; Tang et al., 2016).

Another important way to conceptualize and understand brain function is through Brodmann areas (i.e., brain topography), which create a map of the human brain that details the human cortex into 47 regions based on their position on the human cortex and their relationship to lobes (frontal, temporal, parietal, and occipital), gyri (bumps), sulci (grooves or fissures; Brodmann, 2006; Thatcher, 2016). If we pay close attention to the OFC and ACC, their corresponding Brodmann areas have specific functions that closely relate to OCD symptomatology.

The following description of the corresponding OFC and ACC Brodmann areas and their functions is not exhaustive, but limited to the functions that mostly apply to OCD pathology (Thatcher, 2016). The ACC is composed of BA 24 (inhibition, worry, conflict, and consequences of actions monitoring), 25 (evaluation of emotional words), 32 (mood regulation and reappraisal of negative emotions), and 33 (response to pleasant music and female sexual arousal to erotica;

this BA might be more closely related to sex-related OCD). The OFC corresponds to Brodmann areas 11 (reward vs. conflict) and 12 (decision-making, affective value of reinforcers, sensitivity to punishment, and expectation; Thatcher, 2016). If we extrapolate the functions of the aforementioned Brodmann areas to overt behavior, we can point out the following: 1) the ACC acts as a hub for affective modulation and for error and conflict monitoring, and 2) the OFC regulates the cognitive processing of whether stimuli are rewarding or conflicting. If there is hyperactivation in these two areas, it is very likely that stimuli that would have previously been perceived as neutral (now OCD-related) will be overly perceived both emotionally and cognitively as dangerous, which is very common in people with OCD. This perception, in turn, engenders the need to perform compulsions in order to counteract the unpleasant effects of an overactive error-detection system.

The next level of the CSTC network is the striatum. The striatum includes the caudate nucleus, nucleus accumbens, and the putamen (Ducharme et al., 2016). Within the context of OCD psychopathology, the striatum is involved in both affective and cognitive processes (Ducharme et al., 2016), and has connections with both higher cortical brain areas (OFC and ACC) and lower subcortical regions (the thalamus; Graybiel & Rauch, 2000). The last component of the CSTC network, the thalamus, is mainly involved in the relay of information from the striatum back to higher cortical areas (e.g., the OFC and ACC; Del Casale et al., 2011).

Research suggests that abnormalities exist in the structures that comprise the CSTC network (Bandelow et al., 2017; Chamberlain et al., 2005; Dougherty et al., 2004; Haber & Heilbronner, 2013). For instance, several studies have found altered metabolic activity (i.e., hyperactivity) in the OFC, ACC, striatum, and thalamus in people diagnosed with OCD (Dougherty & Greenberg, 2011; Graybiel & Rauch, 2000; Tang et al., 2016) that decreases after

successful treatment (Dougherty & Greenberg, 2011; Wen et al., 2013). Other studies have found volume reductions in the brain areas involved in the CSTC network, including, volumetric reductions in the OFC and ACC (Ducharme et al., 2016; Jayarajan et al., 2015), and in the striatum and thalamus as well (Matsumoto et al., 2010). Lastly, other research studies have found connectivity abnormalities within the CSTC network (Del Casale et al., 2011). Posner et al. (2014) found that people diagnosed with OCD showed reduced connectivity within the limbic and motor loop, but increased connectivity in the associative loop of the CSTC network. In sum, abnormalities in the OFC and ACC contribute to the development of obsessions via hyperactivation of the endogenous error detection system, which then communicates with the striatum (most likely receiving distorted information and then processing it), which sends the information to the thalamus to relay back to the cortical areas, creating a loop that continually reinforces OCD symptomatology.

Environmental Stressors

In terms of stress vulnerability, each individual has a unique stress-tolerance threshold, which dictates how much stress someone can cope with before it negatively influences the mind and body (i.e., the diathesis stress model). *Diathesis* refers to the predisposition to develop a particular disease, and in the context of this paper, to develop a mental disorder. People do not respond to stressors equally since we all have different susceptibility thresholds that need to be reached to develop a certain psychopathology. This is better known as the additive model of diathesis stress interaction, which states that people are either more or less prone to developing a pathology in the presence of a stressor depending on whether the person has either a low or a high diathesis threshold; a person with a low threshold would develop a disorder more quickly than someone with a high threshold when exposed to an acute stressor (Zuckerman, 1999).

Research supports this idea of a stress-related OCD onset, since life and environmental stressors tend to make someone more OCD-prone when in the presence of certain genetic predispositions, which denotes gene-environment interactions (Real et al., 2011; Coles et al., 2012). Thus, the diathesis-stress model supports that either a psychological predisposition such as personality type (Real et al., 2011) or a biological precursor may evolve into psychopathology when exposed to severe stress (Zuckerman, 1999). For instance, research suggests that the threshold for a stressor is lower in familial OCD compared to non-familial OCD (Taylor, 2005). In addition, Zuckerman states that even irregular neurotransmitter activity contributes to different levels of diathesis. This further supports the idea that chemical imbalances in the brain play a crucial role in the development of OCD. Furthermore, dysregulation of the hypothalamus-pituitary-adrenal axis [HPA axis], which increases cortisol production, may account for the stress vulnerability factor related to OCD (Greenberg et al., 1997).

Early-Life Experiences

In terms of early-life experiences, research suggests that there is a relationship between parenting styles and the development of OC symptomatology via the activation of maladaptive and perfectionistic beliefs (e.g., overestimation of threat or failure), or by disrupting emotional regulation processes. For instance, parenting styles low in the responsiveness/warmth dimension, but high on the demandingness/control dimension, have been associated with the presence of OC symptomatology. Furthermore, authoritarian parenting might be related to a particular set of cognitive dyads: responsibility/threat, perfectionism/certainty, and importance/control. These cognitive dyads, in turn, may be a catalyst for OC symptomatology (Timpano et al., 2010). In terms of these cognitive dyads, research suggests that parental overcontrol, a restrictive involvement in the child's life, may lead the child to develop inaccurate representations of what

stimuli are threatening or not, which compromises a child's perceived ability to cope with their environmental demands. It has been hypothesized that parental overcontrol stems from the parent's own fear and anxieties about making mistakes and concerns about safety. As a result, they control their child's life as a way to cope with their own unresolved anxiety and fear (Affrunti & Woodruff-Borden, 2015).

Parenting Styles: Background

Parenting involves an exchange of different cognitive, affective, and behavioral dimensions between a parent and a child (i.e., parenting styles or practices). During the late 1960's and early 1970's, Baumrind conducted several experiments to study the relationship between different parental practices and child socialization behaviors. Initially, Baumrind's experiments yielded three distinct parenting styles: authoritarian (or autocratic), authoritative (or democratic), and permissive (or indulgent or neglecting; Baumrind, 1966,1967; Calzada et al., 2012; Hibbard & Walton, 2014; Önder & Gülay, 2009; Power, 2013). However, in the early 1980's, Maccoby and Martin, defined a fourth style, *neglectful* (also referred to as *rejecting* or *uninvolved*), which, in the 1980's, Baumrind incorporated into her original three parenting styles typologies (Ebrahimi et al., 2017; Gafoor & Kurukkan, 2014; Huver et al., 2010; Jago et al., 2010; Kuppens & Ceulemans, 2018; Milevsky et al., 2007; Nancy, 1999; Pinquart, 2016; Rodríguez et al., 2009; Singh, 2017; Smetana, 2017; Timpano et al., 2010).

These four main parenting style typologies were derived using an orthogonal dimensional framework of responsiveness/warmth and demandingness/control, each of which correspond to different values, beliefs, and behaviors (Calzada et al., 2012; Ebrahimi et al., 2017; Hubbs-Tait et al., 2008; Milevsky et al., 2007; Power, 2013; Singh, 2017). The *responsiveness/warmth* dimension refers to the degree a parent shows love, care, and understanding towards a child

(Timpano et al., 2010). This dimension is better characterized by parents who offer structure in the child's life, yet are flexible and attuned to the child's needs (Önder & Gülay, 2009). Parents high on the responsiveness/warmth dimension promote self-actualization, self-control, individuation, and emotional regulation in their children (Gafoor & Kurukkan, 2014; Nancy, 1999). In contrast, the *demandingness/control* dimension refers to the establishment of rules and expectations to shape a child's behavior (Nancy, 1999; Timpano et al., 2010). This dimension is characteristic of parents who control their children's lives through disciplinary methods (e.g., punishment), but are less attuned to their cognitive and emotional needs (Gafoor & Kurukkan, 2014; Huver et al., 2010; Önder & Gülay, 2009). Additionally, this demandingness/control dimension is further divided into two types of control: behavioral and psychological.

Behavioral control is the process by which parents attempt to shape a child's behavior through rules, expectations, and disciplinary practice. Behavioral control is further subdivided into proactive and reactive behavioral control. *Proactive behavioral control* refers to parental behaviors that involve a clear and supportive communication style to shape a child's behavior. *Reactive behavioral control*, on the other hand, is the process by which parents punish their children to shape their behaviors when they fail to meet their expectations (Pinquart, 2016). It is important to note that a well-balanced amount of parental behavioral control can be adaptive and enhance a child's development (Smetana, 2017), but excessive (e.g., physical or emotional punishment) or insufficient (e.g., little to no supervision) behavioral control has been associated with deviant behaviors and depressive or anxious symptomatology in children (Nancy, 1999).

Psychological control is the process by which a person (e.g., parent) exerts affective and cognitive control on another person (e.g., child). This type of control is characterized by practices that include intrusive behaviors, shaming, and love withdrawal, and has been associated

with greater internalizing and externalizing problems (Nancy, 1999; Pinquart, 2016; Smetana, 2017) Psychological control, in comparison to balanced and supportive behavioral control, is usually associated with detrimental outcomes in children, such as antisocial practices, depressive symptomatology, interpersonal regression, and hindering of a child's individuation development (Kuppens & Ceulemans, 2018).

Some researchers conceptualize the four parenting styles through a third dimension, control versus autonomy granting (Rodríguez et al., 2009). *Control versus autonomy granting* refers to the process by which parents either exert absolute control over the child's behaviors, or whether they foster the child's independence and individuation processes while at the same time providing guidance (Pinquart, 2016). Most research, however, conceptualizes the four parenting styles using two of the three dimensions (responsiveness and demandingness; Rodríguez et al., 2009). Some researchers (e.g., Smetana, 2017) conceptualize the subtypes of the demandingness/control dimension as active or restrictive monitoring. The former involves a dialogue between parent and child, whilst the latter involves absolute control over a child's behavior.

Parenting Styles: Typologies

This section will introduce the four different parenting styles typologies (authoritative, authoritarian, permissive, and neglectful), and their influence on a child's cognitive, affective, behavioral, and psychological development.

Authoritative Parenting Style

Authoritative parenting (also known as *democratic* parenting) is characteristic of behaviors that display both high levels of responsiveness/warmth and demandingness/control (Ebrahimi et al., 2017; Hubbs-Tait et al., 2008; Milevsky et al., 2007; Pinquart, 2016; Power,

2013). Parents that fall under the authoritative parenting typology tend to be emotionally available, attuned to the child's affective and cognitive world, communicative, nurturing, supportive, approachable, loving, warm, and cooperative (Baumrind, 1966, 1967; Hibbard & Walton, 2014; Huver et al., 2010; Jago et al., 2010; Kuppens & Ceulemans, 2018; Nancy, 1999; Önder & Gülay, 2009; Singh, 2017; Timpano et al., 2010). In addition to being responsive and warm, authoritative parents also provide structure through rules and expectations in the child's life (Baumrind, 1966, 1967; Nancy, 1999; Singh, 2017). The purpose of these rules and expectations is to guide rather than punish or control a child's behavior (Baumrind, 1966; Singh, 2017; Timpano et al., 2010) as they are generally autonomy-granting, flexible, and rational (Baumrind, 1966, 1967; Hibbard & Walton, 2014; Jago et al., 2010; Nancy, 1999; Önder &; Gülay, 2009; Rodríguez et al., 2009; Singh, 2017; Timpano et al., 2010).

Authoritative practices have been generally associated with positive developmental characteristics (Huver et al., 2010; Power, 2013), such as higher emotional stability, self-esteem, self-control, academic achievement, social competence, self-reliance, self-efficacy, resilience, responsibility, independence, cooperativeness, assertiveness, and cognitive and behavioral functioning (Baumrind, 1967; Gong et al., 2014; Hibbard & Walton, 2014; Hubbs-Tait et al., 2008; Huver et al., 2010; Kuppens & Ceulemans, 2018; Milevsky et al., 2007; Nancy, 1999; Önder & Gülay, 2009; Power, 2013; Rodríguez et al., 2009; Singh, 2017). Moreover, children raised by authoritative parents also tend to display higher adaptive coping mechanisms (e.g., strategy or socioemotional coping style; Gong et al., 2014; Power, 2013) and exhibit a healthier psychosocial development (Huver et al., 2010; Kuppens & Ceulemans, 2018; Nancy, 1999). In terms of psychopathology, authoritative parenting is also associated with lower negative affect (e.g., depressive and somatic symptomatology), aggressive behaviors, deviant behaviors, and

substance abuse (Gong et al., 2014; Huver et al., 2010; Kuppens & Ceulemans, 2018; Milevsky et al., 2007; Nancy, 1999; Rodríguez et al., 2009; Singh, 2017).

Authoritarian Parenting Style

Authoritarian parenting (also known as *autocratic* parenting) involves behaviors that are high in demandingness/control and low in responsiveness/warmth (Ebrahimi et al., 2017; Hubbs-Tait et al., 2008; Huver et al., 2010; Milevsky et al., 2007; Nancy, 1999; Pinquart, 2016; Power, 2013; Rodríguez et al., 2009). Authoritarian parents can be further divided into authoritarian directive and authoritarian non-directive. Both styles are high in directiveness, yet the former is less intrusive than the latter (Nancy, 1999). Authoritarian parents tend to be less attuned to the child's cognitive and affective processes. For instance, authoritarian parents may be less nurturing, flexible, emotionally available, communicative, approachable, and open to change and dialogue (Baumrind, 1966, 1967; Kuppens & Ceulemans, 2018; Nancy, 1999; Önder & Gülay, 2009; Singh, 2017). Furthermore, authoritarian parents impose controlling, restrictive, rigid, and unrealistic rules and expectations on their children (Baumrind, 1966, 1967; Hibbard & Walton, 2014; Jago et al., 2010; Kuppens & Ceulemans, 2018; Önder & Gülay, 2009; Singh, 2017). Authoritarian parents expect their children to follow these rules and expectations without questioning them because they highly value obedience, status, tradition, and structure (Baumrind, 1966; Hibbard & Walton, 2014; Nancy, 1999; Singh, 2017; Timpano et al., 2010). If children fail to meet the rules or expectations imposed on them, their parents may resort to punitive methods (verbal or non-verbal) to correct a child's unwanted behavior (Baumrind, 1966; Önder & Gülay, 2009; Singh, 2017).

According to Baumrind, punishment is an ineffective practice to change a child's behavior. Instead, showing love, understanding, and offering an explanation and alternative

behaviors are better options to affect change in a child (Rodríguez et al., 2009). However, while some authoritarian parents exert absolute control on the entirety of their children's lives, some parents focus solely on particular areas that are important to them, leaving some space for affective, cognitive, and behavioral autonomy in certain areas the parents consider less important (Baumrind, 1966). Although both authoritarian and authoritative parents display high levels of control, only the former involves high levels of psychological control (Nancy, 1999). Research suggests that this parental overcontrol stems from the parent's own fear and anxieties about making mistakes. As a result, they control their child's life as a way to cope with their unresolved anxiety and fear (Affrunti & Woodruff-Borden, 2015).

Authoritarian parenting has been associated with negative developmental outcomes in children, such as lower self-confidence, self-reliance, self-esteem, stress tolerance, life satisfaction (Baumrind, 1967; Hibbard & Walton, 2014; Nancy, 1999; Önder & Gülay, 2009; Singh, 2017; Timpano et al., 2010). Furthermore, children raised in authoritarian households may also be less self-controlled; more dependent and withdraw; display more internalizing (older children) and externalizing (younger children) problems; act violently; show introverted traits; resort to less active coping strategies (e.g., avoidance); have less social skills; and have a higher incidence of drug/alcohol use (Baumrind, 1966, 1967; Hubbs-Tait et al., 2008; Kuppens & Ceulemans, 2018; Nancy, 1999; Önder & Gülay, 2009; Singh, 2017; Timpano et al., 2010). In terms of psychopathology, children raised by authoritarian parents tend to show higher psychopathology rates such as anxiety, depression, neuroticism, somaticism, personality problems, depersonalization, and a disorganized self-concept (Baumrind, 1966; Hibbard & Walton, 2014; Kuppens & Ceulemans, 2018; Milevsky et al., 2007; Nancy, 1999; Önder & Gülay, 2009; Power, 2013; Singh, 2017; Timpano et al., 2010).

Although the majority of research usually associates authoritarian practices with more negative developmental outcomes (Baumrind, 1966; Kuppens & Ceulemans, 2018), others associate this parenting style with fewer risk-taking tendencies and deviant behaviors (e.g., antisocial; Nancy, 1999; Singh, 2017). For instance, some literature suggests that authoritarianism positively affects a child's school performance (Nancy, 1999), while others oppose that view (Power, 2013; Timpano et al., 2010). Moreover, some literature suggests that children raised by authoritarian parents can do well in situations that require obedience in order to succeed at a particular task (Milevsky et al., 2007), or in instances in which a child might be in an environment that might induce them to drink (i.e., as a deterrent; Lamborn et al., 1991). However, this effect was non-existent when controlling for parental education and income (Smetana, 2017).

Permissive Parenting Style

Permissive parenting (also known as *indulgent* parenting) is characterized by high levels of responsiveness/warmth and low levels of demandingness/control (Ebrahimi et al., 2017; Hibbard & Walton, 2014; Jago et al., 2010; Milevsky et al., 2007; Nancy, 1999; Pinquart, 2016; Power, 2013; Rodríguez et al., 2009). Permissive parents are warm and responsive to their child's needs, but provide little to no structure in the child's life. In other words, they provide excessive behavioral freedom in the child's life, without structured supervision (Baumrind, 1966, 1967; Huver et al., 2010; Kuppens & Ceulemans, 2018). Moreover, they do not endorse any rules nor place expectations on the child. Permissive parents have difficulties setting boundaries as they generally yield to the child's wishes and desires without questioning them (Baumrind, 1966; Hibbard & Walton, 2014; Nancy, 1999; Önder & Gülay, 2009; Singh, 2017; Timpano et al., 2010). Parents that have adopted a permissive (or indulgent) parenting style are generally

non-confrontational, non-traditional, and act more like a friend rather than a parent to the child (Singh, 2017). Permissive parenting can be split into two categories: democratic and uninvolved. The former is characterized by more involvement in the child's life, while the latter involves little to no guidance (Nancy, 1999).

Permissive parenting has been associated with higher levels of aggressiveness, avoidance, dependence, and deviant behaviors (Baumrind, 1966, 1967; Hibbard & Walton, 2014; Nancy, 1999; Power, 2013; Singh, 2017) as well as lower self-control, self-esteem, academic achievement, and resilience (Baumrind, 1967; Hibbard & Walton, 2014; Milevsky et al., 2007; Nancy, 1999; Power, 2013; Singh, 2017; Timpano et al., 2010), and fewer adaptive social skills (Önder & Gülay, 2009). In terms of psychopathology rates, research suggests that there is an association between permissiveness and anxiety, depression, somatic complaints, and ineffective emotion regulation (Singh, 2017; Timpano et al., 2010). However, studies have yielded mixed results in this area (Kuppens & Ceulemans, 2018). Even though the majority of the literature associates permissiveness with negative developmental outcomes in children, there are researchers that have found that permissive parenting may result in higher levels of self-confidence (Önder & Gülay, 2009), contentment and sociability (Singh, 2017), self-esteem (Nancy, 1999), vitality and confidence (Timpano et al., 2010), independence and confidence (Milevsky et al., 2007), as well as lower depressive symptoms (Nancy, 1999).

Neglectful Parenting Style

A neglectful (also known as *uninvolved* or *rejecting* parenting) parenting style is characterized by low levels of responsiveness/warmth and demandingness/control. Parents that have adopted a neglectful style offer little to no warmth, affection, support, understanding, or involvement in the child's life. Additionally, they do not provide structure or guidance (through

rules and expectations) in the child's life (Ebrahimi et al., 2017; Huver et al., 2010; Jago et al., 2010; Milevsky et al., 2007; Pinquart, 2016; Rodríguez et al., 2009). Neglectful parents, as the name suggests, are disconnected from the child's life (Hibbard & Walton, 2014; Huver et al., 2010).

Neglectful parenting has been associated with negative developmental social, cognitive, affective, and behavioral outcomes in children (Nancy, 1999). For example, children raised in a neglectful home environment tend to have lower self-esteem, social responsibility, competence, and self-reliance; reduced emotional regulation capacities; be more withdrawn and fearful; weak academic performance; and a higher incidence of substance abuse and externalizing problems (e.g, antisocial behaviors; Hibbard & Walton, 2014; Kuppens & Ceulemans, 2018; Nancy, 1999; Singh, 2017). In terms of psychopathology rates, children raised by neglectful parents have a higher probability of experiencing anxiety (Kuppens & Ceulemans, 2018; Singh, 2017), depression (Hibbard & Walton, 2014; Kuppens & Ceulemans, 2018), somatic symptomatology (Kuppens & Ceulemans, 2018), and suicidal ideation (for women only; Hibbard & Walton, 2014). Research suggests that even though having two authoritarian parents is associated with negative outcomes in children, being raised in a neglectful environment has been associated with more pronounced maladaptive outcomes (Kuppens & Ceulemans, 2018).

As research suggests, parenting styles are a crucial factor in the cognitive, affective, behavioral, and psychological development of a child, as early parent-child interactions shape the child's internal world, which they use as a map to navigate the world (Calzada et al., 2012; Ebrahimi et al., 2017; Jago et al., 2010; Kuppens & Ceulemans, 2018; Sebire et al., 2016; Singh, 2017). Parenting styles influence how children adapt and respond to their environment and their self-esteem, physical health, and academic performance (Önder & Gülay, 2009; Pinquart, 2016;

Singh, 2017). For instance, a study by Lamborn et al. (1991) on the relationship between parenting styles and adolescent outcomes (psychosocial development, academic achievement, internalized distress, and problematic behavior) showed that adolescents that rated parents as *authoritative* scored higher in academic competence and psychosocial development scales, and lower on the problem behavior scales. However, when assessing for internalizing symptoms, adolescents whose parents were authoritative did not differ significantly from adolescents who rated their parents as authoritarian or indulgent. Meanwhile, adolescents who rated their parents as *neglectful* scored lower on all the outcome variables, especially compared to adolescents whose parents displayed an authoritative parenting style. However, in terms of self-perception, there was no significant difference between adolescents raised by either authoritarian or neglectful parents. Adolescents whose parents were indulgent scored higher on the social competence scale compared to adolescents raised by authoritarian parents, but there were no significant differences between adolescents raised by indulgent and neglectful parents in measures of problem behaviors and school performance. Overall, the largest effect sizes in the study between parenting styles and the outcome variables were between adolescents raised by authoritative and neglectful parents.

Parenting Styles and Perfectionism

The relationship between parenting styles and *perfectionism* warrants further exploration given that in some OC symptom categories (e.g., symmetry obsessions/ordering compulsions) can be driven by excessive perfectionistic standards. Research suggests that perfectionism is correlated with different parenting styles (Gong et al., 2014; Hibbard & Walton, 2014) and psychopathology (e.g., alcoholism; anorexia nervosa, anxiety, depression, suicide, interpersonal and intrapersonal functioning, and personality disorders; Flett & Hewitt, 2006; Flett et al., 1995;

Hewitt & Flett, 1991). Perfectionism consists of (1) inflexible adherence to unrealistic expectations about the self, (2) over-reactivity to mistakes, and (3) hypervigilance on self-behavior (Gong et al., 2014). The mechanisms by which perfectionism triggers negative developmental outcomes, which are contributing factors to the development of psychopathology, are due to 1) unrealistic high standards imposed oneself, 2) strict evaluations of the self, 3) inflated sense of failure, and 4) all-or-nothing cognitive patterns (i.e., either success or failure), which become part of an individual's schematic structure (Hewitt & Flett, 1991). These mechanisms, which develop into cognitive schemas (mental maps that help us navigate the world) tend to be rigid rather than flexible, which might contribute to the development of pathological patterns via automatic thoughts (Flett & Hewitt, 2006).

According to Hewitt and Flett (1991), there are three types of perfectionism typologies: self-oriented, other-oriented, and socially-prescribed perfectionism. The etiological difference between these three perfectionism types is not the behavior itself, but to whom such behavior is directed or attributed to. Self-oriented perfectionism is characteristic of people that set high standards on the self (sometimes unrealistic), are critical of their performance, and who are motivated to succeed and avoid failure. This type of perfectionism has been associated with anorexia nervosa, anxiety, depression (due to the discrepancy between ideal and actual self), and low self-regard. Other-oriented perfectionism, on the other hand, is characteristic of individuals that direct their perfectionist behaviors outwards (e.g., having high expectations or being critical of others' performance). This type of perfectionism has been associated with negative outcomes (e.g., lack of trust, loneliness, interpersonal problems) and positive outcomes (e.g., leadership, motivating others to perform better). Socially-prescribed perfectionism, as the name implies, is the belief that others are constantly placing unrealistic expectations on you, being critical of your

actions, and expecting you to be perfect (which is similar to Baumrind's description of an *authoritarian* parenting style). This type of perfectionism has been associated with anger, anxiety, depression, fear of negative evaluations, and constant approval-seeking, which stems from a discrepancy between the real self and what others expect us to be (Hewitt & Flett, 1991; Miller et al., 2012).

A study by Gong et al. (2014) found that an authoritative style was associated with higher personal standards, less self-doubt, and lower fear about making mistakes, which aligns with some of the core features of adaptive perfectionism. Nonetheless, due to the relationship between personal standards, self-doubt and fear of making mistakes, there is still the possibility that an individual with high standards might resort to passive coping strategies (i.e., avoidance). In contrast, authoritarian or indifferent parenting predicts self-oriented and socially-prescribed perfectionism, which are more often related to excessive doubts and preoccupation about making mistakes (Miller et al., 2012). In a study by Flett et al. (1995), the authors found that the relationship between parenting style and socially-prescribed perfectionism is mediated by gender, as only boys who described their parents as authoritarian scored high on the socially-prescribed perfectionism measure compared to girls (positively correlated to father's permissiveness). Others have associated authoritarian parenting with both adaptive (self-assertiveness and flexibility) and maladaptive (self-doubt and preoccupation about making mistakes) perfectionism (Gong et al., 2014). The association between permissive parenting style and perfectionism is mixed, regardless of gender. On the one hand, it may be the case that lack of structure and high responsiveness may cause children to challenge themselves. On the other hand, however, this same level of low demandingness may prevent children from facing

challenging tasks (Hibbard & Walton, 2014). Neglectful parenting, controlling for gender, is associated with more maladaptive rather than adaptive perfectionism (Hibbard &Walton, 2014).

Parenting styles and OCD

Research suggests that parental rearing behaviors may contribute to the development of distorted (or maladaptive) beliefs about: 1) responsibility, 2) threat estimation, 3) perfectionism, and 4) control or tolerance for ambiguity, which are features commonly exhibited by people diagnosed with OCD (Alonso et al., 2004). Maladaptive beliefs and appraisals of both internal and external stimuli (particularly distressing stimuli), which are influenced by early-life experiences, may lead to the development of OCD (Paul et al., 2016; Tamir, 2016). These maladaptive beliefs and appraisals can be the result of unhealthy internal working models (IWMs). Internal working models include cognitive and affective schemas that influence how an individual perceives themselves, others, and the world around them, and also their expectations, emotions, defenses, and relational behavior (Doron & Kyrios, 2005; Nanu & Nijloveanu, 2015). Another way to think of IWMs is as a psychological map—they help us navigate the world. If the map is healthy (adaptive IWM), the chances of getting lost are lower than if the map is broken (maladaptive IWM).

Research suggests that while adaptive IWMs tend to be associated with greater self-efficacy, coping strategies, social skills, and emotional regulation mechanisms, maladaptive IWMs are usually associated with higher rates of psychopathology (e.g., depression and low self-esteem; Doron & Kyrios, 2005). In fact, advocates for early-life experiences as potential precursors for the development of OC symptomatology suggest that not having a secure attachment with one's parents, which is usually correlated with authoritative parenting (Nanu & Nijloveanu, 2015) can lead to feeling a sense of loss of control. This need to control one's

environment, as an older child, adolescent, or adult, is a plausible explanation for the development of OC symptomatology as an individual 'should' or 'can' control unwanted thoughts in order to make the individual's world a safer place—a place without those unacceptable thoughts (Doron & Kyrios, 2005; Timpano et al., 2010). Furthermore, according to Jacob et al. (2012), people diagnosed with OCD may also employ poor and maladaptive emotion-regulation strategies when attempting to cope with their obsessions and compulsions (a form of control as well). These emotion-regulation strategies can be influenced by the relationship between a child and their primary giver (Nanu & Nijloveanu, 2015).

Several research studies on the relationship between parenting styles and the development of OCD tend to show that, on average, people with an OCD diagnosis report having being raised by parents who were less caring and warm, and more controlling, critical, demanding, overprotective, perfectionist, rejecting, and likely to employ guilt induction (Alonso et al., 2004; Black et al., 2003; Haciomeroglu & Karanci, 2014; Krebs et al., 2019; Rosa-Alcázar et al., 2019), which are characteristics frequently associated with an authoritarian parenting style.

For instance, a study by Yoshida et al. (2005) on the relationship between parental rearing styles, obsessive-compulsive disorder, and depression with obsessive-compulsive traits, showed that participants in the OCD group had higher paternal protection scores and lower paternal care scores compared to the control group. With regards to maternal scores, there was only a significant difference in the maternal protection score between the OCD and control group. Therefore, the results of this study suggest that excessive parental control and interference—especially paternal—are linked to the development of OCD and depression with OC symptomatology.

A different study by Timpano et al. (2010) on the relationship between parenting styles and OC symptoms revealed that, overall, authoritarian parental practices were positively associated with OC symptomatology, while authoritative practices were negatively associated with OC symptomatology. Nonetheless, OC symptomatology was only associated with authoritarian parenting after controlling for the remaining two parenting styles (authoritative and permissive), general mood, and anxiety symptoms.

A qualitative study by Griffiths et al. (2011) aimed at examining the subjective lived experiences of five young people living with a parent diagnosed with OCD. Participants reported experiencing issues with boundaries, over-protectiveness, control, and restriction, and they felt like their parents intruded in their personal space. Although the authors of this study did not have a parenting style lens through which they conducted their interviews, the responses that the participants provided align with the widely accepted description of an authoritarian parenting style.

Haciomeroglu and Karanci's (2013) study examined the vulnerability factors of OCS in a non-clinical sample, and they found that maternal overprotection was associated with OCS after controlling for depression and anxiety. Furthermore, the correlation between maternal overprotection and OC symptomatology was mediated by responsibility beliefs. In other words, if a child perceives their mother as overprotective, that can increase the child's responsibility beliefs and therefore lead to higher levels of OCS.

Rosa-Alcázar et al. (2019) investigated the association between parental rearing styles and OC symptomatology in adolescents. Results from this study showed that, overall, parental warmth was negatively correlated to OC symptomatology, while paternal control (in particular psychological), manipulation and guilt induction were positively correlated with OC

symptomatology in adolescents. Furthermore, this study showed that the variables that contribute to the expression of OC symptomatology differ between sex. For instance, it appears that emotional regulation and frustration tolerance was a predictor for girls' OCS, while paternal control/manipulation was for boys' OCS.

A possible explanation for the relationship between authoritarian parenting and OC symptomatology is that when the child is under continual scrutiny to follow rules, meet unrealistic expectations, and is not granted autonomy, they might develop a hypervigilant state in order to cope with a threatening and out-of-control world. If we then pair this hypervigilance towards perceived 'threatening' stimuli, maladaptive cognitive schemas (or IWMs), and different organic (i.e., genes) and environmental stressors, the chances of developing clinical OC symptomatology increases. Furthermore, because an overprotective parenting style models fearfulness, caution, and avoidance behaviors, it may contribute to a child's sense of incompetence, which, in turn, can reinforce maladaptive threat responses. With this in mind, it may be that continual exposure to overprotection, control, and criticism may be a contributing factor to the development of OCD (Haciomeroglu & Karanci, 2014).

While the aforementioned research studies suggest that there is a relationship between how someone was parented (especially an authoritarian parenting style) and the development of OCD, other studies have found that not all the characteristics associated with authoritarianism (e.g., overprotection and parental punitive discipline) are also associated with OC symptomatology.

For example, a study by Alonso et al. (2004) on the relationship between perceived parental rearing style and OCD showed that participants with OCD reported their fathers as more rejecting in comparison to the control group. Although participants with OCD also indicated that

their fathers were less warm compared to the control group, the difference was not statistically significant. In terms of overprotection, there was no statistically significant difference between the OCD and control group. Therefore, the results of this study did not support the association between parental overprotection and OCD.

Additionally, a study by Wilcox et al. (2008) investigating the association between parenting style and OCD found that 1) parental overprotection is not associated with OCD when at least one parent had OCD, and 2) maternal overprotection is associated with OCD only when participants did not report having a parent with OCD.

Last, Krebs et al. (2019) conducted a longitudinal study to investigate the effects of parental punitive discipline and stressful life events on OCS during adolescence at the phenotypic level with and without the effects of familial confounds. The authors of this study found that 1) only stressful life events—and not parental punitive discipline—significantly predicted OCD in adolescence longitudinally, and 2) neither maternal nor paternal punitive discipline were significantly associated with OCS, either cross-sectionally or longitudinally, when familial confounds (MZ twin difference scores) were accounted for in the regression analyses.

Taken together, these studies suggest that although there is a correlation between parenting styles (in particular authoritarian) and the development of OCD, there are other factors (e.g., genetics or pre-existing psychiatric conditions) that can mediate this relationship. Genetically, it may be the case that an individual is already predisposed to develop OCD when a significant stressor ‘activates’ the OC symptomatology (i.e., the diathesis-stress model). In other words, a parenting style (e.g., authoritarian) might be the trigger that leads to OCD rather than a direct link to it (Wilcox et al., 2008). In terms of pre-existing psychiatric conditions, a child with

pre-existing mental health conditions (e.g., anxiety or depression) may elicit behaviors (e.g., the need to be overprotected) that are then reinforced by their parents. This overprotective parental behavior—frequently associated with an authoritarian style—may become a parents' *modus operandi*. In other words, a parent may adopt authoritarian parenting qualities as a response to their child's psychiatric symptomatology, rather than because they are an authoritarian parent by nature (Alonso et al., 2004; Wilcox et al., 2008).

Hypotheses for the Present Study

In line with the parenting literature supporting a relationship between parenting styles and an individual's development, the researcher postulated that:

1. Given that authoritative parenting has been associated with higher emotional stability (Önder & Gülay, 2009; Power, 2013; Singh, 2017), more adaptive perfectionism (Gong et al., 2014) and lower psychopathology rates (Rodríguez et al., 2009), the researcher hypothesized that individuals raised by authoritative parents would show lower OC symptom severity compared to individuals raised by authoritarian, or permissive parents.
2. Given that authoritarian parenting has been associated with lower stress tolerance (Hibbard & Walton, 2014), higher maladaptive perfectionism (Miller et al., 2012), higher incidences of psychopathology, and higher use of psychological control (Baumrind, 1966; Hibbard & Walton, 2014; Kuppens & Ceulemans, 2018; Önder & Gülay, 2009; Singh, 2017; Timpano et al., 2010), the researcher hypothesized that individuals raised by authoritarian parents would display higher OC symptom severity compared to authoritative and permissive parenting.
3. Given that permissive parenting has been associated with maladaptive perfectionism (Hibbard & Walton, 2014), lower emotion regulation capabilities (Timpano et al., 2010;

Singh, 2017), and psychopathology (Kuppens & Ceulemans, 2018), the researcher hypothesized that individuals raised by permissive parents would show lower OC symptom severity compared to individuals raised by authoritarian parents, but higher OC symptom severity compared to individuals raised by authoritative parents.

In other words:

[Authoritative OC Severity < Permissive OC Severity < Authoritarian OC Severity]

The null hypothesis was that there would be no difference between the three different parenting styles (authoritative, authoritarian, and permissive) and an individual's OC symptom severity score. In other words:

[Authoritative OC Severity = Permissive OC Severity = Authoritarian OC Severity]

CHAPTER III: METHOD

Participants

Participants were recruited from June 2020 to April 2021 via two different methods: social media and Antioch University's network. Via social media, the researcher used a subReddit space (https://www.reddit.com/r/OCD/) specially dedicated to OCD-related topics and the dissemination of resources and information helpful to individuals struggling with OCD. Prior to using this subreddit site to recruit participants, the researcher contacted the OCD subReddit moderators to request permission to utilize this space to recruit participants for the study. After the researcher was granted permission, the researcher posted a recruitment message that included a link to the survey (please refer to "Appendix A: Recruitment Message"). Via Antioch University's network, the researcher contacted Ms. Holland (sholland@antioch.edu), Clinical Psychology Doctoral Program Senior Program Coordinator at Antioch University Santa Barbara, to request her assistance in distributing the study's survey link. The same recruitment message and survey link that the researcher used for Reddit were used for this participant recruitment procedure.

As an incentive for participants to take this survey, the researcher awarded two Amazon gift cards (one for USD$100 and one for USD$50). Two participants were randomly selected in the drawing process: one was randomly selected to win the USD$100 Amazon gift card, and the other, the USD$50 gift card. The researcher purchased the physical Amazon gift cards from Target and sent the respective code to each of the two winners. The researcher kept both the physical gift cards and the receipt as reference and proof of purchase. The drawing process to select the two winner participants was conducted as follows:

1. The researcher exported the email addresses from SurveyMonkey to Excel.

2. The researcher used the Excel random number generation function to randomly select two email addresses from the list based on their row number. The formula used for the process was as follows:

   =RANDBETWEEN(1,number of emails provided)

3. The first email address selected from the aforementioned process received the USD$100 Amazon gift card and the second email selected received the USD$50 gift card.
4. The researcher deleted the survey data, including all email addresses, from SurveyMonkey.

The researcher used the same email address provided in the informed consent form (mnavarro@antich.edu) to send the gift card codes. When the researcher first contacted the two randomly selected gift card winners, the researcher set a response deadline to receive the Amazon gift card code. This deadline was set in order to make sure that the recipients replied within a specific time frame in order to: 1) prevent unnecessary response delays, and 2) give other participants a chance to win a gift card should someone not respond to the initial email within the allotted time frame. (Please refer to "Appendix B: Email Templates" for a sample of the email templates used to contact the gift card winners.)

In order to protect the participants' identity, the researcher securely deleted the Excel file containing the email address list as soon as the aforementioned process was completed. The conversations interchanged via email with the winning participants were kept in a separate folder in the researcher's email account. These emails will be securely deleted alongside the other data collected during the survey after the seven-year period (unless otherwise advised). Nonetheless, in order to minimize any breaches of these email addresses, the researcher deleted these addresses from the *Frequently contacted* and *other contacts* options by following the next steps:

1. Under the Google Account option located at the upper-right corner, select *Manage your Google Account*.
2. Under the *Google Account* page, select *People & sharing* from the list on the left side of the page.
3. Under the *People & sharing* page, select the option *contacts*.
4. Remove winner participants' email addresses from the *Frequently contacted* and *other contacts* options located on the left side of the page.

Recruitment Material

The recruitment message was designed using a free account on Canva (www.canva.com), an online graphic design platform. The researcher selected and populated a pre-designed Instagram post template (1080 x 1080 px) by following the next steps:

- Canva home page —> templates —> social media —> Instagram posts —> coronavirus tab —> 13th predesigned post —> researcher then populated predesigned template with study recruitment message and survey link

After the recruitment message was designed, the researcher downloaded a PDF copy to disseminate and recruit participants (please refer to "Appendix A: Recruitment Message").

Measures

Parental Authority Questionnaire (PAQ; Buri, 1991)

The PAQ is a 30-item self-assessment tool intended to capture Baumrind's parenting typologies (authoritative, authoritarian, and permissive). The PAQ was normed using two different groups: a high school group consisting of 108 juniors and seniors (M = 17.4 years) from three different high schools, and a college group consisting of 171 students (M = 18.8 years) enrolled in an introductory psychology course. All participants from the normative sample (N =

279) had intact families (i.e., both a mother and father). The final version of the PAQ includes two forms (one form for maternal parenting behaviors and one for paternal parenting behaviors) with a total of 30 items each: 10 items measure authoritativeness; 10 items measure authoritativeness; and 10 items measure permissiveness. The 30 items are measured on a five-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5) yielding a range of scores between 10 and 50: higher scores depict a greater association with a particular parenting typology (Buri, 1991).

Psychometrically, the PAQ has yielded strong reliability and validity results. *Reliability* refers to a test's consistency or stability across different conditions (Drost, 2011). One of the most widely-used methods to measure reliability is Cronbach's alpha. *Cronbach's alpha (α)* is a reliability coefficient that ranges between 0 and 1. Higher values mean that a test is more reliable (Cronbach, 1951). Research suggests that an alpha value greater than or equal to 0.70 signifies that a test is reliable (Trobia, 2011). One approach to measure a test's reliability is through test-retest analyses. *Test-retest reliability* examines whether or not the results of a test remain consistent if administered at two different points in time (Field, 2013). Test-retest analysis yielded the following reliability coefficients for the mother's PAQ version: .81 for permissiveness; .86 for authoritarianism; .78 for authoritativeness. For the father's PAQ version, the reliability coefficients were: .77 for permissiveness; .85 for authoritarianism; and .92 for authoritativeness. Another measure of reliability is internal consistency. *Internal consistency* refers to how well the questions of a particular test measure the phenomena they are supposed to measure (Drost, 2011). Cronbach alphas (α; ranging from 0 to 1) are also used to measure internal consistency. Higher α values denote that the items of a test are measuring the phenomena being studied. Internal consistency analysis yielded the following Cronbach's alpha

values: mother's permissiveness (.75); mother's authoritarianism (.85); mother's authoritativeness (.82); father' permissiveness (.74); father's authoritarianism (.87); father's authoritativeness (.85).

Validity refers to whether or not a particular test is measuring what it is supposed to measure (Drost, 2011). Discriminant validity analysis (the degree of divergence between two different constructs; Drost, 2011) resulted in a negative relationship between mother's authoritarianism and permissiveness (r = -.38, p = < .0005) as well as mother's authoritativeness (r = -.50, p = < .0005). Furthermore, mother's permissiveness was not significantly related to mother's authoritativeness (r = .07, p = > .10). In terms of the father's parenting behaviors, father's authoritarianism was negatively related to father's permissiveness (r = -.50, p = < .0005) as well as authoritativeness (r = -.52, p = < .0005). Moreover, father's permissiveness was not significantly related to father's authoritativeness (r = -.12, p = > 10). Another approach to measuring validity is that of examining how well the outcome of a particular test predicts the outcome of a different test (i.e., *criterion-related validity*; Drost, 2011), through careful examination of their correlations. *Bivariate correlations* examine the relationship between two variables (Field, 2013). For parametric tests, which are tests that adhere to specific assumptions (please refer to Field (2013) for a detailed description of these assumptions), the most commonly used correlation coefficient is the *Pearson (r) coefficient*, which ranges between -1 and +1. Research delineates the following criteria for interpreting correlation coefficients: 1) ± 0.1 to ± 0.3 (weak correlation), 2) ± 0.4 to ± 0.6 (moderate correlation), 3) ± 0.7 to ± 0.9 (strong correlation), and 4) ± 1.0 (perfect correlation; Akoglu, 2018). Criterion-related analyses (correlations between the PAQ and the Parental Nurturance Scale [PNS]) revealed the following: authoritativeness for both mothers and fathers were highly correlated with parental nurturance,

respectively (r = .56, p = < .0005; r = .68, p = < .0005); authoritarianism was negatively related to parental nurturance for both mothers (r = -.36, p = < .0005) and fathers (r = -.53, p = < .0005); permissiveness was not related to either maternal (r = .04, p = > .10) or paternal (r = .13, p = > .10) nurturance. Furthermore, bivariate correlations between the PAQ and the Marlowe-Crowne Social Desirability Scale [MCSDS]) yielded the following values for the mother's parenting behaviors: permissiveness (r = .23); authoritarianism (r = -.14); and authoritativeness (r = .10). For the fathers' parenting behaviors, the results were: permissiveness (r = .10); authoritarianism (r = .01); and authoritativeness (r = .05). All of these values were non-significant, therefore the PAQ does not seem to be influenced by social desirability factors. The aforementioned results suggest that, overall, the PAQ is a reliable and valid instrument to measure parenting styles. Even though the PAQ was normed using a sample of older adolescents and young adults, the researcher decided to use this parenting style assessment because he was unable to find 1) a psychometrically valid and reliable self-report measure assessing how an individual was raised at their home (i.e., parenting style), and 2) an instrument with a wider age range for their norming process.

Florida Obsessive-Compulsive Inventory (FOCI; Storch et al., 2007)

The FOCI is a 25-question self-report assessment that measures obsessive-compulsive symptomatology. The FOCI consists of two scales: the Symptom Checklist and Symptom Severity Scales. The former scale measures the presence or absence of 20 common obsessions and compulsions, which were derived from the original Yale-Brown Obsessive-Compulsive Scale Symptom Checklist (Y-BOCS). The Symptom Checklist Scale is measured on a *yes* and *no* format yielding a score between 0 and 20, with higher scores representing greater obsessive-compulsive symptomatology. The latter scale measures symptom severity based on five different

criteria: 1) time occupied; 2) interference; 3) distress; 4) resistance; 5) degree of control. The Symptom Severity Scale is measured on a five-point Likert scale of *none* (0) to *extreme* (4) yielding a score between 0 and 25, with higher scores representing greater symptom severity (Aldea et al., 2009a, 2009b; Storch et al., 2007).

In a study by Storch et al. (2007) on the psychometric properties of the FOCI on a clinical population, the authors administered the FOCI to 113 participants (53 men and 60 females) ranging from ages 18 to 62 years (M = 33.8, SD = 11.5). Seventy-four participants were part of a clinical medication trial, and 39 were attending an outpatient clinic for pharmacological and/or cognitive/behavioral treatment for OCD. The ethnic distribution of the sample was: 91.2% Caucasian, 2.7% African-American, 3.5% Hispanic-American, 1.8% Asian-American, and 0.9% as 'Other.' Inclusion criteria required that participants had a current diagnosis of OCD using the *Diagnostic and Statistical Manual of Mental Disorders*, *third edition, revised* (*DSM-3-R*) or *fourth edition* (*DSM-4*) for at least one year. Participants were excluded from the study if they if they also had one of the following diagnoses: 1) schizophrenia or other psychotic disorders; 2) bipolar disorder; 3) suicidal ideation; 4) alcohol or substance abuse (in the past six months); and 5) simultaneous use of psychotropic medication. The measures used to evaluate the FOCI's psychometric properties included the: 1) Yale-Brown Obsessive-Compulsive Scale (Y-BOCS), 2) Beck Depression Inventory (BDI), 3) Hamilton Depression Rating Scale (HDRS), and 4) Clinical Global Impression Scale (CGIS). A different method to measuring a test's internal consistency is the Kuder-Richardson 20 (KR-20) formula. The KR-20 is a reliability coefficient that ranges from 0 to 1, and is used when the test questions are measured on a binary scale, which is a scale that has only two answer options (e.g., 'yes' or 'no'). Higher values mean that a test is more reliable (Kuder & Richardson, 1937). Internal consistency measures using the KR-20

formula yielded a value of .83 for the Symptom Checklist, and a Cronbach's alpha of .89 for the Severity Scale. The Symptom Checklist was moderately related to the Severity Scale (r = .38, p = < .001). Another approach to measuring a test's validity is to examine the degree of similarity between two different tests (i.e., *convergent validity*; Drust, 2011). Results from concurrent validity analyses revealed moderate to strong correlation coefficients between the FOCI Severity Scale and measures of OCD (r = .78, p = < .001 for Y-BOCS Total Score), impairment (r = .43, p = < .001 for the CGIS), and depressive symptomatology (r = .63, p = < .001 for the BDI). In terms of the FOCI Symptom Checklist, the correlation coefficients with measures of OCD (r = .40, p = < .001), impairment (r = .29, p = < .001), and depressive symptomatology (r = .35, p = < .001) were moderate (Storch et al., 2007).

In a different study by Aldea et al. (2009a) on the psychometric properties of the FOCI on a clinical population, 90 participants (42 women and 48 men) who attended a clinic that specialized in cognitive-behavioral therapy (CBT) for OCD participated in the study. All participants had an OCD diagnosis based on the *Diagnostic and Statistical Manual of Mental Disorders, fourth edition, text revised* (*DSM-4-TR*). The ethnic composition of this sample was as follows: 95.6% Caucasian, 2.2% African American, 1.1% Asian American, and 1.1% Hispanic American. The measurements used for this study were 1) The Yale-Brown Obsessive Compulsive Scale (Y-BOCS), 2) The Obsessive-Compulsive Inventory-Revised (OCI-R), 3) The Beck Depression Inventory-Second Edition (BDI-II), and 4) The State-Trait Anxiety Inventory (STAI), which measures two factors: anxiety (STAI-A) and depression (STAI-D). In terms of reliability, internal consistency analyses revealed that the KR-20 formula value for the FOCI Symptom Checklist was .78, and the Cronbach's alpha for the FOCI Symptom Scale was .86. The FOCI Symptom Checklist and Symptom Severity were not significantly related. In terms of

validity, correlation analyses yielded different correlation values at baseline and post-treatment between the FOCI and the study measurements. At baseline, correlation coefficients between the FOCI Symptom Checklist and other measurements were: 1) Y-BOCS Total (r = .18, *ns*), 2) OCI-R Total (r = .76, p = < .01), 3) BDI-II (r = .08, *ns*), and 4) STAI (r = .17, *ns*). At post-treatment, the correlation values were: 1) Y-BOCS Total (r = .44, p = < .01), 2) OCI-R Total (r = .66, p = < .01), 3) BDI-II (r = .29, p = < .05), and 4) STAI (r = .46, p = < .001). For the FOCI Symptom Severity, the correlation values at baseline with other measurements were as follows: 1) Y-BOCS Total (r = .61, p = < .01), 2) OCI-R Total (r = .36, p = < .01), 3) BDI-II (r = .38, p = < .01), and 4) STAI (r = .46, p = < .001). At post-treatment, the correlation values were: 1) Y-BOCS Total (r = .82, p = < .01), 2) OCI-R Total (r = .55, p = < .01), 3) BDI-II (r = .73, p = < .01), and 4) STAI (r = .78, p = < .01).

A different study by Aldea et al. (2009b) on the psychometric properties of the FOCI on a non-clinical sample yielded strong reliability and validity results. The sample for this study consisted of 253 students from southeastern university in the U.S. Out of the 253 participants, 159 identified as females, 84 as males, and 10 did not identify with a particular gender. Furthermore, the ethnic composition of the sample was as follows: 63.2% Caucasian, 9.9% African-American, 8.3% Hispanic, 5.9% Asian, and 3.6% as Other. The measurements for this study included the following: 1) Beck Depression Inventory-Second Edition (BDI-II), 2) Obsessive-Compulsive Inventory-Revised (OCI-R), and 3) State-Trait Anxiety Inventory (STAI), which measures two factors: anxiety (STAI-A) and depression (STAI-D). In terms of reliability, internal consistency measures yielded a Cronbach's alpha value of .83 for both the FOCI Symptom Checklist and Severity Scale. The correlation value for the Symptom Checklist and Severity Scale was (r = .65, p = < .001). In terms of validity, correlation analyses yielded

moderate to strong correlation values for the FOCI Symptom Checklist and Severity Scale and the other measurements used in the study. The correlation values for the FOCI Symptom Checklist were: OCI-R ($r = .73$, $p = < .001$), BDI-II ($r = .48$, $p = < .001$), STAI-A ($r = .55$, $p = < .001$), and STAI-D ($r = .41$, $p = < .001$). The correlation values for the FOCI Severity Scale were: OCI-R ($r = .58$, $p = < .001$), BDI-II ($r = .53$, $p = < .001$), STAI-A ($r = .57$, $p = < .001$), and STAI-D ($r = .49$, $p = < .001$).

These studies show that, overall, the FOCI is a reliable and valid self-assessment screening tool for obsessive-compulsive symptomatology in both clinical and non-clinical populations.

Survey Design

The researcher used SurveyMonkey (https://www.surveymonkey.com) to develop, distribute, and collect data for this study. The researcher utilized a paid standard monthly student plan. The survey link was online from June 2020 to April 2021. The survey consisted of a total of 93 questions, which included:

- Seven demographic questions on age, ethnicity, gender, genetic predisposition, and use of psychotropic medication. (Please refer to "Appendix C: Demographic Questions.")
- Sixty questions from the Parental Authority Questionnaire (PAQ).
- Twenty-six questions from the Florida Obsessive-Compulsive Questionnaire (FOCI).

Due to copyright protection regulations on both the PAQ and FOCI, the researcher of this study included neither sample questions nor the assessment itself. For more information regarding the use, dissemination, and publication of these two psychological instruments, please contact:

- Dr. Storch, leading author of the FOCI, at Eric.Storch@bcm.edu

- Taylor & Francis, copyright holders of the PAQ, at USJournalPermissions@taylorandfrancis.com

Procedure

Participants were provided with a short description of the study (i.e., recruitment message) and an electronic web link that directed them to an online survey. Upon receiving and accessing the link, participants were directed to a section that provided them with an overview of the study (labeled *informed consent*), which contained all the necessary information that adheres to both Antioch University IRB and APA standards for conducting research. Participants were required to select a box that read "*I have read and understood the informed consent form and I consent to participate in the study*" before they could proceed with the survey. If participants agreed to participate in the study, they were then directed to the survey. (Please refer to "Appendix D: Informed Consent" for a copy of the informed consent used in this study.)

At the beginning of the survey, participants were prompted to answer several questions about their age, gender, and ethnicity (labeled *demographics*). After the demographics section, participants were directed to a section labeled *background information*, which consisted of two questions inquiring about whether or not a family member has OCD and whether or not the participant was taking psychotropic medications. Following the background information section, participants were asked to complete a set of three questionnaires. The first questionnaire—the Parental Authority Questionnaire (PAQ)—measures three different parental typologies (authoritative, authoritarian, and permissive). Each of these forms consists of 30 questions on a five-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5). Prior to completing PAQ, participants were asked whether or not they had a mother or father while growing up. If participants were raised by both a mother and a father, they were expected to

complete both forms of the PAQ (one measuring maternal parenting behaviors, and the other, paternal). If, however, participants were raised by only one parent, they were directed to the appropriate PAQ form (either mother's or father's form). If participants were not raised by either parent, they were directed to the Florida Obsessive-Compulsive Inventory (FOCI). After completing the PAQ, participants completed the FOCI, which is a 25-item self-report inventory measuring the presence and severity of obsessive-compulsive symptomatology. The FOCI *symptom checklist* consists of 20 questions measured on a *yes* and *no* question format. The FOCI *severity scale* consists of five questions measured on a five-point Likert scale ranging from *none* (0) to *extreme* (4). If participants answered *yes* to more than one question on the FOCI symptom checklist, they were directed to the FOCI severity scale and then to the last two sections of the survey. If, however, participants did not answer *yes* to more than one question in the FOCI symptom checklist, they were then directed to the last two sections of the survey.

The *resource* section contained a list of different numbers and online resources that participants could refer to should they need to process any thoughts or feelings that arose during or after the survey (Please refer to "Appendix E: Participant Resources"). In order to protect their privacy, participants were instructed to either write down or take a screenshot of the information presented in the last section of the survey for them to use—if needed—without needing to contact the researcher via e-mail to request these resources. The last section of the survey, labeled *end of survey*, provided participants with the primary investigator's contact information as well as the researcher's dissertation chair's contact information in case the participants had further questions about the survey. At the end of the survey, participants were given the option to provide their email address to participate in the drawing of two Amazon gift cards. For more

information on the random drawing process, please refer back to the sub-section labeled *participants* under the section *methods*.

Research Design

Standard multiple regression analyses were conducted to analyze and interpret the data of this research study. The researcher used the *forced entry* (or *Enter* method in SPSS) to conduct the regression analyses. Standard multiple regression is a statistical method that tests for the effect of all the independent (predictor) variables at once, as well as for the effect of each of the independent variables on the dependent (outcome) variable (Pearson, 2012). A *predictor variable* (or *independent variable*) is a variable that is hypothesized to predict another variable. An *outcome variable* (or *dependent variable*) is a variable that is hypothesized to be predicted and changed by a predictor variable(s) (Pole & Bondy, 2012). For the purpose of this study, standard multiple regression analyses will be used to explore the relationship (or lack thereof) between different parenting styles (authoritative, authoritarian, and permissive) and OC symptom severity. The multiple regression equation is:

$$Y= \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} \ldots \beta_n X_{ni} + \varepsilon_i$$

where:

- Y denotes the outcome.
- β_0 denotes the intercept (value of Y when $X = 0$).
- β_1 - β_n denote the slope coefficients (the difference in Y per unit difference in X).
- X_1- X_n denote the predictors.
- ε_i denotes the error associated with the regression model.

Predictor Variable

The predictor variable (*X*) for the regression equation of this study was *parenting style*, which includes authoritative, authoritarian, and permissive parenting styles. The predictor variable was measured using the PAQ. For the purpose of this study, the PAQ, mother's version was labeled *Form 1*, and the father's version, *Form 2*. Each of the parenting styles was measured using a five-point Likert scale that ranges from *strongly disagree* (1) to *strongly agree* (5).

Outcome Variable

The outcome variable (*Y*) is *OC symptom severity scale*, and it was measured using the FOCI. OC severity was measured using a five-point Likert scale that ranges from *none* (0) to *extreme* (4). The intercept (β_0) is the degree of *OC symptom severity* when the score for a particular parenting style in the PAQ is zero. The slope (β_1 - β_n) is the difference of *OC symptom severity* for every point increase in a particular parenting style in the PAQ. In other words, how much *OC symptom severity* increases when the score in a particular parenting style increases by one point.

Control Variables

In order to isolate the mediating effects of variables that are not the focus of the study (i.e., *control* or *confounding* variables), the researcher controlled for gender and ethnicity. The ethnicity variable included the following ethnic groups: American Indian or Alaskan Native, Asian or Asian American, Black or African American, Hispanic or Latino, Native Hawaiian or Pacific Islander, White or Caucasian, and Other. For the purposes of this study, the 'Other' ethnicity variable was intended to capture any ethnicities not presented by the other categories, including a Mixed/Multiracial ethnicity. The gender variables included the following: female, male, non-binary, transgender, unsure/questioning, prefer not to say, and other. For the purposes

of this research study, the ‘other’ gender variable included responses in which the participant selected more than one of the aforementioned gender options available, with the exception of the ‘prefer not to say’ option. The purpose of controlling the variation of these potential confounding variables was to attribute a particular relationship between predictor and outcome to the predictor’s influence rather than to the confounding variable’s influence (Pole & Bondy, 2012).

The researcher created ‘dummy’ variables for both gender (one ‘dummy variable’) and ethnicity (three ‘dummy’ variables). A ‘dummy’ or indicator variable is created to include categorical variables with more than two categories in a regression analysis. The total number of dummy variables is obtained by subtracting one group to the total number of groups included in the categorical variable (k - 1). When a dummy variable is created, the new groups in the ‘dummy’ variable are represented as a zero (reference group) or as a one (comparison group; Field, 2013).

In terms of gender, only the female [1] and male [2] categories were included in the regression analyses because 1) there were no responses in the remainder of the gender categories (non-binary, transgender, unsure/questioning, prefer not to say), and 2) there was only one response in the ‘other’ gender category.

For the ethnicity variable, the ethnic groups for this research study were defined as follows:

- White or Caucasian [1]
- Hispanic or Latino [2]
- Black or African American [3]
- Other [4]

The ‘Other’ ethnicity category was comprised of the following ethnic groups:

- American Indian or Alaskan Native

- Asian or Asian American
- Native Hawaiian or Pacific Islander
- Mixed or Multiracial

Interactions

In order to better understand the mediating effects of the aforementioned control variables, the researcher tested for interactions between the participants' parents parenting styles and their OC symptom severity. *Interactions* examine whether the effect of a predictor variable on an outcome variable differs based upon the level of a different variable (Pole & Bondy, 2012). The following interactions (denoted by an *) were tested in the regression analyses:

- Authoritative Mother * Authoritative Father
- Authoritative Mother * Authoritarian Father
- Authoritative Mother * Permissive Father
- Authoritarian Mother * Authoritative Father
- Authoritarian Mother * Authoritarian Father
- Authoritarian Mother * Permissive Father
- Permissive Mother * Authoritative Father
- Permissive Mother * Authoritarian Father
- Permissive Mother * Permissive Father

Statistical Software

The data collected for this research study was analyzed using IBM Statistical Package for the Social Sciences (SPSS; version 28) for macOS.

CHAPTER IV: RESULTS

The researcher conducted a series of multiple regression analyses (henceforth referred to as regression models) to examine whether or not parenting style (authoritative, authoritarian, permissive) significantly predicted an individual's OC symptom severity score. Ethnicity and gender were included as control variables in the multiple regression analyses. The researcher postulated three hypotheses for this research study:

1. Individuals raised by authoritative parents would show lower OC symptom severity compared to individuals raised by authoritarian and permissive parents.
2. Individuals raised by authoritarian parents would display higher OC symptom severity compared to authoritative and permissive parenting.
3. Individuals raised by permissive parents would show lower OC symptom severity compared to individuals raised by authoritarian parents, but higher OC symptom severity compared to individuals raised by authoritative parents.

In other words:

[Authoritative OC Severity < Permissive OC Severity < Authoritarian OC Severity].

The null hypothesis was that there would be no difference between the three different parenting styles (authoritative, authoritarian, and permissive) and a participant's OC symptom severity score. In other words:

[Authoritative OC Severity = Permissive OC Severity = Authoritarian OC Severity].

Descriptive Statistics: Participants

The total number of responses collected for this research study was 153. Out of those 153 responses, 42 responses were not included in the final sample. There were three categories of

responses that were disqualified from the final sample. The number of responses per category, along with the rationale behind their disqualification, are described below:

1. Single parent responses were not included in the final sample because the focus of this research study was on two-parent rather than single-parent households (n = 11).
2. 'Other' responses for the gender demographic question were not included in the final sample because of their low frequency (n = 1). Given that only one response in this category was collected, the researcher believed that it would have been unethical to randomly assign this participant as either 'female' or 'male,' when, in fact, this participant self-identified as 'other' in the survey. Furthermore, this 'other' response would not have contributed significantly to the statistical analyses conducted for this research study because of its low frequency in the overall gender distribution. By no means, however, did the researcher intentionally disqualify this participant solely based on their gender.
3. Incomplete responses were not included because important data for the statistical analyses were missing (n = 30).

The final sample for this research study consisted of 111 participants. Participants' age ranged from 18 to 62 (M = 28.68; SD = 6.668). A total of 82 participants identified as male while 29 participants identified as female. The ethnic composition of the total sample was as follows: White/Caucasian (N = 41), Hispanic/Latino (N = 32), Black/African American (N = 19), and Other (N = 19). (Please refer to Table 1 for more information.)

Descriptive Statistics: Parenting Style and OC Symptom Severity Score

Table 2 depicts information on the continuous variables included in the regression analyses: parenting style (predictor variable) and OC symptom severity score (outcome variable).

Table 1

Participants' Descriptive Statistics

Demographic	*N*	%	*M*	*SD*	Range
Age			28.68	6.7	18-62
Gender					
Female	29	26.1			
Male	82	73.9			
Ethnicity					
White/Caucasian	41	36.9			
Hispanic/Latino	32	28.8			
Black/African American	19	17.1			
Other[a]	19	17.1			
Psychotropic Medication					
Yes	102	91.9			
No	9	8.1			
OCD in Family					
Yes	106	95.5			
No	5	4.5			

Note. $N = 111$

[a]The 'Other' ethnicity included the following groups: Asian/Asian American, American Indian/Alaskan Native, Native Hawaiian/Pacific Islander, Mixed/Multiracial.

Table 2

Descriptive Statistics for Parenting Style and OC Symptom Severity Score

Variable	*M*	*SD*	Range	
			Minimum	Maximum
PAQ				
Mother[a]				
Authoritative	30.98	5.090	21	46
Authoritarian	30.82	5.639	17	46
Permissive	30.18	4.978	19	48
Father[a]				
Authoritative	27.06	5.214	11	43
Authoritarian	31.68	6.168	19	48
Permissive	29.59	5.325	16	45
FOCI				
OC Symptom Severity Score[b]	10.47	2.696	2	18

Note. $N = 111$

[a]PAQ scores for each parenting subscale range from 10-50. Please refer to the Parental Authority Questionnaire (PAQ) by Buri (1991) for more information on the scoring for each of the parenting subscales.

[b]FOCI scores for part B of the inventory range from 0-20 (referred to as 'OC symptom severity score' in this research study). Please refer to the Florida Obsessive-Compulsive Inventory (FOCI) by Storch et al. (2007) for more information on the scoring for part B of the inventory.

Bivariate Correlations

Table 3 depicts the bivariate correlations between each of the parenting styles examined in this research study (authoritative, authoritarian, and permissive) and the OC symptom severity score. Looking at the correlation coefficients between parenting styles and OC symptom severity without controlling for the effect of other variables (such as gender and ethnicity), the following was observed:

- First, the correlation between authoritarian parents and OC symptom severity was the strongest compared to the correlation between authoritative/permissive parents and OC symptom severity. Interestingly, however, the strength of the correlation was slightly stronger for authoritarian fathers compared to authoritarian mothers.
- Second, the strength of the correlation between authoritative mothers and OC symptom severity was stronger compared to the correlation strength between permissive mothers and OC symptom severity.
- Third, the correlation strength between permissive fathers and OC symptom severity was slightly stronger compared to the correlation strength between authoritative fathers and OC symptom severity.

Regression Analyses

In order to ensure that the confidence intervals and significance tests of the regression results were valid, and therefore increase the generalizability of the regression analyses results, the researcher examined the following linear regression model assumptions:

- additivity and linearity
- homoscedasticity
- independence of errors

Table 3

Bivariate Correlations for Parenting Styles and OC Symptom Severity Score

Variable	1	2	3	4	5	6	7
1. Authoritative Mother	-	.244**	.343**	.252**	.364**	.277**	.397**
2. Authoritarian Mother		-	.385**	.468**	.493**	.526**	.506**
3. Permissive Mother			-	.369**	.194*	.470**	.279**
4. Authoritative Father				-	.379**	.617**	.412**
5. Authoritarian Father					-	.343**	.559**
6. Permissive Father						-	.433**
7. OC Symptom Severity Score							-

*$p < .05$. **$p < .01$

- multicollinearity
- normal distribution of errors

None of the assumptions of the regression models appeared to be violated.

The researcher conducted four different regression models for this study. (Please refer to Table 9 for a comparison of the regression coefficients of models one, two, and four, and to the following tables for regression model 3: Table 6 in "Appendix H: Regression Model 3a" and Table 7 in "Appendix I: Regression Model 3b.")

Regression Model One: Parenting Styles and OC Symptom Severity

Regression model one examined whether or not authoritative, authoritarian, and permissive parenting styles significantly predicted the OC symptom severity score. The overall regression model was statistically significant (R^2 = .406, F [6,104] = 13.506, p = < .001). What the R^2 value (.406) of this regression model suggests is that parenting styles account for 40.6% of the variance in OC symptom severity.

Mother Parenting styles. On average, an individual's OC symptom severity score increased by .099 points (p = .034) when raised by an authoritarian mother, and by .095 points (p = .032) when raised by an authoritative mother. Although having a permissive mother decreased, on average, an individual's score by .005 points, it was not statistically significant (p = .916).

Father Parenting styles. On average, an individual's OC symptom severity score increased by .141 points (p = < .001) when raised by an authoritarian father. The effects of the other two parenting styles were not statistically significant: on average, having an authoritative father increased the score by .040 points (p = .428), while having a permissive father increased the score by .060 points (p = .251). (Please refer to Table 4 in "Appendix F: Regression Model 1" for more information.)

Regression Model Two: Parenting Styles, Control Variables, and OC Symptom Severity

The second regression model examined the effect of each of the three parenting styles (authoritative, authoritarian, permissive) on OC symptom severity when gender and ethnicity were included in the model. The overall regression model was statistically significant (R^2 = .441, F [10,100] = 9.692, p = < .001). What the R^2 value (.441) of this regression model suggests is that parenting styles, gender, and ethnicity account for 44.1% of the variance in OC symptom severity.

Parenting Styles. When gender and ethnicity were included in the regression model (i.e., controlling for gender and ethnicity), only an authoritarian parenting style remained statistically significant. While an individual's OC symptom severity score increased, on average, by .101 points (p = .029) when raised by an authoritarian mother, an individual's OC symptom severity score increased, on average, by .150 points (p = < .001) when raised by an authoritarian father.

Control Variables. The following main effect results are regardless of parenting styles (i.e., controlling for parenting styles). Females (in comparison to males) showed, on average, a 1.203-point decrease in their OC symptom severity score (p = .014). Furthermore, compared to the reference group (White/Caucasian participants), on average, significantly lower OC symptom severity scores were observed in the following ethnic groups:

- Hispanic/Latino (a 1.176-point decrease; p = .038)
- Black/African American (a 1.422-point decrease; p = .024)
- Other (a 1.389-point decrease; p = .033)

(Please refer to Table 5 in "Appendix G: Regression Model 2" for more information.)

Regression Model Three: Parenting Styles, Interaction Terms, Control Variables, and OC Symptom Severity

The third regression model was an overall compilation of the multiple regression analyses that were conducted with each of the parenting styles (authoritative, authoritarian, permissive), their interactions, the control variables (gender and ethnicity), and OC symptom severity. Each significant predictor variable from regression model 2 (authoritarian mother/father parenting style, gender, ethnicity), along with an interaction term and its corresponding main effect, was analyzed in different regression analyses.

While the overall regression models that were conducted using parenting styles, interaction terms, gender, and ethnicity were statistically significant, only authoritarian mother/father parenting style, gender, and ethnicity remained statistically significant. Neither an authoritative nor a permissive parenting style, nor any of the interaction terms between the remaining parenting styles reached statistical significance. Interestingly, however, there were two interaction terms that almost reached statistical significance:

- authoritarian mother * authoritative father ($\beta = -.009$, $p = .060$), main effect of authoritative father ($\beta = .309$, $p = .055$; referred to as model 3a)
- authoritarian mother * permissive father ($\beta = -.012$, $p = .080$), main effect of permissive father ($\beta = .412$, $p = .056$; referred to as model 3b)

Since none of the interaction terms were significant in the multiple regression analyses conducted, which was the purpose of this multiple regression model, detailed results from these analyses were not displayed in this section. (Please refer to Table 6 in “Appendix H: Regression Model 3a” and Table 7 in “Appendix I: Regression Model 3b” for more information.)

Regression Model Four: Authoritarian Mother and Father, Control Variables, and OC Symptom Severity

This final regression model only included the significant predictor variables that resulted from the aforementioned three regression models (authoritarian mother/father parenting style, gender, and ethnicity). This model explained 44% of the variance in the OC symptom severity score. The overall regression model was statistically significant (R^2 = .441, F [6,104] = 15.481, p = < .001).

Parenting Styles. In this final regression model, an authoritarian parenting style significantly predicted participants' OC symptom severity score. When participants were raised by an authoritarian mother, their score increased, on average, by .115 points (p = .006) when controlling for gender and ethnicity. When participants were raised by an authoritarian father, their score increased, on average, by .172 points (p = < .001) when controlling for gender and ethnicity. Thus, although both authoritarian mothers and fathers were associated with a significantly higher OC symptom severity score, having an authoritarian father was associated with an OC symptom severity increase that was approximately 150% the increase associated with authoritarian mothers.

Control Variables. The following main effect results are regardless of parenting styles (i.e., controlling for parenting styles). In comparison to participants who identified as male, female participants' OC symptom severity score was, on average, 1.271 points lower (p = .008). Furthermore, compared to White/Caucasian participants, on average, there were significantly lower OC symptom severity scores for the following ethnic groups:

- Hispanic/Latino (a 1.487-point decrease; p = .005)
- Black/African American (a 1.538-point decrease; p = .010)

- Other (a 1.751-point decrease; $p = .002$)

The regression equation for the final model is:

Obsessive-Compulsive Symptom Severity Score = 2.815 + .115 * (authoritarian mother score) + .172 * (authoritarian father score) - 1.271 * (female) - 1.487 * (Hispanic/Latino) - 1.538 * (Black/African American) - 1.751 * (Other).

(Please refer to Table 8 in "Appendix J: Regression Model 4" for more information.)

Summary of Regression Models

In conclusion, participants who reported being raised by authoritarian parents showed, on average, higher OC symptom severity scores compared to participants who were raised by authoritative and permissive parents. Furthermore, participants who identified as male and as a White/Caucasian had, on average, greater OC symptom severity scores. (Please refer to Table 9 for a comparison of the regression coefficients of models one, two, and four.)

Answer to Research Hypotheses

The researcher postulated three hypotheses: 1) authoritative parenting would result in lower OC symptom severity scores compared to authoritarian and permissive, 2) authoritarian parenting would result in higher OC symptom severity scores compared to authoritative and permissive, and 3) permissive parenting would result in higher OC symptom severity scores compared to authoritative, but lower compared to authoritarian.

Hypothesis One (Authoritative Parenting)

OC symptom severity scores were, on average, lower for participants with authoritative mothers compared to those with authoritarian mothers, but not compared to participants raised by a permissive mother. However, when ethnicity and gender were included in the regression model, the difference in OC symptom severity between an authoritative mother and an

Table 9

Summary Regression Coefficients of Parenting Styles and OC Symptom Severity Score

Variable	Model 1			Model 2			Model 4		
	B	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
Constant	-2.73	1.65		.928	2.04		2.82	1.39	
Authoritative Mother	.095	.044	.032*	.079	.045	.084			
Authoritarian Mother	.099	.046	.034*	.101	.046	.029*	.115	.040	.006**
Permissive Mother	-.005	.048	.916	-.031	.047	.509			
Authoritative Father	.040	.050	.428	.005	.050	.924			
Authoritarian Father	.141	.039	<.001**	.150	.039	<.001**	.172	.037	<.001**
Permissive Father	.060	.052	.251	.040	.052	.439			
Female [a]				-1.20	.482	.014*	-1.27	.469	.008**
Hispanic/Latino [b]				-1.18	.560	.038*	-1.49	.520	.005**
Black/African American [b]				-1.42	.622	.024*	-1.54	.588	.010*
Other [b, c]				-1.39	.642	.033*	-1.75	.565	.002**
R^2		(.438)			(.492)			(.472)	
$R^2_{adjusted}$		(.406)			(.441)			(.441)	
F		(13.51)			(9.69)			(15.48)	
df		(6,104)			(10,100)			(6,104)	
p		(< .001)			(< .001)			(< .001)	

Note. $N = 111$

[a]Male was the reference group.

[b]White/Caucasian was the reference group.

[c]The 'Other' ethnicity included the following groups: Asian/Asian American, American Indian/Alaskan Native, Native Hawaiian/Pacific Islander, Mixed/Multiracial.

*$p < .05$. **$p < .01$

authoritarian mother was not statistically significant. Although participants who reported having an authoritative father had, on average, lower OC symptom severity scores than participants with an authoritarian or a permissive father, the difference was not statistically significant. Results for an authoritative parenting style (by the father) were consistent in the model that included the control variables (gender and ethnicity) and in the model with only the parenting styles as predictor variables. Therefore, hypothesis one was not supported, except when comparing the OC symptom severity scores of participants who were raised by an authoritative mother compared to those raised by an authoritarian mother when ethnicity and gender were not part of the regression model.

Hypothesis Two (Authoritarian Parenting)

Participants raised by an authoritarian mother and father had, on average, higher OC symptom severity scores compared to participants who reported being raised by authoritative or permissive parents. These results were consistent in the model that included the control variables (gender and ethnicity) and in the model with only the parenting styles as predictor variables. Therefore, hypothesis two was supported for both parents.

Hypothesis Three (Permissive Parenting)

While participants' OC symptom severity scores were not, on average, higher if they were raised by a permissive mother compared to an authoritative mother, their scores were, on average, lower compared to participants raised by an authoritarian mother. However, these differences did not reach statistical significance. Participants' OC symptom severity scores were, on average, higher when they reported being raised by a permissive father compared to being raised by an authoritative father, but lower when compared to those who were raised by an authoritarian father. However, these differences were not statistically significant. These results

were consistent in the model that included the control variables (gender and ethnicity) and in the model with only the parenting styles as predictor variables. Therefore, hypothesis three was not supported.

CHAPTER V: DISCUSSION

Research suggests that one putative risk factor for the development of OCD is parenting style (e.g., Black et al., 2003; Krebs et al., 2019; Wilcox et al., 2008). The purpose of this study was therefore to investigate the association between parenting styles (authoritative, authoritarian, and permissive) and OCD. In line with the literature supporting that a relationship exists between how an individual was parented and their OC symptomatology, the researcher postulated the following three hypotheses:

1. Individuals raised by authoritative parents would have lower OC symptom severity compared to individuals raised by authoritarian or permissive parents.
2. Individuals raised by authoritarian parents would have higher OC symptom severity compared to individuals raised by authoritative or permissive parents.
3. Individuals raised by permissive parents would show lower OC symptom severity compared to individuals raised by authoritarian parents, but higher OC symptom severity compared to individuals raised by authoritative parents.

Summary of Findings

Results from the multiple regression analyses conducted for this study showed that, on average, participants who reported being raised by authoritarian parents displayed higher OC symptom severity compared to individuals raised by authoritative or permissive parents. The association between higher OC symptom severity and an authoritarian parenting style remained statistically significant, even after controlling for gender and ethnicity. Although none of the interactions (*) between parenting styles had a statistically significant effect on OC symptom severity, two interactions—authoritarian mother * authoritative father, and authoritarian mother * permissive father—almost reached statistical significance. Participants who were raised by an

authoritative mother and either an authoritative or permissive father reported having, on average, less severe OC symptom severity scores. Furthermore, results from this study suggest that participants who identified as non-White females showed, on average, lower OC symptom severity compared to participants who identified as White and male. (Please refer to Table 9 for more information.)

Interpretation of Findings

Hypothesis One: Authoritative Parenting Style

The researcher's first hypothesis was that participants raised by authoritative parents would report lower OC symptom severity compared to participants raised by authoritarian or permissive parents. This is because OCD is associated with perfectionistic practices and the use of sub-optimal emotional regulation capabilities and coping mechanisms, whereas an authoritative parenting style is associated with the opposite (higher emotional regulation skills, adaptive perfectionism, adaptive coping mechanisms, and lower psychopathology rates; Baumrind, 1967; Gong et al., 2014; Hibbard & Walton, 2014; Hubbs-Tait et al., 2008; Huver et al., 2010; Kuppens & Ceulemans, 2018; Milevsky et al., 2007; Nancy, 1999; Önder & Gülay, 2009; Power, 2013; Rodríguez et al., 2009; Singh, 2017).

However, this hypothesis was only partially supported: having an authoritative *mother* led to a statistically significant lower OCD score, but having an authoritative *father* did not. These results are not fully in line with the existing literature, which suggests that authoritative parenting tends to be associated with lower OC symptomatology (Rosa-Alcázar's et al., 2019; Timpano et al., 2010). It is possible that these results may have been influenced by other variables, given that the regression model accounted for only 40% of the variance in OC

symptom severity. (Please refer to Table 1 in "Appendix F: Regression Model 1" for more information.)

Interestingly, when two other variables—gender and ethnicity—were included in the regression model as control variables, the difference in OC symptom severity between authoritative parents (both mother and father) and the other two parenting styles did not reach statistical significance. (Please refer to Table 5 in "Appendix G: Regression Model 2" for more information.) One possible explanation for these results might be that the expression of OC symptomatology can differ between genders (Rosa-Alcázar et al., 2019). Furthermore, people tend to be socialized differently based on their gender, which, in turn, can influence how people perceive, interpret, and respond to internal and external stimuli. These processes are essential in the development, expression, and maintenance of OC symptomatology.

Hypothesis Two: Authoritarian Parenting Style

The researcher's second hypothesis was that participants raised by authoritarian parents would report higher OC symptom severity compared to those raised by authoritative or permissive parents. This is because current research indicates that, on average, people with OCD tend to be raised by parents who were less caring and warm, and more controlling, critical, demanding, overprotective, perfectionist, rejecting, and likely to employ guilt induction (Alonso et al., 2004; Black et al., 2003; Haciomeroglu & Karanci, 2014; Krebs et al., 2019; Rosa-Alcázar et al., 2019).

This hypothesis was fully supported: participants who were raised by an authoritarian mother and father reported greater OC symptom severity compared to participants raised by authoritative or permissive parents, which were consistent and statistically significant even after

including gender and ethnicity as control variables. (Please refer to Table 1 in "Appendix F: Regression Model 1" and Table 8 in "Appendix J: Regression Model 4" for more information.)

The results from this study are consistent with the literature and other studies, in that authoritarian practices tend to be correlated with OC symptomatology (Griffiths et al., 2011; Rosa-Alcázar's et al., 2019; Yoshida et al., 2005). OCD involves anxiety-provoking irrational thoughts, and compulsions to neutralize them. While it is normal to have fleeting irrational thoughts from time to time, people with OCD experience these maladaptive automatic thoughts regularly, and are unable to disregard them. For neurotypical individuals, it is relatively easy not to ruminate on these negative, irrational thoughts, because they have learned to regulate their emotions in a healthier manner, and have established healthier schemas (or IWMs) throughout their development, which are heavily influenced by early interactions with a caregiver (Nanu & Nijloveanu, 2015). Although these schemas are solidified throughout an individual's development, the interactional dynamics between a parent and a child are essential for a healthy psychosocial development. As research suggests, core schemas are influenced by early life experiences (e.g., parenting styles; Paul et al., 2016; Tamir, 2016). These schemas then become the foundation of an individual's cognitive world, dictating how that individual perceives, interprets, and responds to the world around them.

A helpful analogy to better understand the importance of these schemas is that of a GPS. We frequently rely on GPS services to get from one location to another. However, imagine that the software engineer who programmed your GPS is controlling, restrictive, irrational, and inflexible (authoritarian parenting style), and coded your GPS accordingly. This poorly-coded (i.e., maladaptive) GPS then becomes your guide to the world (schema). As you try to navigate from point A to point B using this GPS, it might insist upon taking you down an irrational and

inflexible path, making it much harder and more anxiety-inducing for you to reach your destination—if you do at all.

Literature suggests that when parents adopt an authoritarian parenting style, they may be contributing to their child's development of maladaptive schemas (e.g., heightened sense of responsibility, inaccurate threat estimation, hypervigilant behaviors, excessive perfectionism; Alonso et al., 2004). These maladaptive schemas, in turn, can contribute to the development of psychopathology (e.g., OCD). For example, a child with authoritarian parents might have learned that in order to please their parents and avoid coercive or controlling behaviors from their parents, they need to excessively control how they behave. This excessive self-control is continually reinforced, expected, and maintained via the constant threat of authoritarian parental practices. As such, the child may then adopt this 'control' mindset to use when dealing with any perceived threat, including automatic thoughts, uncertainty, and emotional turmoil.

Just like the child who learns to control themself to avoid the uncertainty of what may happen if they fail to adhere to the unrealistic, controlling, and inflexible rules and expectations imposed by authoritarian practices, so too do people with OCD attempt to neutralize their obsessions by performing compulsions to avoid the uncertainty of what may happen if they fail to do so.

Hypothesis Three: Permissive Parenting Style

Finally, the researcher's third hypothesis was that the OC symptom severity of participants raised by permissive parents would, on average, be lower than those raised by authoritarian parents, but higher than those raised by authoritative parents. This is because research suggests that a permissive parenting style is usually associated with ineffective emotion

regulation skills, as well as higher levels of avoidance and psychopathology (Baumrind, 1966, 1967; Hibbard & Walton, 2014; Nancy, 1999; Power, 2013; Timpano et al., 2010; Singh, 2017).

This hypothesis was not supported: first, the differences were not statistically significant, and second, participants raised by permissive parents actually reported having *less* OC symptom severity compared to those raised by either authoritarian or authoritative parents. These results were consistent when gender and ethnicity were included in the regression model as control variables. (Please refer to Table 9 for more information.)

A possible explanation for these results might be that the majority of participants did not provide high scores (greater than three) in the PAQ for the questions about a permissive parenting style, probably giving them a weak influence on the overall regression analyses. In fact, 55% of the permissiveness questions in the PAQ (out of a total of 20 questions) were answered with a plurality of low responses (a score of one and two) compared to high responses (scores greater than three). Another possibility is that permissive parenting may buffer against greater OC symptomatology because it is more lenient (with little rigidity and control) compared to excessive parental control and coerciveness, which are more frequently associated with greater OC symptomatology (Timpano et al., 2010; Yoshida et al., 2005). In fact, some researchers have associated permissive parenting with low psychopathology rates (Kuppens & Ceulemans, 2018; Nancy, 1999).

Implications

These findings have important implications. First, the results from this study build on the existing research supporting a relationship between parenting styles and OCD, and, in particular, the influence of an authoritarian parenting style and OC symptomatology (Alonso et al., 2004; Black et al., 2003; Haciomeroglu & Karanci, 2014; Krebs et al., 2019; Rosa-Alcázar et al.,

2019). Second, these results did not entirely support the literature suggesting that an authoritative parenting style is usually associated with less OC symptomatology (e.g., Timpano et al., 2010), as only a maternal authoritative parenting style yielded lower OC symptom severity scores. This statistical significance, however, was nulled when gender and ethnicity were included in the regression analyses as control variables. Third, and along the same lines of the previous finding, results from this study were not in line with the literature suggesting that, on average, a permissive parenting style is associated with higher rates of psychopathology (Singh, 2017; Timpano et al., 2010) compared to, for instance, an authoritative parenting style. Implications two and three provide a new insight into the relationship between an authoritative and permissive parenting style and OC symptom severity. Fourth, these data contribute to a clearer understanding of the possible etiological factors explaining the development of OCD. While research suggests that genes can influence the development of OCD, at least 50% of the variance can be attributed to other external variables (e.g., adverse events in childhood, parenting style; Bandelow et al., 2016). With this in mind, these results should be taken into consideration when providing treatment to individuals with OCD. Typically, the treatment of choice to ameliorate OC symptomatology—contingent upon the individual's age, medical status, and OC symptom severity—is individual therapy (e.g., CBT) and pharmacotherapy (e.g., SSRIs). However, provided the widely accepted influence of parenting style on the development and likely maintenance of OC symptomatology, treatment planning should focus on more systemic approaches to treating OCD (e.g., Family-based CBT). Since the presence of OCD will, very likely, affect the entire family system, it is imperative that treatment focuses on the individual's family relational dynamics that are contributing to the maintenance (i.e., reinforcement) of maladaptive cognitions and behavioral responses. A systemic approach would be especially

important in young children who have been diagnosed with OCD, as the bond between parent and child is critical in a child's development. Therefore, addressing a child's OC symptomatology through a systemic lens could serve as a preventative factor by identifying early parent-child interactions that may maintain and exacerbate the child's OC symptomatology as they develop.

Limitations of the Study

The current study has several limitations. First, the instrument used to measure parenting style did not include the neglectful parenting style (alongside authoritative, authoritarian, and permissive). Having used an instrument that measured all four parenting styles would have strengthened the results of this study, given that research suggests that neglectful parenting has been associated with more pronounced negative developmental outcomes in children (Kuppens & Ceulemans, 2018). Second, the generalizability of these results is limited by the fact that the instrument used to measure parenting styles (PAQ) was normed using a high school and college population. Although some of the participants who completed the PAQ for this study fell in the age range used to validate the PAQ, some participants did not. Third, given that the PAQ was completed by the participant, and not the participant's parent or parents, the reported parenting styles represent the participant's perceptions of their parents' parenting styles, which may differ from their parent's perceived or actual parenting style. Having had the parents also complete a self-report parenting style measure (e.g., The Parenting Styles and Dimensions Questionnaire [PSDQ]) would have further strengthened the results of this study. Fourth, although the sample for this study was primarily collected via an OCD subReddit forum, having had a sample from OCD clinics would have further strengthened the results of this study. Fifth, although the final sample size for this study consisted of a total of 111 participants, an even larger size could have

yielded more reliable regression models. Sixth, participants' responses on the PAQ could have been subjected to memory recall bias. Having obtained information from other sources (e.g., parents) to cross-check the participant's responses could have mitigated some of the effects of memory recall bias.

Recommendations

Future research should take into account individuals who were raised in either a single-parent or same-sex parent household, and investigate its effect on an individual's OC symptom severity. Given that research also suggests that a child's pre-existing mental health condition (in this case OCD) can also influence and reinforce parents' behaviors (e.g., overprotectiveness; Alonso et al., 2004; Wilcox et al., 2008), future studies should examine this potential bidirectional influence between a child's OCD and their parent's parenting style. Examining this potential bidirectional relationship would strengthen our understanding of the relationship between parenting style and OC symptom severity. Furthermore, future research should also include both parent and child measures of parenting styles in order to better capture the parenting style used by a parent. Additionally, considering that the literature suggests that OC symptom categories (e.g., cleaning, symmetry, checking) can differ by gender (APA, 2013), future studies should examine the interaction between gender and OC symptom categories and how the severity of these symptoms is influenced by a particular parenting style. Lastly, a longitudinal (rather than a cross-sectional) methodological approach would allow researchers to further explore how parenting style influences an individual's OC symptom severity. Although longitudinal research has been done examining the association between parenting style and OCD (e.g., Krebs et al., 2019), more longitudinal research that includes all four parenting styles

typologies is needed to develop a better understanding of the developmental impact of all four parenting styles.

Conclusions

In summary, results from this study suggest that parenting styles influence OC symptom severity. In particular, and consistent with the current literature, an authoritarian parenting style yielded higher OC symptom severity compared to an authoritative and permissive parenting style. However, contrary to the existing research delineating that an authoritative parenting style tends to be negatively associated with OCD, the results from this study showed that only an authoritative mother yielded lower OC symptom severity scores, not both parents. Results from this study suggest that mental health providers should consider a systemic approach (e.g., Family-based CBT) to treat individuals with OCD, especially children, because of the synergism between parenting style—in particular, an authoritarian parenting style—and OC symptomatology. Further research is needed to examine the relationship between authoritative and permissive parental practices, as well as the effects of gender and ethnicity, on OC symptom severity.

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Appendix A: Recruitment Message

PARENTING STYLES AND OCD SURVEY

My name is Miguel and I am currently earning my doctorate in Clinical Psychology. For my dissertation, I'm looking for people with OCD to take this survey. My goal is to study whether there is a relationship between how people were parented and their OCD.

You can take the survey if you: 1) have an OCD diagnosis, 2) are receiving therapy, 3) are between 18 and 62 years old, and 4) live in the United States. If you take it, you have a chance to win ONE of TWO Amazon gift cards (one for USD$100 dollars or one for USD$50 dollars).

Thank you guys so much in advance for your time and helping me with my dissertation!

https://www.surveymonkey.com/r/MNRESEARCH21

Appendix B: Email Templates

From: mnavarro@antioch.edu

To: Winner participant's email address

Subject: Parenting Styles and OCD Survey Gift Card Winner

Dear Participant,

Thank you for completing my dissertation survey on OCD and parenting styles after I posted it on Reddit. Your email address was randomly selected to win a [USD$50 or USD$100] Amazon gift card! If you would like to claim your gift card, please respond by [mm/dd/year] to this email to confirm that 1) you completed the online survey, and 2) this is the email address you would like to use to receive the gift card code. If no response is received by the aforementioned date, a new participant will be randomly selected to win the Amazon gift card. Thank you.

Sincerely,

Miguel Navarro

From: mnavarro@antioch.edu

To: Winner participant's email address

Subject: Parenting Styles and OCD Survey Gift Card Winner

Dear participant,

Thank you for your reply. Please find the code to redeem your [USD$50 or USD$100] Amazon gift card code below:

[Gift Card Code]

Thank you very much for your help with my survey! I hope you enjoy the gift card!

Sincerely,

Miguel Navarro

Appendix C: Demographic Questions

1. What is your age?
2. What is your gender?
    a. Female
    b. Male
    c. Non-binary
    d. Transgender
    e. Unsure/questioning
    f. Other
    g. Prefer not to say
3. What is your ethnicity?
    a. American Indian or Alaskan Native
    b. Asian or Asian American
    c. Black or African American
    d. Hispanic or Latino
    e. Native Hawaiian or Pacific Islander
    f. White or Caucasian
    g. Other
4. Do any of your immediate family members (mom, dad, siblings) have OCD?
    a. Yes
    b. No
5. Are you currently taking any medications to help reduce or control your obsessive-compulsive symptoms?

   a. Yes

   b. No

6. Did you have a mother while growing up?

   a. Yes

   b. No

7. Did you have a father while growing up?

   a. Yes

   b. No

Appendix D: Informed Consent

Dear prospective participant,

First, I would like to extend my gratitude to you for considering participating in this online survey. Before you proceed to the next page, please take your time to read and understand the following sections carefully.

Overview of the Survey

This online survey is part of my dissertation research for the doctoral program in Clinical Psychology at Antioch University. The survey is about the relationship between the parenting style your parents used and your OCD symptoms. In order to take the survey, you should: 1) have an OCD diagnosis, 2) be receiving therapy, 3) be between the ages of 18 and 62, and 4) reside in the United States. The survey contains a total of 93 questions and takes approximately 30 minutes to complete. There is no time limit, so please take your time to read each question carefully before answering it. Please be honest with your answers, as this will improve the quality of the research and thus have a greater impact on the community. Your participation in this survey is voluntary, and you have the right to discontinue your participation at any time without any penalty. At the end of the survey, you will have the option to provide your email address if you wish to be entered into a drawing to win ONE of TWO Amazon gift cards (one for USD$100 dollars or one for USD$50 dollars).

Benefits

Although there may not be any direct benefits to you from participating in this online survey, you may be able to learn new things about yourself that might contribute to your development as a person. In addition, your participation in this study might allow me and other researchers to help others in the community.

Risks

Although it is not expected that you will have any negative impact from this survey, you may feel slightly nervous and anxious, as it is not uncommon for some people to feel this way when completing a survey. In the event that you would like to process any thoughts or feelings that arise during the survey, I encourage you to 1) speak with your current therapist, or 2) refer to the *Resources* section at the end of the survey.

Confidentiality and Privacy

The researcher will take the following precautions to safeguard the information collected from you during the survey. First, your responses will be confidential. Only the researcher and his research supervisor will see the responses. Response data will be reported as aggregated, rather than individually, and will not be associated with any personal identifying information. Second, no IP addresses will be collected during the survey. Third, after downloading the information collected during the survey, the researcher will delete the data from SurveyMonkey. Fourth, the information collected in this online survey will be securely stored in the primary investigator's personal computer, which has the following activated as an extra layer of precaution: 1) encryption (256-bit key), 2) firewall, and 3) passwords. Fourth, no one else but the primary investigator will have access to the computer and to the passwords necessary to access the computer and the data files. Data obtained from this survey will be kept for a period of seven years, after which the investigator will securely erase. To further enhance confidentiality and privacy, I highly recommend that:

- You use your personal electronic device (e.g., computer, cell-phone, tablet) to complete the online survey. Preferably, it is advisable that you use 'private mode' on your browser.

- Should you need to use a non-personal electronic device, please make sure to close the survey tab and delete the browser's history.

Future Publication

The primary investigator, Miguel Navarro, reserves the right to use the data obtained in this survey for future scholarly research and publications.

Contact Information

If you have any questions about the study, you may contact the principal investigator, Miguel Navarro, via email at mnavarro@antioch.edu. If you have any further questions about the study or about your rights as a research participant, you may contact Dr. Kia-Keating, dissertation chair and local IRB Chair via telephone at 805-962-8179 x5210, or via email at bkiakeating@antioch.edu.

Thank you very much for your time and for your help!

Sincerely,
Miguel

Acknowledgement to participate in this study

- I have read and understood the informed consent form and consent to participate in this study
- I do not consent to participate in this study

Appendix E: Participant Resources

1. Numbers that you may call (rates may apply depending on your carrier provider)
    a. National Helpline (1-800-662-4357)
        i. Available 24 hours a day / 7 days a week
    b. National Alliance on Mental Health (1-800-950-6264)
        i. Available Monday through Friday from 10 am to 6 pm Eastern Time
2. Websites that you may visit for further assistance
    a. American Psychological Association (APA): Psychologist locator
        i. https://locator.apa.org/?_ga=2.40746539.823316961.1575664902-1275793557.1575664902
    b. National Board for Certified Counselors (NBCC): Find a board-certified counselor in your area
        i. https://www.nbcc.org/search/counselorfind
    c. Psychology Today: Find a therapist
        i. https://www.psychologytoday.com/us/therapists
    d. Mental Health America (MHA): Finding therapy
        i. https://www.mhanational.org/finding-therapy
    e. Substance Abuse and Mental Health Services Administration (SAMHSA)
        i. https://findtreatment.samhsa.gov
    f. National Alliance on Mental Health (NAMI)
        i. https://www.nami.org/Find-Support/NAMI-HelpLine#crisis
    g. Open Counseling
        i. https://www.opencounseling.com/hotlines-us

Appendix F: Regression Model 1

Table 4

Regression Coefficients for Model 1

Variable	*B*	β	*SE*	*p*
Constant	-2.73		1.65	.102
Authoritative Mother	.095	.180	.044	.032*
Authoritarian Mother	.099	.208	.046	.034*
Permissive Mother	-.005	-.009	.048	.916
Authoritative Father	.040	.077	.050	.428
Authoritarian Father	.141	.323	.039	< .001**
Permissive Father	.060	.119	.052	.251
R^2 = .438				
$R^2_{adjusted}$ = .406				
F = 13.51				
df (6,104)				
p = < .001				

Note. *N* = 111

*$p < .05$. **$p < .01$

Appendix G: Regression Model 2

Table 5

Regression Coefficients for Model 2

Variable	*B*	β	*SE*	*p*
Constant	.928		2.04	.649
Authoritative Mother	.079	.150	.045	.084
Authoritarian Mother	.101	.211	.046	.029*
Permissive Mother	-.031	-.058	.047	.509
Authoritative Father	.005	.009	.050	.924
Authoritarian Father	.150	.342	.039	< .001**
Permissive Father	.040	.079	.052	.439
Female [a]	-1.20	-.197	.482	.014*
Hispanic/Latino [b]	-1.18	-.199	.560	.038*
Black/African American [b]	-1.42	-.200	.622	.024*
Other [b, c]	-1.39	-.195	.642	.033*
R^2 = .492				
$R^2_{adjusted}$ = .441				
F = 9.69				
df (10,100)				
p = < .001				

Note. N = 111

[a]Male was the reference group.

[b]White/Caucasian was the reference group.

[c]The 'Other' ethnicity included the following groups: Asian/Asian American, American Indian/Alaskan Native, Native Hawaiian/Pacific Islander, Mixed/Multiracial.

*$p < .05$. **$p < .01$

Appendix H: Regression Model 3a

Table 6

Regression Coefficients for Model 3a

Variable	*B*	β	*SE*	*p*
Constant	-5.29		4.39	.232
Authoritarian Mother	.355	.743	.136	.011*
Authoritarian Father	.179	.409	.038	< .001**
Authoritative Father	.309	.597	.159	.055
Authoritarian Mother * Authoritative Father	-.009	-.944	.005	.060
Female [a]	-1.22	-.199	.474	.012*
Hispanic/Latino [b]	-1.52	-.267	.527	.005**
Black/African American [b]	-1.44	-.202	.595	.017*
Other [b, c]	-1.74	-.244	.599	.005**
R^2 = .491				
$R^2_{adjusted}$ = .451				
F = 12.28				
df (8,102)				
p = < .001				

Note. *N* = 111

[a]Male was the reference group.

[b]White/Caucasian was the reference group.

[c]The 'Other' ethnicity included the following groups: Asian/Asian American, American Indian/Alaskan Native, Native Hawaiian/Pacific Islander, Mixed/Multiracial.

*$p < .05$. **$p < .01$

Appendix I: Regression Model 3b

Table 7

Regression Coefficients for Model 3b

Variable	*B*	β	*SE*	*p*
Constant	-8.86		6.40	
Authoritarian Mother	.447	.936	.203	.029*
Authoritarian Father	.173	.396	.037	< .001**
Permissive Father	.412	.814	.213	.056
Authoritarian Mother * Permissive Father	-.012	-1.29	.007	.080
Female [a]	-1.06	-.174	.478	.028*
Hispanic/Latino [b]	-1.56	-.263	.522	.004**
Black/African American [b]	-1.29	-.181	.601	.034*
Other [b, c]	-1.66	-.233	.589	.006**
R^2 = .492				
$R^2_{adjusted}$ = .452				
F = 12.34				
df (8,102)				
p = < .001				

Note. *N* = 111

[a]Male was the reference group.

[b]White/Caucasian was the reference group.

[c]The 'Other' ethnicity included the following groups: Asian/Asian American, American Indian/Alaskan Native, Native Hawaiian/Pacific Islander, Mixed/Multiracial.

*$p < .05$. **$p < .01$

Appendix J: Regression Model 4

Table 8

Regression Coefficients for Model 4

Variable	*B*	β	*SE*	*p*
Constant	2.82		1.39	.046*
Authoritarian Mother	.115	.240	.040	.006**
Authoritarian Father	.172	.393	.037	< .001**
Female [a]	-1.27	-.208	.469	.008**
Hispanic/Latino [b]	-1.49	-.251	.520	.005**
Black/African American [b]	-1.54	-.216	.588	.010**
Other [b, c]	-1.75	-.246	.565	.002**
R^2 = .472				
$R^2_{adjusted}$ = .441				
F = 15.48				
df (6,104)				
p = < .001				

Note. *N* = 111

[a]Male was the reference group.

[b]White/Caucasian was the reference group.

[c]The 'Other' ethnicity included the following groups: Asian/Asian American, American Indian/Alaskan Native, Native Hawaiian/Pacific Islander, Mixed/Multiracial.

*$p < .05$. **$p < .01$