UNDERSTANDING TRAUMA SYMPTOMATOLOGY AND OCD: SHARED COGNITIVE ERRORS AND EMOTIONS

By

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ABSTRACT

Although there is a well-documented link between post-traumatic stress disorder (PTSD) and obsessive-compulsive disorder (OCD), there is much that remains unknown about this relationship. Comorbid PTSD and OCD are linked to particularly poor outcomes, and individuals with these disorders are impacted across several areas of life. The present study takes a closer look at characteristics that are common among both disorders, including thought-action fusion (TAF), magical thinking, guilt, and shame. Additionally, the author explores the unique impact of each previously identified symptom dimension of OCD (i.e., contamination, responsibility for harm, unacceptable thoughts, and order/symmetry) on trauma symptomatology. The present study hypothesized that symptoms of OCD will positively predict symptoms of PTSD, and that out of the identified symptom dimensions of OCD, symptoms related to fear of causing harm to others will explain a greater proportion of the variance in this relationship than the other symptom dimensions. Furthermore, the author hypothesized that magical thinking, TAF, guilt, and shame would positively predict trauma symptomatology. Data was primarily collected via online recruitment and was analyzed using linear regression. Results indicate that OCD symptom severity and shame do predict trauma symptomatology, even when controlling for traumatic experiences; however, magical thinking, TAF, and guilt do not. Contrary to the authors

hypothesis that symptoms related to fear of causing harm to others would explain a greater proportion of the variance in the relationship between OCD and trauma symptomatology, it was found that symptoms related to unacceptable thoughts did and that symptoms related to this dimension were the only ones that predicted trauma symptomatology. The author suggests the relationship between OCD and trauma symptomatology could be explained by one of several factors or even a combination of these factors. These findings are relevant to current clinical practice, as well as point to several areas for future research.

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DEDICATION

This work is dedicated to my father, Wendell Sawyer. We miss you, Dad!

> I find myself at the extremity of a long beach. How gladly does the spirit leap forth, and suddenly enlarge its sense of being to the full extent of the broad, blue, sunny deep! A greeting and a homage to the Sea! I descend over its margin and dip my hand into the wave that meets me and bathe my brow. That far-resounding roar is the Ocean's voice of welcome. His salt breath brings a blessing along with it. (Hawthorne, 1893, Footprints on the Seashore section).

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I would like to thank my parents for putting me on a path that allowed me to excel in my education. Their hard work, dedication, and love for their children is what has made this achievement a possibility for me. I want to say thank you to my Dad for being unapologetically himself every day of his life and for the countless hours he put in at work so that he and my mom could give us a life that was better than his. I also want to say thank you to my Mom for the superhuman feat of homeschooling all six of us and for truly making me believe that I can do anything I put my mind to. I would also like to thank my graduate mentor, Dr. Jeannie Golden for believing in me and always being positive and supportive throughout my graduate school experience. I am proud to be one of her little beans. Additionally, Dr. Jacqueline White made graduate school a reality for me by taking me under her wing, valuing my unique life experiences, and allowing me to work with her. I would like to thank all the members of my committee for their individual contributions and for reading drafts of my dissertation while they had their lives and loved ones to get back to. I would like to thank my husband (James) for picking up the slack and being flexible with the chaos of graduate school, especially with a young daughter. All the Daddy Daughter Dates that you had with Josie to keep her happy and entertained, as well as all the cooking and cleaning that you did; it was more than I could have asked for. I want to thank my daughter (Josie) for being my sunshine every day. I also want to thank her for reminding me of that childlike hope that led me to want to make a difference in the world in the first place. I would like to thank my in-laws for rooting for me throughout this journey, both in the U.S. and in Australia. Finally, I want to thank my siblings, and my friends. You guys have been there for me every step of the way and I love you all!

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CHAPTER I: INTRODUCTION

This paper explores the complex relationship between Obsessive-Compulsive Disorder (OCD), traumatic events, and trauma symptomatology that are well documented throughout the literature (de Araújo et al., 2018; de Silva & Marks, 1999; Fontenelle et al., 2007). OCD is defined by the core features of persistent, unwanted thoughts (obsessions) and repeated actions or mental rituals (compulsions) that are performed to neutralize or decrease subsequent psychological distress (American Psychological Association [APA], 2013). Symptoms of Post-Traumatic Stress Disorder (PTSD) are centered around exposure to a traumatic event, followed by symptoms related to intrusions (i.e., thoughts and memories of the event), avoidance of relevant stimuli, and reactive changes in mood and physiological arousal (APA, 2013). On the surface, parallels between both conditions are evident in the common features of intrusions, related distress, and avoidant behaviors. Moreover, when looking beyond the surface, the similarities become increasingly salient. The literature has illustrated a depth of characteristics that are shared by both mental health disorders, including overlap in symptoms (Fletcher et al., 2019), environmental triggers (Brander et al., 2016), common comorbidities (Ferrão et al., 2023), the role of the conditioned fear response (Cooper & Dunsmoor, 2021; Kaczkurkin, 2014), impaired extinction of conditioned responses (Milad et al., 2013; VanElzakker et al., 2014), and symptom maintenance through functional similarities (i.e., avoidance; Foa & McLean, 2016).

In addition to these similarities, past studies have identified elevated comorbidity between these diagnoses. Among clinical OCD and PTSD populations, the rate of comorbidity ranges from 19.1% to 41% respectively (Nacasch et al., 2011; Torresan et al., 2013). In previous research on the comorbidity of psychological disorders, Rachman (1991) advocated for examining the relationships between comorbid conditions to understand the impact of one

disorder on the other. Specifically, he proposed that identifying whether the nature of the relationship is static, or dynamic is important to treatment planning, understanding outcomes, and addressing barriers that may be faced. Across the last twenty years, compelling evidence has demonstrated that OCD and PTSD possess a dynamic relationship, in which the symptoms of one condition influence the other and vice versa (de Silva & Marks, 1999; Gershuny et al., 2003; Van Kirk et al., 2018). For example, in a case series of four subjects with treatment resistant OCD, as individuals' OCD symptoms improved during treatment, they began having more PTSD specific symptoms (Gershuny et al., 2003). Paralleling these findings, in a case study conducted by Van Kirk and colleagues, a combat exposed veteran experienced increased PTSD symptomatology when he was unable to engage in OCD related compulsions and rituals. Similarly, as he engaged in more compulsive behaviors (i.e., checking, counting) he experienced fewer symptoms specifically related to PTSD. It has been proposed that symptoms of OCD might enable avoidance of trauma reminders, leading to the development of OCD as a maladaptive strategy for coping with trauma related symptoms (Gershuny et al., 2003; Van Kirk et al., 2018).

In addition to the previously discussed overlap between these two conditions, there are unique features of this diagnostic pairing that endure within the domains of symptom severity (Knowles et al., 2019; Pinciotti et al., 2022), course of illness (Ojserkis et al., 2017), treatment outcomes (Shavitt et al., 2010), suicidality/suicidal ideation (Torres et al., 2011) and social adjustment (Rosa et al., 2012). Comorbid OCD and chronic PTSD are associated with increased symptom severity, substance use, and emotional difficulties (Ojserkis et al., 2017). Additionally, comorbid OCD and PTSD have proven to be more difficult to treat (Gershuny et al., 2002; Gershuny et al., 2008). A diverse range of outcomes are often worse among individuals who

suffer from both PTSD and OCD, which increases the urgency of learning more about this relationship (Ojserkis et al., 2017).

Although many different hypotheses about the relationship between OCD and PTSD have been explored within extant literature, there remains many unknowns (de Silva & Marks, 1999; Fontenelle et al., 2007; Ojserkis et al., 2017). There are a substantial number of studies that have examined the impact of traumatic events on OCD; however, the relationship between preexisting OCD and subsequent PTSD onset has infrequently been the focus of research. Nevertheless, a small number of researchers have been pursuing a line of research over the last several years that has revealed evidence for post-traumatic and pre-traumatic subtypes of OCD, of which the latter may be associated with an increased risk of developing PTSD (Fontenelle et al., 2012; see also de Araújou et al., 2018). A general limitation to the OCD-PTSD literature that has impeded a better understanding of this relationship, is that age of onset is not defined consistently across studies. Age of OCD onset has been variably defined as the age of onset of symptoms, the age at onset of distress, and the age at which individuals met diagnostic criteria for OCD as defined by diagnostic resources (Diagnostic and Statistical Manual [DSM] or the International Classification of Diseases [ICD]). Further research is needed to identify the temporal sequence of the relationship between comorbid OCD and PTSD to better understand their genesis and contributing factors (Fontenelle et al., 2011).

Although individuals with OCD often report having experienced stressful and traumatic life events, the causality of this relationship remains unclear (Rosso et al., 2012; Cromer et al., 2007). Cromer and colleagues (2007) found that traumatic life events (TLEs) were associated with increased OCD symptom severity. Despite this finding, the authors proposed that the reason for this relationship is still unclear. They then suggested alternative explanations for the

relationship between OCD symptom severity and TLE's including that individuals with severe OCD might more easily recall stressful life events, or that they might experience events as stressful or traumatic in circumstances that others may not. In support of this hypothesis, a 1996 study found that among a sample of individuals who were present during a large-scale shooting, individuals with obsessive compulsive symptoms (OCS) were more susceptible to developing post traumatic symptoms (PTS) than individuals who did not, even when they were less exposed to the event. It is of note that the author stated that these findings should be interpreted with caution due to this being an unexpected finding that was not hypothesized a priori (Sewell, 1996). Fontenelle and colleagues (2012) theorized that traumatic events may be evaluated as more devastating among individuals with preexisting OCD due to intense emotional responses such as disgust, that could facilitate the onset of PTSD. Others have hypothesized that comorbid OCD and PTSD could potentially be explained as a form of complex PTSD as described in previous research (Gershuny et al., 2003; Herman, 1992). With respect to stressful life events, in a sample of 329 individuals with a primary diagnosis of OCD, 60.8% of the participants reported experiencing a stressful life event (SLE) approximately one year before OCD onset. This pattern was much more common among female participants, which is consistent with past research; SLEs are a greater risk-factor for sudden onset of OCD among women (Bogetto et al., 1999; Rosso et al., 2012).

Theories regarding the connection between OCD and PTSD have been discussed at length; however, there is a need for more research that identifies clinical features and associated factors of OCD that are linked to trauma symptomatology (Fontenelle et al. 2012). One such feature is *magical thinking*, a construct that covers a broad range of atypical beliefs about causal influences that are at odds with cultural norms. For example, beliefs related to superstition,

communication with spirits, or the influence of thoughts or minute actions on external events would fall under this umbrella term (Rees et al., 2010). Within the context of OCD, magical thinking may manifest as an individual repeatedly flipping a light switch with the purpose of protecting their loved ones from harm (Eremsoy & Inozu, 2016). Essentially, this is an overly simplified explanation of the relationship that exists between some obsessions and compulsions in OCD (APA, 2013). Correspondingly, magical thinking could be manifested as the belief that thoughts can influence outcomes or define an individual's moral character. This type of magical thinking has been called thought-action fusion (TAF) throughout the literature and has been theorized as being central to the mechanisms of OCD (Shafran et al., 1996; see also Berle & Starcevic, 2005).

Although TAF has been found to exist in a variety of other clinical populations (PTSD, Generalized Anxiety Disorder [GAD], and Seasonal Affective Disorder [SAD] among others), the idea of TAF was spawned from research related to the processes involved in OCD (Shafran et al., 1996). TAF can be described as a cognitive error in which individuals place exaggerated significance into the thoughts that they have; it can be manifested in two ways: (a) when individuals believe that having an objectionable thought or impulse is morally equivalent to acting on it (Moral TAF), and (b) when individuals believe that having an unacceptable thought makes it more likely to happen (Likelihood TAF). Likelihood TAF can be further broken down into whether the related thoughts are directed at the self (likelihood-self TAF) or others (likelihood-other TAF). Someone with high levels of likelihood-self TAF beliefs may be inclined to believe that if they think about getting an illness, they are more likely to contract it. Alternatively, individuals with high levels of likelihood-other TAF beliefs may be more inclined to believe that thinking about a friend or family member getting into a car accident will increase

the probability that it will happen (Shafran et al., 1996). Some studies have identified a stronger link between likelihood-other and moral TAF in OCD, with no differences between anxiety disorders in likelihood-self TAF (Bailey et al., 2013). Others have found that likelihood-other and likelihood-self TAF beliefs are especially elevated among OCD populations, but that this relationship is mediated by negative affect. The authors suggested that TAF could be linked to negative thinking styles that are associated with symptoms of anxiety and depression (Abramowitz et al., 2003). It has been hypothesized that TAF maintains the relationship between obsessions and compulsions, due to the sense of duty that individuals feel to control their thoughts and perceived potential outcomes (Salkovskis, 1985; see also Wilson & Chambless, 1999).

TAF and magical thinking have not commonly been explored as primary variables of interest in relation to PTSD; however, associations between magical thinking and TAF among individuals with PTSD have been discussed within several sources. In a recent study, a negative correlation between TAF and psychological well-being was discovered among veterans who were hospitalized for combat-related PTSD (Mikaeili et al., 2017). Additionally, children who experience trauma are more likely to engage in magical thinking and report having paranormal beliefs; it has been hypothesized that children develop these beliefs as a way of coping with events that are outside of their control (Berkowski & MacDonald, 2014). Feelings of mental contamination (feeling dirty inside of the self) have been consistently reported among individuals with both OCD and PTSD (Mathes et al., 2019; McCann et al., 2023); however, it is important to note that mental contamination has also been linked to elevated TAF beliefs (Coughtrey et al., 2012). Finally, a past study described one form of guilt associated with PTSD as being magical in nature. *Superwoman*/*Superman* guilt is used to describe the guilt of individuals who feel as

though they should have been able to change the outcomes of a traumatic event, without regard for the limitations of human abilities (Opp & Samson, 1989).

In addition to the cognitive processes previously discussed, there is also a unique relationship between OCD and certain emotional responses. Specifically, the self-conscious emotions of guilt and shame have been identified as being elevated in OCD populations (Stewart & Shapiro, 2011; Weingarden & Renshaw, 2015). Although guilt can be adaptive when it enables individuals to correct their transgressions towards others, it is considered pathological when an individual experiences guilt in situations in which no true wrong has been done. In a 2011 literature review, it was concluded that pathological guilt plays an important role in OCD symptoms, as demonstrated by the findings of 14 studies that confirmed that individuals with OCD or OCS are more likely to experience guilt in neutral situations (Stewart & Shapiro, 2011). Individuals with OCD have also been found to exhibit heightened guilt sensitivity (i.e., more negative evaluations of guilt) and guilt propensity (i.e., more frequent and powerful guilt reactions) (d'Olimpio et al., 2013; Hellberg et al., 2023; Melli et al., 2018). Regarding shame, individuals with OCD experience two types of shame including symptom-based shame and shame associated with having a psychological disorder (Weingarden & Renshaw, 2015). Shame and guilt in OCD have both been identified as barriers to treatment due to reluctance of patients to disclose symptoms (i.e., disturbing thoughts and beliefs; Newth & Rachman, 2001). Both guilt and shame appear to have a unique relationship with certain OCD symptom dimensions. For example, Hellberg and colleagues (2023) found that symptoms related to fear of causing harm to others and unacceptable thoughts were related to increased guilt sensitivity. Another group of researchers further proposed that these two symptom dimensions (i.e., fear of causing harm and unacceptable thoughts) would also be associated with shame-proneness. Although they

confirmed one of their hypotheses (that shame-proneness and symptoms related to fear of causing harm would be related to one another), they did not find this same relationship with symptoms related to unacceptable thoughts. Instead, they found that symptoms related to symmetry were significantly correlated with shame-proneness; the authors hypothesized that this finding might be explained by the previously identified relationship between perfectionism and symptoms related to symmetry (Wetterneck et al., 2014; see also Wheaton et al., 2010).

Although PTSD was previously classified as an anxiety disorder, many individuals with PTSD describe experiencing a complex array of emotions, including guilt, shame, sadness, and anger (Lee et al., 2001). Negative thoughts and feelings directed towards the self, including guilt and shame, were added to diagnostic criteria for PTSD with the release of the DSM-5. Specifically, the diagnostic manual reads that individuals may experience "distorted cognitions about the cause or consequences of the traumatic event(s) that lead the individual to blame himself/herself or others," as well as may have "persistent negative emotional states (e.g., fear, horror, anger, guilt, or shame)" (APA, 2013, p. 272). Generalized guilt and shame among survivors of interpersonal trauma have been identified as predictors of PTSD (Bockers et al., 2016). Additionally, in a recent study that explored participant reactions to an analogue task that resulted in an accident, individuals who were blamed for the incident reported experiencing more distress and intrusions the next day than individuals who were told that the accident was due to a technical problem. The authors of this published study concluded that guilt is a factor that could contribute to the development of PTSD after a traumatic event (Bub & Lommen, 2017). Several studies have implicated shame and guilt as playing a role in the development of PTSD (Kip et al., 2022; Lee et al., 2001; Pugh et al., 2015; Saraiya & Lopez-Castro, 2016). Although guilt and shame can occur independently from one another, a recent study determined that approximately

100% of veterans with trauma-based guilt in PTSD also experienced shame (Bannister et al., 2019). Trauma related guilt and shame have been identified as risk factors for suicidality, as well as barriers to treatment among individuals with PTSD (Bryan et al., 2013; Tripp & McDevitt-Murphy, 2017; Saraiya & Lopez-Castro, 2016).

Purpose of the Present Study

There are many related OCD symptoms and factors that could theoretically play a part in the emergence of PTSD and trauma symptomatology; however, the literature only discursively supports these connections. The present study seeks to address this gap by tying these pieces of literature together to identify the following: (a) Does OCD symptom severity predict trauma symptomatology?, (b) Do OCD symptoms related to fear of causing harm to others explain more about the relationship between OCD symptoms and trauma symptomatology than other symptom dimensions of OCD?, and (c) Are there specific traits related to OCD that are linked to increased trauma symptomatology among adults with OCD? Based upon a thorough literature review, the present study seeks to identify the relationship of magical thinking, TAF, guilt, and shame to trauma symptomatology among individuals with OCD. Specifically, the author is theorizing that magical thinking and TAF cause individuals with OCD to believe that they are responsible for events that are beyond their control, which in turn may cause increased guilt and shame, and contribute to the development of trauma symptomatology. The author proposes the following in support of this theory:

1. Magical thinking and TAF are common in OCD and cause individuals to feel responsible for thoughts or actions that are unrelated to outcomes (Rees et al., 2010; Shafran et al., 1996).

2. TAF, a form of magical thinking, is positively associated with guilt (Rachman et al., 1995) and the development of shame (Hansmeier et al., 2023).
3. Guilt and shame are elevated among OCD populations (Geissner et al., 2022; Laving et al., 2023).
4) Guilt and shame are highly relevant to trauma symptomatology and PTSD (Pugh et al., 2015; Saraiya & Lopez-Castro, 2016).

Seeking out the answers to the questions previously mentioned will help establish a greater understanding of the relationship between OCD and trauma symptomatology, which will be especially helpful in treatment resistant cases. This study explores specific variables related to OCD and examines what role these variables may play in the well-documented relationship between OCD and PTSD. Additionally, the findings of this study could inform future directions for research, especially as it pertains to prevention of PTSD onset among individuals with OCD.

CHAPTER II: LITERATURE REVIEW

Obsessive Compulsive Disorder

OCD has been described as ego-dystonic in nature, indicating that the symptoms undermine the basic human desires and needs of the individuals who are affected (Coimbra-Gomes, 2020). Individuals with OCD often experience an ambivalent sense of self, in which they question their moral character and worth (Bhar & Kyrios, 2007). Additionally, poor self-esteem and even fear of the self are prevalent among clinical OCD populations (Husain et al, 2014; Melli et al., 2016). Quality of life (QoL) is worse among individuals with OCD as compared to the general population in many domains, with social functioning, and psychological and emotional well-being being the most severely impacted areas (Macy et al., 2013). Health related QoL is also impacted, as self-reported by participants on a short health screener in a study on comprehensive QoL among individuals with OCD (Kugler et al., 2013). Individuals with OCD also often demonstrate poor functioning at work and have trouble obtaining and maintaining employment. In cases of early onset, individuals may underachieve academically due to barriers caused by symptoms, and experience strain in family life (Rosa et al., 2012).

OCD, previously classified as an anxiety disorder, came to be classified under the more recently specified category of Obsessive Compulsive and Related Disorders concurrently with the release of the DSM-5 (APA, 2013). The main reason for this change stemmed from evidence that OCD and anxiety disorders, although related, are different across many domains. One major difference is that the core feature of OCD and related disorders is the relationship between obsessions and compulsions rather than anxiety (Mataix-Cols et al., 2007). Several emotional forces drive OCD symptoms in tandem including anxiety (Cohen et al., 2003), disgust (Bhikram et al., 2017), guilt (Melli et al., 2018), and discomfort (i.e., not just right experiences; Coles et

al., 2003). Additionally, OCD and related disorders differ from anxiety disorders within the realms of course of illness, heritability, comorbidities, response to treatment, associated personality features, cognitive processing, risk-factors, and biomarkers (Stein et al., 2010). For an individual to receive a diagnosis of OCD, they must experience both persistent/unwanted obsessions and engage in compulsions (behavioral or mental acts) for the purpose of decreasing distress associated with the thoughts or preventing feared outcomes. These symptoms must also take up more than one hour each day *or* cause distress or decreased functioning in important areas of life. Specifiers for OCD are those that indicate the level of insight that an individual may have into their symptoms. For example, *good or fair insight* would indicate that an individual feels that the dysfunctional beliefs that are driving compulsions are most likely untrue; individuals with *poor insight* may feel that these beliefs are probably true; and individual with *absent insight or delusional beliefs* would feel that their dysfunctional beliefs are definitely true. Additionally, a specifier to state whether symptom presentation includes tics was also added to the DSM-5 and carried over to the DSM-5 Text Revision (DSM-5 TR; APA, 2022; APA, 2013).

OCD has a lifetime prevalence rate of approximately 1.3% to 2.3 % within the general population (Fawcett et al., 2020; Kessler et al., 2005; Ruscio et al., 2010). Globally, women are 1.5 times more likely to be diagnosed with OCD during their lifetime than men (Fawcett et al., 2020). Research on racial differences in OCD symptom severity has determined that racial group membership is an important factor in need of further research. Among a nonclinical sample of students, those who were either black or Asian scored significantly higher on measures of OCD symptom severity than white individuals (Wu & Wyman, 2016). Among children and adolescents, OCD has an estimated prevalence of approximately .25% - 3% (James et al., 2017). OCD symptoms typically emerge in late adolescence or early adulthood; however, childhood

onset also occurs, although more frequently among boys (Taylor, 2011; see also Castle et al., 2016). Although the course of OCD can range drastically from person to person, approximately 62% of those with a formal diagnosis report a chronic course of illness (i.e., longer than two years; Visser et al., 2014). Furthermore, when researchers conducted a 40 year follow up on individuals who received treatment for OCD between 1947 and 1953, it was found that 20% of the participants were in complete remission, 28% experienced subclinical symptoms, and 48% met diagnostic criteria for OCD for more than 30 years (Skoog & Skoog, 1999).

The etiology of OCD is complex and related to a vast range of genetic and environmental factors that can impact cognitions and behaviors (Bozorgmehr et al., 2017; Grisham et al., 2008; Taylor, 2016). The weight of these factors can vary depending upon age of onset; two distinct subtypes of OCD have been identified in the literature, which are classified as early onset (mean age of onset 11 years) and late onset (mean age of onset 23 years). Ages that have been determined as appropriate, empirically supported cutoffs to distinguish between the two subtypes are 20-21 years of age respectively (Taylor, 2011; see also Anholt et al., 2014). Comorbid tics and chronic courses of illness are more prevalent among individuals with early onset OCD. Additionally, individuals that experience an early age of onset typically have more immediate family members with OCD, are more likely to have had complications at birth, and are more likely to be male (Taylor, 2011). Early onset OCD is associated with more severe symptoms, which has been supported by several previous studies (Anholt et al., 2014; Fontenelle et al., 2003; Taylor, 2011). In contrast, individuals with late onset OCD are more likely to be female, experience greater neuropsychological impairment, have high levels of iron in the brain, and experience OCD onset in response to life stressors (Taylor, 2011). Research on the heritability of OCD has demonstrated moderate levels of heritability (47%; Mataix-Cols et al., 2013). An

extensive meta-analysis that reviewed twin studies across a period of 70 years identified that this number ranges anywhere from 27% to 47% among adults, and from 45% to 65% for younger populations (i.e., children and adolescents; van Grootheest et al., 2005). Child abuse, neglect, life stressors, and traumatic experiences have also been identified as being associated with higher rates of OCD diagnoses as well as OCS severity (Caspi et al., 2008; Faravelli et al., 2012; Lafleur et al., 2011).

Intrusive thoughts is the term used throughout the literature to define automatic thoughts and impulses that are personally and culturally unacceptable (Berry & Laskey, 2012; Julien et al., 2007). Although most people experience intrusive thoughts in their daily lives, only some experience related distress (Rachman & de Silva, 1978). Additionally, even when intrusive thoughts cause some distress among non-clinical populations, they interfere much less with functioning and more easily leave the mind than they do for individuals with OCD (Bouvard et al., 2017). Among individuals in non-clinical samples, those who respond to intrusive thoughts in an effortful way, especially those who attempt to escape and avoid these thoughts, report experiencing the most distress (Freeston et al., 1991). Among clinical populations, intrusive thoughts are related to more distress and are more persistent. Additionally, individuals in clinical populations tend to engage in more avoidance behaviors (Rachman & de Silva, 1978). Although intrusive thoughts are a normal part of the human experience, individuals with OCD tend to appraise these thoughts as being more meaningful and threatening, as well as feel a greater sense of responsibility over them as compared to individuals who do not have OCD (Julien et al., 2007; Rachman, 1992; Salkovskis, 1985). In alignment with these findings, The Obsessive Compulsive Cognitions Working Group (OCCWG; 1997) identified a number of core dysfunctional beliefs and cognitive features that are associated with OCD, including an exaggerated sense of

responsibility, inflated perceptions of the importance and threat of thoughts, the perceived need to control thoughts, deficiencies in coping with uncertainty, and perfectionistic tendencies.

Regarding more specific features of associated symptoms, obsessions can generally be classified as belonging to one of four categories, including: (a) cleanliness/contamination, (b) taboo or unacceptable thoughts, (c) harm related to self or others, and (d) symmetry (Abramowitz et al., 2010; see also APA, 2013). Two overarching classifications of obsessions have been identified throughout the literature which have been defined as *autogenous* and *reactive* (Lee & Kwon, 2003; Moulding et al., 2006). Autogenous obsessions are those that have an unclear trigger and are highly distressing due to the nature of the thoughts being at odds with values, moral beliefs, and self-concept. For example, unacceptable thoughts about religious sacrilege, aggression towards self or others, and images of engaging in impulsive or aggressive sexual acts would be considered autogenous in nature. Alternatively, obsessions that are reactive in nature are triggered by environmental stimuli (i.e., doctors office, public restroom), and are perceived as being somewhat reasonable concerns. Related compulsions are often targeted at preventing negative outcomes (i.e., washing, checking). There is typically less shame and guilt associated with reactive obsessions, and individuals who experience this subtype of obsessions tend to place an emphasis on their responsibility to prevent negative outcomes. In contrast, individuals who experience autogenous obsessions report feeling that it is especially important to control their thoughts. They engage in more avoidance and neutralizing compulsions such as distracting themselves, trying to stop distressing thoughts, and self-punishment (Lee & Kwon, 2003).

Although some compulsions are quickly recognized as symptoms of OCD, some individuals engage in more covert rituals or actions such as internal counting, visualizing

positive mental images to counteract distressing ones, and thinking of "good" words (Belloch et al., 2015). In congruence with the theory of covert compulsions, Williams and colleagues (2011) found support for the idea that pure obsessions without compulsions are unlikely; individuals who seem to have no compulsions may be engaging in hidden acts such as mental rituals and reassurance seeking. *Thought suppression* occurs when various efforts are made to terminate or neutralize distressing thoughts; these strategies might include actions such as avoiding triggers of intrusive thoughts, saying "stop", or reasoning with the self throughout the obsessional thoughts (Purdon et al., 2007). Throughout the literature, thought suppression and mental rituals are most often referred to as *covert neutralizing strategies*. These hidden acts are related to increased symptom-related distress, sadness, guilt, and impaired functioning (Belloch et al., 2015). Although thought suppression and other neutralizing strategies often serve the same function as compulsions among individuals with OCD, these clinically significant features of OCD are often excluded from measures of symptom severity (Purdon et al., 2007). Similar to engaging in covert compulsions, some individuals are able to conceal physical compulsions. Research on the lived experience of OCD has highlighted that some individuals hide compulsions by discretely executing them or by doing them when they are in private. Some individuals can put on a public face in which they appear to be functioning well, but in private they experience severe distress, suffering, and strain in daily life and relationships (Brooks, 2010).

OCD is a condition in which approximately 90%-92% of those who have a formal diagnosis, will experience a comorbid mental health disorder during their lives (Ruscio et al., 2010; Torres et al., 2016). In a national study that surveyed 9,282 individuals across the country, it was determined that categorically, OCD comorbidities fall in descending order as follows: anxiety disorders (75.8%), mood disorders (63.3%), impulse control disorders (55.9%), and

substance use disorders (38.6%; Ruscio et al., 2010). OCD and PTSD have been documented as being comorbid at high rates (Brown et al., 2001; Torres et al, 2016; see also Fletcher et al., 2019). Additionally, comorbid PTSD has been documented as being especially prevalent among individuals with treatment resistant OCD (39%; Gershuny et al., 2008). Despite these findings, comorbidity between OCD and PTSD can vary drastically dependent upon the sample. For example, in a study of comorbidities among individuals receiving treatment at outpatient treatment centers affiliated with the International College of Obsessive-Compulsive Spectrum Disorders (ICOCS), rates of comorbidity were much lower. The authors proposed that this could be due to individuals currently receiving effective treatment (Lochner et al., 2014). Comorbidities found among this sample are compared to comorbidities found among a larger sample of patients receiving specialized care at public university clinics (Torres et al., 2016) and are displayed in Tables 1 and 2.

Table 1

Comorbidities Among Clinical OCD Samples (Lochner et al., 2014)

Disorder	Estimated Comorbidity (N=497)
Major Depressive Disorder	15%
Social Anxiety Disorder	14%
Generalized Anxiety Disorder	13%
Persistent Depressive Disorder	13%
Tic Disorders	12.5%
Panic Disorder	11.7%
Body Dysmorphic Disorder	8.7%
Self-Injurious Behaviors	7.4%
Alcohol Use Disorder	4%
Post-Traumatic Stress Disorder	2%
Compulsive Shopping	7%

Table 2

Comorbidities Among Clinical OCD Samples (Torres et al., 2016)

Disorder	Estimated Comorbidity (N=1001)
Major Depressive Disorder	56.4%
Social Phobia	34.6%
Generalized Anxiety Disorder	34.3%
Specific Phobia	31.4%
Tic Disorders	28.4%
Separation Anxiety Disorder	27.6%
Panic Disorder	20.2%
Post-Traumatic Stress Disorder	19.1%
Excoriation Disorder	16.7%
Attention Deficit Hyperactivity Disorder	13.7%
Persistent Depressive Disorder	11.9%

Traumatic and Stressful Life Events

SLEs is a term that encompasses life events that cause change and are likely to produce stress in daily life (Dohrenwend & Dohrenwend, 1974). TLEs, a specific type of SLE, are distinguished from other SLEs due to the involvement of a real or perceived threat of death or serious injury (Schwarzer & Luszczynska, 2013). Although a countless number of life events could be considered potential sources of stress, in *Stressful Life Events: Their Nature and Effects* (Dohrenwend & Dohrenwend, 1974) the authors attempted to answer two questions by exploring and compiling findings from previous research including: (a) What characteristics of life events are related to increased stress? and (b) What are the deleterious effects of related stress? They discussed clear associations between stressful life events and physical illness. Furthermore, in the four decades since this publication, there have been several other significant contributions to this line of research that have added more depth and breadth to our understanding of stress and the human response. These include the identification of risk factors for developing maladaptive stress responses (i.e., adjustment disorder and PTSD; Sayed et al., 2015), an ever-growing

knowledge of the detrimental effects of stress (Lupien et al., 2009), and the transactional processes involved in the stress response (Lazarus & Folkman, 1987). These findings highlight some of the ways this research has informed a diverse range of professional disciplines.

Stress is a term that has been used inconsistently throughout the literature to refer to various facets of the stress response; it has been used to reference stressors (i.e., precipitating stimuli), the physiological stress reaction, as well as the subsequent cognitive appraisal and response (Lazarus, 2006). This lack of cohesion has been described as problematic (Schwarzer & Luszczynska, 2013). In reference to sources of stress, two distinct types of life events have been referred to in the literature, including those that are normative and non-normative. Normative life events refer to those expected as a part of daily life and are based on voluntary choices, while non-normative events are rarer, more unpredictable, and often involuntary. Normative life events might include changes in work, school, or place of residence; while non-normative life events may include experiences such as the loss of a loved one, getting into an accident, or becoming ill (Schwarzer & Luszczynska, 2013; see also Buccheri et al., 2018). Because of the nature of non-normative life events, they generally result in more stress than normative life events. Life events are perceived as more stressful when individuals sense of loss of control, perceive the risk of the event as great, and consider the impact of the event as substantial (Schwarzer & Luszczynska, 2013). Essentially, non-normative life events cover a broad range of unexpected stressors, including traumatic ones.

General adaptation syndrome (GAS) is a model that attempts to explain the relationship between stressors, the stress response, and detrimental health outcomes (Selye, 1950). This model proposes that there are three phases of the stress response including the alarm phase, in which the sympathetic nervous system is activated (i.e., fight or flight); the resistance phase, in

which the animal becomes resilient to the negative effects of stress; and the exhaustion phase, in which the animal becomes weak and worn down. Selye (1965) proposed that although the stress response is meant to protect animals when faced with a threat, persistent or frequent stress leads to exhaustion which breaks down adaptive responses leading to illness, compromised immunity, and cardiac disease, among other poor outcomes. Literature in support of this theory is abundant, and this theory has continued to be expanded throughout the years (Turcu et al., 2017; O'Connor et al., 2021). One of the central implications of GAS theory is that all animals have a limited ability to cope with stress, and that interindividual characteristics impact where the limits of adaptability are (O'Connor et al., 2021; Selye, 1965).

In line with GAS theory, individual vulnerabilities and traits have been implicated in susceptibility to developing pathological stress responses (Schwarzer & Luszczynska, 2013). The interactions between these individual vulnerabilities and traits, as well as the nature of the stressors play a key role in whether individuals develop a pathological stress response or resiliency in the face of difficulties (Gillespie et al., 2009). Research has demonstrated that several biological, social, and psychological features may predispose individuals to developing PTSD or another trauma related disorder when faced with severe stress. For example, Radley and colleagues (2011) substantiated their hypotheses that typical cortisol levels, neuroplasticity of the prefrontal cortex, and control of the hypothalamo–pituitary–adrenocortical (HPA) axis are associated with more resilient stress responses. Regarding nature of the stressors, individuals who experience chronic or more frequent life stressors are more likely to experience a range of poor outcomes across many domains of life (Hassanzadeh et al., 2017). An example of a chronic stressor often associated with negative health outcomes and comorbid mental health conditions is poverty (Thoits, 2010).

In a review about the impact of chronic stress on health, it was suggested that chronic stress may facilitate decline or magnify preexisting vulnerabilities (Marin et al., 2011). SLEs have been identified as a precursor to many physical and mental health outcomes, including cardiac disease (Golbidi et al., 2015), suicidality (Howarth et al., 2020), relapse after recovery from eating disorders (Grilo et al., 2012), onset of OCD (Rosso et al., 2012), and cancer (Bahri et al., 2019) among many others. Developmentally, exposure to stressful and traumatic life events in childhood are believed to permanently alter the HPA axis response which enables the onset of anxiety and PTSD (Faravelli et al., 2012). Among younger populations, SLEs are related to decreased health related QoL (Coker et al., 2011), internalizing and externalizing difficulties, and increased risk of school drop-out (Roberts et al., 2018).

A recent literature review highlighted the differences between traumatic and nontraumatic memories across studies; traumatic memories are encoded differently, and the narratives are qualitatively distinct. Traumatic memories are shorter, more fragmented, disorganized, laden with sensory and emotional content, and seen as more self-defining than those that are simply autobiographical in nature (Crespo & Fernández-Lansac, 2016). Brewin and colleagues (1996) proposed that there are two cognitive representations of traumatic events that are created when trauma is experienced; those that are voluntarily accessed (Verbally Accessed Memories [VAMs]), and those that are automatically and involuntarily brought to mind by environmental cues (Situationally Accessed Memories [SAMs]). VAMs are typically associated with emotional responses that are proportional to the situation, reasonable, and in line with values and beliefs. Alternatively, emotional responses related to SAMs are typically out of proportion, based on unrealistic fears, and an overexaggerated sense of threat.

Compelling evidence from past research indicates that SLEs and TLEs play a unique role in OCD onset, maintenance, and exacerbation (Cromer et al., 2007; Adams et al., 2018). A study conducted by Cromer and colleagues (2007) found that approximately 54% of participants with OCD reported having experienced a TLE, and increased OC symptom severity was positively correlated with the number of TLEs experienced. In a recent meta-analysis conducted by Brander, Pérez-Vigil, Larsson, & Mataix-Cols (2016), 128 previous studies about environmental risk-factors for OCD were reviewed which revealed consistent associations between TLEs, SLEs, and OCD onset. Adams and colleagues (2018) proposed that OCD symptoms could be partially maintained by changes in the limbic and corticostriatal regions of the brain that occur in cases of severe stress. Recent research has also found that individuals who have suffered traumatic childhoods are more likely to meet diagnostic criteria for OCD later in life. The authors found that after accounting for symptoms of anxiety and depression, the relationship between childhood trauma and OCD symptoms is no longer significant; however, they found that experiential avoidance maintained a significant association with OCD symptoms even after accounting for anxiety and depression (Briggs & Price, 2009). Carpenter and Chung (2011) explored the relationship between childhood trauma, alexithymia (inability to express feelings in words), attachment avoidance, and OCD. The results of their study supported that trauma is associated with OCD but indirectly, in which past experiences and emotional processing difficulties play a role.

PTSD and Trauma Symptomatology

The lifetime prevalence of PTSD ranges from 1.3% to 12.2%, while the yearly prevalence ranges from .2% to 3.8% (Shalev et al., 2017). DSM-5 TR diagnostic criteria for PTSD states that symptoms must follow the experience of a real or perceived death or threat of

death, serious injury, or sexual assault; and that related symptoms consist of intrusions, avoidance, negative changes in thoughts and mood, and changes in reactivity (APA, 2022). Although trauma symptomatology is often understood in terms of the presence or absence of PTSD, symptoms associated with trauma occur at varying degrees and can emerge in stressful events or circumstances that would not be considered traumatic in nature as defined by the DSM-5 TR (Brewin et al., 2009; Korte et al., 2016; see also APA, 2022). To cover the broad range of these expressions of trauma and stressor related symptoms in varying circumstances, the DSM-5 and DSM-5 TR have a chapter dedicated to trauma and stressor related disorders (APA, 2013; APA, 2022). Diagnoses that encompass situations in which the event exposure or symptoms do not meet diagnostic criteria for PTSD include acute stress disorder, other trauma and stressor related disorder, and adjustment disorder, among others (APA, 2013; APA, 2022). Diagnostic criteria for PTSD are displayed in Figure 1.

Figure 1

Diagnostic Criteria for PTSD (APA, 2022)

Exposure to death, threat of death, serious injury, or sexual assault through …	**Intrusion symptoms including…**	**Avoidance of reminders by ...**	**Negative changes in cognition and mood related to the traumatic event (two or more of the following)**	**Marked alterations in arousal and reactivity.**	**Duration**	**Distress/impaired functioning in…**
Direct Experience	Repeated intrusive thoughts and memories of the traumatic event	Attempting to avoid associated thoughts, memories, and feelings	Difficulties remembering the traumatic experience.	Irritable behavior/angry outbursts.	Symptoms persist for longer than one month	Important areas of life (i.e., work, home, relationships, school)
Witnessing a traumatic event	Nightmares of the traumatic event	Attempts to avoid external reminders (people, places, situations, etc.)	Negative beliefs about oneself, others, or the world.	Reckless/self-destructive behavior.		
Learning of a sudden violent/ unexpected traumatic event	Dissociative flashbacks in which the individual reexperiences trauma		Distorted cognitions about the cause/consequences of the traumatic event, including blaming oneself.	Hypervigilance.		
Repeated exposure to extreme details via work (i.e., first responders)	Intense/extended psychological distress when facing reminders		Persistent negative emotional state (e.g., fear, horror, anger, guilt, or shame)	Exaggerated startle response.		
	Strong physiological reactions to internal/external cues of the traumatic event.		Diminished participation/interest in activities.	Difficulties with concentration.		
			Feelings of detachment or estrangement from others.	Sleep disturbances.		
			Persistent inability to experience positive emotions.			

Although men typically encounter more traumatic events than women, women are approximately two to three times more likely to be diagnosed with PTSD than men (Christiansen & Elklit, 2008; Olff, 2017). These differences in diagnostic prevalence are partly due to variables that are specific to biological sex, including a more sensitive HPA axis among women, and differential effects of oxytocin (Kubzansky et al., 2012; Olff, 2017; Olff et al., 2007). Research on the conditioned fear response also demonstrated that women exhibit a greater response (skin conductance) when presented with cues of a threat after fear conditioning, indicating that women learn and instill these associations at an accelerated rate (Inslicht et al., 2013). Gender differences have also been identified among risk-factors for PTSD; preexisting depression has been identified as a risk-factor for PTSD development among women, while anxiety is considered a risk-factor for PTSD among men. Additionally, women who experience traumatic events have been found to experience more symptoms of dissociation (i.e., losing track of time, place, or sense of self or "zoning out") than men, although dissociative symptoms are prevalent among individuals of both sexes. Age has not been found to play a part in PTSD symptomatology among men or women (Christiansen & Elkit, 2008).

A unique link between OCD and PTSD has been discovered over the past several decades. De Silva & Marks (1999) published an article that outlined eight clinical cases in which individuals who experienced trauma and symptoms of PTSD also met DSM diagnostic criteria for OCD. In all eight cases, the patients experienced a traumatic event prior to OCD onset and clinically significant or subclinical symptoms of PTSD; some of the individuals met diagnostic criteria for both OCD and PTSD. These authors described the relationship between OCD and PTSD as *dynamic*; one that exists as a process of change. In line with these findings, a review of four cases in which individuals were treated for comorbid OCD and PTSD determined that as

symptoms of OCD improved during treatment, symptoms of PTSD worsened and vice versa (Gershuny et al., 2003). A more recent study explored a series of four cases in which veterans experienced the almost simultaneous onset of comorbid PTSD and OCD after encountering a traumatic event (Fostick et al., 2012). In contrast with these findings, Huppert and colleagues (2005) found that when controlling for depression and symptom overlap between PTSD and OCD, the relationship between the two disorders no longer existed. Other studies have determined that depression acts as a mediator in the relationship between OCD and PTSD (Merrill et al., 2011).

In previous studies about comorbid OCD and PTSD, researchers have made distinctions between post-traumatic and pre-traumatic OCD, identifying unique features of both. Individuals with pre-traumatic OCD were found to have an earlier age of onset, substance use difficulties (alcohol), and symptoms associated with washing and contamination. In contrast, individuals with post-traumatic OCD onset typically experienced a later age of onset, planned their suicide in the past, engaged in compulsive shopping, and had received a prior diagnosis of panic disorder with agoraphobia. Individuals with both post- and pre-traumatic subtypes of OCD were likely to engage in self-mutilation (Fontenelle et al., 2012). Another study conducted by some of the same authors and their colleagues determined that individuals with pre-traumatic OCD were more likely to have experienced childhood abuse, have worse functional health related to physical health, and have more comorbid psychological disorders (de Araújo, et al., 2018).

Magical Thinking and Thought-Action Fusion

Magical thinking has previously been described as irrational belief in causal influences between things that cannot be explained by either physical laws or cultural beliefs (Bocci & Gordon, 2007). Similarly, magical thinking has been conceptualized by other researchers as

holding beliefs about causal influences that violate cultural norms (Einstein & Menzies, 2004). The literature generally refers to beliefs in the influence of supernatural forces, spirits, magic, witchcraft, and psychic abilities on the physical world as magical thinking (Tobacyk & Wilkinson, 1990). Also falling under the definition of magical thinking is a thought pattern that is especially relevant to OCD and other anxiety disorders: thought-action fusion (TAF; Rosengren & French, 2013). TAF refers to a form of magical thinking, in which individuals seem to confuse the difference between actions and thoughts. For example, an individual with elevated TAF beliefs may believe that thinking about something makes it more likely to happen, or that thinking about doing something is morally equivalent to acting on the thought (Thompson-Hollands et al., 2013).

Magical thinking is common among children and generally decreases as children age into late childhood; however, persistence of some magical beliefs endures into adulthood. Recent research has found that although these beliefs can last into adulthood, they often fade with age (Brashier & Multhaup, 2017). Research within the past decade has determined that there are sex differences in magical thinking; women tend to endorse higher levels of magical thinking than men (Karcher et al., 2014). Although magical thinking is present in non-clinical populations (Einstein & Menzies, 2006), it tends to be elevated among individuals with certain psychological traits or symptoms, including those related to schizotypy, psychosis, depression, anxiety, hostility, phobia, and paranoia (Hatunoğlu, 2014). Previous research has identified magical thinking as being especially elevated among clinical OCD populations (Einstein & Menzies, 2006); however, it is higher among individuals with schizophrenia (García-Montes et al., 2014). Most of the research surrounding magical thinking pertains to the research of schizotypy (i.e., psychological/behavioral traits that are considered unusual and are linked to a vulnerability to

schizophrenia; Lenzenweger, 1999). Despite this focus on schizotypy, OCD is another psychological disorder in which magical thinking has been a recurring research theme.

Magical thinking and OCD have been examined closely in several research studies, which has shed some light on their unique relationship. Magical thinking has been identified as being a critical factor in the relationship between OCD obsessions and related compulsions (Yorulmaz et al., 2011). It has been hypothesized that magical thinking acts as a coping strategy which allows individuals have a greater sense of control over things that are outside of their control (Stavrova & Meckel, 2017); however, in the context of OCD this is partly what fuels and maintains compulsive actions (Moulding & Kyrios, 2006). In alignment with this hypothesis, previous research has determined that magical thinking predicts OCD symptom severity (Rees et al., 2010). A 2020 study replicated these findings, but also determined that magical thinking mediates the relationship between other psychological factors related to OCD (i.e., threat overestimation and sense of responsibility) on OC symptom severity (Fite et al., 2020).

Research on the relationship between OCD, magical thinking, and TAF has determined that both magical thinking and TAF are significantly correlated with OC symptomatology; however, it is interesting to note that when controlling for magical thinking, the relationship between OC symptomatology and TAF is no longer significant. In contrast, when controlling for TAF, the relationship between magical thinking and OC symptomatology is still meaningful. The authors hypothesized that this phenomenon may be explained by observing TAF as a specific manifestation of magical thinking, rather than as an independent construct (Einstein & Menzies, 2004). Despite TAF being closely related to magical thinking, many studies have placed a singular focus on the relationship between OCD and TAF. Research has revealed that TAF beliefs are related to heightened distress in response to intrusive thoughts (Berle & Starcevic,

2005), and increased worry (Akbari, 2017). TAF beliefs have also been found to mediate the relationship between religiosity and OCS, indicating that religious beliefs may play a role in how OCS are manifested (Williams et al., 2013). Another interesting finding that has guided present research, is that the relationship between TAF beliefs and OCD symptomatology is mediated by negative emotions, such as anxiety and depression (Abramowitz et al., 2003). Of note, other studies have also determined that TAF related beliefs are not specific to OCD populations (Rassin et al., 2001).

Research on the relationship between OCD and specific TAF beliefs (i.e., likelihood-other, likelihood-self, and moral) has identified unique differential relationships between the specific TAF beliefs and OCD. For example, regarding specific symptom dimensions of OCD, likelihood-other TAF beliefs positively predict symptom severity related to unacceptable thoughts, while likelihood-self TAF beliefs positively predict symptoms related to fear of causing harm to others (Kim & Lee, 2020). Additionally, moral TAF beliefs have been identified as a predictor for inflated sense of responsibility, while likelihood TAF beliefs are associated with increased thought suppression, resulting in increased symptom severity (Altin & Gençöz, 2011). Recent research has also found that moral TAF beliefs act as a moderator in the relationship between obsessions and compulsions among individuals who are especially prone to shame (Valentiner & Smith, 2008).

Regarding the relationship between PTSD, magical thinking, and TAF beliefs, these connections are not frequently discussed directly throughout the literature. Even though research in this realm is more limited, there are interesting discoveries that are relevant to the present hypotheses. Previous research has found that children who experience stressors, such as parental addiction and traumatic events engage in more magical thinking than children who do not; it is

believed that this phenomenon is due to children's attempts to cope with situations in which they have very little control (Berkowski & MacDonald, 2014). Similarly, adults who were maltreated as children demonstrate higher levels of magical thinking (Dizinger et al., 2022). Different experiences of childhood maltreatment have also been found to predict the type of TAF beliefs that individuals hold; among a sample of adults who experienced childhood maltreatment, individuals who experienced emotional abuse and physical neglect demonstrated higher levels of likelihood (other and self) TAF beliefs, while experiences of physical abuse predicted both likelihood and moral TAF beliefs (Berman et al., 2013). In line with this hypothesis, a 2007 study which explored the relationship between schizotypal traits, trauma related intrusions, and trauma symptomatology, researchers found a moderate correlation between magical thinking, trauma-related intrusions, trauma symptomatology, and frequency of unwanted thoughts/images related to traumatic events (Marzillier & Steel, 2007). Individuals who have experienced specific types of traumatic events also frequently report feelings of mental contamination (Badour et al., 2013), which has been identified as being closely tied to TAF (Fergus, 2014; Radomsky et al., 2014; see also Inozu et al., 2023). Mental contamination has also been found to predict OC symptom severity among individuals who were exposed to traumatic events (Ojserkis et al., 2018).

Guilt and Shame

Guilt and shame are considered *self-conscious* emotions that cause internal discomfort within the self and can both emerge in response to negative self-appraisals and/or the real or perceived negative appraisals of others (Tracy et al., 2007). Although these two emotions are similar, there are important distinctions that make them unique. Teroni and Deonna (2008) summarized the differences between these two emotions in the following way; (a) guilt is other

oriented while shame is self-oriented, (b) shame is a social emotion (i.e., generated in response to knowledge, opinions, or perceptions of others) and guilt is not, (c) shame is centered around a negative appraisal of the self, while guilt is centered around a negative appraisal of an action, and (d) guilt is centered around transgressions against others, while shame is centered around perceived violations of the ideal self. In addition to these differences, there are functional differences in the ways that guilt and shame impact coping behaviors. For example, guilt often results in efforts to correct the wrongdoing or improve future behavior. Additionally, it causes people to consider their actions from the perspective of others, leading to increased understanding and empathy (Tracy et al., 2007; Behrendt & Ben-Ari, 2012). In contrast, shame is associated with more negative coping styles such as avoidance, aggression, anger, and defensiveness (Behrendt & Ben-Ari, 2012).

Although guilt is generally more adaptive than shame, pathological guilt emerges in situations in which individuals experience guilt when they have done no wrong (Stewart & Shapiro, 2011). Pathological guilt has been identified as a trait that accompanies a number of psychological diagnoses, including OCD (Stewart & Shapiro, 2011), bulimia nervosa (Steer et al., 1990), bipolar disorder (Parker et al., 2000), PTSD (Bannister et al., 2019; Kubany & Watson, 2003), comorbid schizophrenia and depression (Rahim & Rashid, 2017), and complicated bereavement (i.e., "survivors guilt"; Maciejewski et al., 2016), among others. Guilt has been identified as being related to increased symptom severity among individuals with OCD (Rakesh et al., 2021), as well as those with PTSD (Bannister et al., 2019). Regarding traits related to OCD, a published dissertation study reported that self-reported levels of TAF mediated the relationship between unwanted thoughts and pathological guilt among a sample of

individuals with OCD (*N*=96); those with higher levels of TAF beliefs experienced more pathological guilt in response to unwanted thoughts (Blair, 2016).

There are two types of guilt defined in the literature; *altruistic guilt* is ascribed to an individual's perception that they have not done enough to help others, while *deontological guilt* is related to the perception of breaking a personal moral code (Basile & Mancini, 2011). Avoiding deontological guilt has been identified as being especially motivating for individuals with OCD, as was demonstrated by the tendency among this population to commit to inaction when asked to make choices in response to a philosophical question about life and death consequences (i.e., the Trolly Problem; Mancini & Gangemi, 2014). Additionally, some individuals with OCD have been found to be able to reduce and even eliminate compulsive behaviors if the responsibility of outcomes is placed upon another person, hence reducing the threat of guilt (Arntz et al., 2007). Individuals with OCD have been found to process deontological guilt differently than controls, which has been observed through use of fMRI. Certain brain regions demonstrate decreased activation when exposed to deontological guilt, but not altruistic guilt. The authors hypothesized that this pattern could be due to individuals with OCD having more frequent exposure to deontological guilt (Basile, et al., 2013).

Shame is also prevalent in several psychological disturbances, with well documented associations with OCD (Weingarden & Renshaw, 2015), PTSD (La Bash & Papa, 2014), and borderline personality disorder (Linehan, 1993; Karan et al., 2014). Although shame is more common among women, it predicts negative outcomes (i.e., poor self-esteem, emotional distress, and hostility) similarly among individuals regardless of biological sex (Velotti et al., 2017). Shame has been identified as a common emotion that is experienced in both OCD and PTSD (Laving et al., 2023; Saraiya & Lopez-Castro, 2016), especially among those who experienced

shame at the time of a traumatic event (La Bash & Papa, 2014) and those who experience OCD symptoms related to fear of causing harm to others (Wetterneck et al., 2014). A review of several studies that explored the role of shame in PTSD determined that targeting shame during PTSD treatment could potentially improve treatment outcomes (Saraiya & Lopez-Castro, 2016).

Shame and guilt have both been recognized as risk factors for suicidality among individuals with PTSD (Kealy et al., 2017; Bryan et al., 2013); however, one study found that guilt has a stronger relationship to suicidality than shame when the two are examined separately (Bryan et al., 2013). It is also important to note that the relationship between guilt and suicidality is especially strong when high levels of guilt and shame accompany one another (Kealy et al., 2021). This is an important consideration due to the previous research findings that indicate that individuals who experience trauma-related guilt are also prone to experiencing shame (Held et al., 2015). Another finding that is relevant to the hypotheses of the present study, is that in a recent study, shame and guilt combined explained approximately 46% of the variance in symptom severity among a sample of combat veterans with PTSD (Cunningham et al., 2018). Shame and guilt have been identified as such a central part to some presentations of PTSD that previous research has proposed a guilt and shame-based treatment model of PTSD, in which psychoeducation about guilt, shame, and humiliation, as well as interventions specific to these difficult emotions be implemented (Lee et al., 2001).

Summary of the Literature

Overall, the literature indicates that OCD and PTSD are two mental health diagnoses that are interconnected in several ways. They generally have a dynamic relationship; in cases of comorbidity, symptoms and treatment of each disorder have been found to impact the symptoms of the other (Gershuny et al., 2003; Van Kirk et al., 2018). Although onset of OCD has been

found to occur suddenly in the wake of TLEs, researchers have suggested that more research be conducted to further explore evidence of a pre-traumatic subtype of OCD (de Araújou et al., 2018; Fontanelle et al., 2012). Traits that have been found in common between OCD and PTSD include guilt (Lee et al., 2001; Stewart & Shapiro, 2011), and shame (Lee et al., 2001; Weingarden & Renshaw, 2015). Additionally, there are many clear connections between OCD, magical thinking, and TAF documented throughout the literature (Einstein & Menzies, 2006; Eremsoy & Inozu, 2016; Shafran et al., 1996). Although the connections between PTSD, TAF, and magical thinking are more understated, there are many connections between these constructs that indicate that there are more questions to be asked and answered (Berman et al., 2013; Dizinger et al., 2022; Marzillier & Steel, 2007; Ojserkis et al., 2018). Furthermore, one symptom dimension of OCD (i.e., fear of causing harm to others) has been identified as being related to both guilt and shame (Hellberg et al., 2023; Wetterneck et al., 2014). These facts are the foundation for the present research study and are what led the principal investigator to seek answers to the research questions outlined below.

Hypotheses and Analyses

The present study makes the following hypotheses based upon the literature surrounding the relationship between trauma symptomatology and OCD, tested via a pair of linear regressions:

Hypothesis 1: When controlling for traumatic experiences and demographic variables, higher OC symptom severity, magical thinking, TAF scores, guilt, and shame will be associated with higher severity of trauma symptomatology.

Hypothesis 2a: When controlling for traumatic experiences and demographic variables, severity of OC symptoms centered around fear of doing harm and OCD symptom severity related to any

of the other three symptom dimensions (i.e., contamination, unacceptable thoughts, and order/symmetry) will be associated with trauma symptomatology.

Hypothesis 2b: When controlling for traumatic experiences and demographic variables, severity of OC symptoms centered around fear of doing harm to others will explain a greater proportion of the variance in trauma symptomatology than OCD symptom severity related to any of the other three symptom dimensions (i.e., contamination, unacceptable thoughts, and order/symmetry).

CHAPTER III: METHOD

Recruitment & Participants

Power Analysis

Prior to recruitment, an a priori power analysis was conducted using G*Power 3.1 statistical software (Faul et al., 2009) to determine an adequate sample size for a linear regression analysis using five predictors and five control variables. Specifically, this analysis was done with the overall *F* statistic in mind. The principal investigator wished to achieve power of at least .90 to reduce the likelihood of Type II error to 10%. Given an alpha level of .05 and an assumed medium effect size ($f^2 = .15$), a sample size of 116 was identified as being necessary to detect changes in R^2 within the specifications that were set. A sample size of 175 was collected, to ensure sufficient power following exclusion of any participants that did not meet inclusion criteria.

Recruitment Methods

Participants were adults ranging in age (18 years and older) who self-identified as having OCD, whether they had been formally diagnosed or not. Participants were recruited from locations in which the likelihood of individuals having clinically significant OCD symptoms was increased, such as OCD online support groups and mental health treatment centers. Additionally, due to difficulty recruiting an adequate sample size, the researcher also shared the recruitment flyer with friends and family via social media and email. Throughout most of the recruitment period, the researcher shared a recruitment flyer with her contact information on it via social media and requested that individuals interested in the study contact her for further information. In a minority of cases, the examiner requested that recruitment flyers be placed in plain sight in mental health treatment centers where individuals were able to self-refer. Out of the several

treatment centers approached by the principal investigator, only one OCD treatment center placed the recruitment flyer in their waiting room, to allow individuals to self-refer as they wished.

Upon being contacted by individuals who expressed interest in the study, the researcher provided the interested parties with an ID number which was generated via an online random number generator and then emailed or texted them the link to the study, which could be accessed virtually through HIPAA compliant data collection and storage software. To attract participants, the principal investigator requested university funding in order to offer participants the chance to win one of four $50.00 debit gift cards. On the recruitment flyer and in communication with the participants, the principal investigator highlighted the fact that participants could discontinue the study at any time and still be eligible to receive a gift card. This was done to ensure that no one felt obligated to complete the study. The principal investigator also remained available and responsive to participants to answer questions about the study as needed.

Inclusionary and Exclusionary Criteria

To increase the chances that individuals participating in the study would have clinically significant symptoms related to OCD, all participants were asked to complete a clinical rating scale that is used to diagnose OCD (The Dimensional Obsessive-Compulsive Scale; Abramowitz et al., 2010). Those who scored at or above the cutoff score set by the researcher were able to complete the other measures of the study, while those who did not meet or exceed the cutoff score did not receive access to the additional rating scales; the researcher was able to adjust the settings in the data collection software to ensure that these procedures were followed. The cutoff score set by the researcher was a score of 18; Abramowitz and colleagues (2010) conducted analyses that indicated that a cutoff score of 18 can accurately distinguish between individuals

with clinical OCD from those without OCD approximately 78% of the time. Although these researchers determined that a cutoff score of 21 was able to identify more accurately those with OCD from those with other anxiety related disorders, the present study used a cut off score of 18 to facilitate data collection of an adequate sample size. Exclusionary criteria that were set were put in place to protect human rights, as well as for logistical reasons. Individuals who were not fluent in English, those previously diagnosed with an intellectual disability, and those who were unable to complete rating scales independently for any reason were not included in the present study.

Sample Characteristics

The sample size that was recruited for this study, included 175 individuals, six of whom were removed from analysis due to not completing the OCD screener that was used; it was uncertain whether these individuals would meet the previously stated inclusionary criteria (i.e., a score of 18 or higher on the DOCS rating scale). After removing individuals who did not meet or exceed the cutoff score on the DOCS, the final sample size consisted of an adequate number of participants (N = 129; 73.71% of the originally recruited sample) which exceeded the researchers final recruitment goal of 120 participants. Most study participants identified as being white (73.6%) and female (66.9%). The age of participants ranged from 18 to 51 years (M = 28.7, SD = 7.10). Additional demographic information for the final sample is presented in Table 3.

Table 3

Participant Demographics

Variable	Frequency	Percentage
	n	%
Biological Sex		
Male	20	15.5
Female	107	82.9
Intersex	0	0
Gender		
Male	19	14.7
Female	87	67.4
Nonbinary	16	12.4
Transgender Male	6	4.7
Transgender Female	0	0
Gender Fluid	0	0
Race/Ethnicity		
Black	2	1.6
White	95	73.8
Asian	6	4.7
Latino/Latina/Latine	10	7.8
Indigenous American	2	1.6
Native Hawaiian/Pacific Islander	0	0
Biracial	0	0
Mixed Race	8	6.2
Other – Not Listed	6	4.7
Prefer Not to Say	0	0

In addition to the demographic information listed in Table 3, the researcher also collected information about living circumstances or characteristics of the participants' lives that could act as either risk or protective factors. Although the researcher originally included a measure of socioeconomic status, wording of this item was confusing and for this reason, this variable had to be excluded from the analysis. Generally, results of other items on the demographics questionnaire indicated that participants come from a variety of relationship statuses, with the majority being either single (32.6%), with a long-term partner (27.1%), or married (27.1%). Similarly, participants came from a variety of living situations including those who live alone (14.0%), with a roommate (16.3%), with family (i.e., parents/grandparents; 20.9%), with a

partner with children (17.8%), with a partner without children (27.9%), and single parents (3.1%). Geographic location of participants was recorded as being widespread, with most participants living in America (68.22%). Several participants reported that they experience chronic health difficulties in daily life (46.5%). All participants (100%) reported having previously received a mental health diagnosis (see Table 4). Additionally, most participants reported that they have received some form of mental health care (93.8%) and reported that they have enough social support to get by or more (70.54%; see Table 5). Information regarding geographic location of residence is displayed in Table 6.

Table 4

Mental Health Diagnoses

Previous Diagnoses	*N*	*%*
Obsessive Compulsive Disorder	122	94.6%
Anxiety Disorder	85	65.9%
Depressive Disorder	65	50.4%
Post Traumatic Stress Disorder	41	31.8%
ADHD	30	23.3%
Eating Disorder	16	12.4%
Other – Not Listed	10	7.8%
Autism Spectrum Disorder	8	6.2%
Substance Use Disorder	8	6.2%
Sleep Disorder	7	5.4%
Personality Disorder	6	4.6%
Bipolar Related Disorder	6	4.6%
Dissociative Disorder	4	3.1%
Intellectual Disability	0	0%

Table 5

Mental Health Care History and Social Support

Variable	*N*	*%*
Mental Health Care History		
Medication	108	83.1%
Talk Therapy	107	82.3%
Exposure & Response Prevention	39	30%
Inpatient	31	23.8%
Intensive Outpatient	19	14.6%
Exposure Therapy	19	14.6%
EMDR	14	10.8%
Trauma Focused Therapy	12	9.2%
Other – Not Listed	7	5.4%
Social Support		
None	8	6.2%
A Little but Not Enough	30	23.1%
Enough to Get By	62	47.7%
Exactly What I Need	25	19.2%
More Than I Need	5	3.8%

Table 6

Geographic Location of Final Sample

Region	*N*	*%*
United States of America	88	67.69
United Kingdom	13	10
Canada	10	7.69
Western Europe	4	3.08
Southern Europe	3	2.31
Australia	2	1.54
Middle East/South Asia	2	1.54
Eastern Europe	2	1.54
Central America	2	1.54
Southeast Asia	1	.77
South Africa	1	.77
South America	1	.77

Procedures

All procedures used during the present study were reviewed and approved by the East Carolina University and Medical Institutional Review Board (UMCIRB).

Regarding development and administration of the surveys for the present study, the principal investigator conducted a thorough literature review of rating scales that would provide information on the variables of interest in this study. After the principal investigator identified appropriate ratings scales, she reached out to the authors/those with copyright privileges of the rating scales and requested permission to use them in the present study, as well as to disburse them electronically via HIPAA compliant data collection and storage software. Due to the prevailing pandemic at the time of this study, it was believed that administering rating scales virtually would facilitate data collection during a difficult time, as well as prevent exclusion of individuals with OCD with specific symptom presentations (i.e., contamination concerns).

Surveys that were selected by the principal investigator were chosen for a combination of reasons, including feasibility and psychometric properties. Survey administration was managed via REDCap, and the surveys were available to the participants in the following order:

(a) Consent Form, (b) Demographics Form, (c) Dimensional Obsessive-Compulsive Scale (Abramowitz et al., 2010), (d) Magical Ideation Scale (Eckblad & Chapman, 1983), (e) Thought-Action Fusion Scale (Shafran et al., 1996), (f) Test of Self-Conscious Affect, Third Edition (Tangney et al., 1989), (g) PTSD Checklist for DSM-5 (Weathers et al., 2013a), and (h) Life Events Checklist for DSM-5 (Weathers et al., 2013b). Participants were asked to complete the surveys in a private place, to decrease the chances that someone else might see personal information. Participants were also required to complete the consent form prior to receiving access to the other surveys to protect participants' rights.

After data collection was complete, a drawing was done to select winners at random for the four gift cards. Winning participants in the U.S. received payment via Greenphire debit card, while international participants received payment via digital financial software (e.g., Venmo, PayPal). To select winning participants, an online random number generator was used. After selecting winning participants, the principal investigator reached out to them via email. One winning participant was unable to be reached after several attempts, and for this reason another participant was selected at random using the same procedure.

Study Measures

Demographics Questionnaire

All participants were asked to complete a demographics questionnaire that included questions about participant biological sex, gender, age, racial group membership, relationship status, current living arrangements, employment status, medical/mental health history, monthly income, number of people in household, perceived level of social support, and geographic location. The only question that pertained to physical health asked participants whether they currently suffer from a chronic health condition. In contrast, questions relating to mental health were more detailed and asked about previous diagnoses and treatment history. The questions about monthly income and number of members in household were included to compute an estimate of socioeconomic status (SES); however, due to an error that was made during the development of the online survey, a measure for SES was not able to be computed. The question about social support (i.e., *How much social support do you have?*) was asked in the format of a five-point Likert scale, with answer options including the following: (a) None, (b) A little, but not enough, (c) Enough to get by, (d) Exactly what I need, and (e) More than I need. Regarding geographic location, participants were asked to type in their present country and state or domain

using free text. This question was delivered in this format due to the study being conducted online and available to a wide range of individuals regardless of geographic location.

Dimensional Obsessive-Compulsive Scale (DOCS)

The DOCS is an OCD rating scale which was created with the purpose of being a more feasible, efficient way to measure OCD symptoms and severity in terms of four previously identified symptom dimensions (Abramowitz et al., 2010). Four and five factor models of OCD symptom dimensions have consistently been identified via factor analysis over time (Stein et al., 2019); however, the four subscales generated by the DOCS (i.e., contamination, order/symmetry, fear of causing harm, and unacceptable thoughts) are supported by current conceptualizations of OCD in which OCD and hoarding disorder are considered distinct from one another (Abramowitz et al., 2010; APA 2022). Furthermore, the DOCS asks about the severity/frequency of related symptoms and distress. This contrasts with other rating scales which use the number of symptoms endorsed as a measure of severity, when in fact this may not be an accurate indicator for the level of distress experienced by individuals with OCD (Abramowitz et al., 2010). The DOCS rating scale contains 20 items, which was feasible to ask participants to complete without substantially increasing the risk of fatigue. Additionally, this measure has good diagnostic sensitivity, as well as reliability and validity, making it a satisfactory OCD screener and measure of symptom severity (Abramowitz et al., 2010). Another reason that the DOCS was ideal for the present study, is due to previous findings that indicate that the DOCS retains its psychometric stability when administered via the internet (Enander et al., 2012). The scores provided by the DOCS include four subscale scores which can vary from 0 – 20, and one total score which ranges from 0 – 80 (Abramowitz et al., 2010). Cronbach's alpha for this sample was indicative of acceptable scale reliability, α =.86, 95% CI [.83, .89].

Magical Ideation Scale (MIS)

The MIS is a thirty-item, true-false rating scale that was created initially as a measure of the unusual thoughts and beliefs that often accompany schizotypy (Eckblad & Chapman, 1983). Despite the initial purpose for which this rating scale was created, it has been used as a measure of magical thinking among OCD populations in several previous studies (Einstein & Menzies, 2004; Eremsoy & Inozu, 2016; Teksin et al., 2023; Tolin et al., 2001). Additionally, in a study that compared several measures of magical thinking, it was found that the MIS was more strongly related to OC symptomatology than the other scales that were administered (Einstein & Menzies, 2004). The benefits to using the MIS include that it fairly short (Eckblad & Chapman, 1983), has acceptable reliability and validity among different populations (Cam et al., 2014; Fonseca-Pedrero et al., 2009), and has adequate internal consistency (Norman et al., 1996). The MIS rating scale generates one total score that can range from 0 to 30; higher scores indicate higher levels of magical thinking (Eckblad & Chapman, 1983). Cronbach's alpha for this sample was indicative of acceptable scale reliability, α =.85, 95% CI [.81, .88].

Thought Action Fusion Scale (TAFS)

The TAFS (Shafran et al., 1996) is a 19-item rating scale that is used to measure TAF beliefs by asking individuals to rate how much they agree or disagree with a statement on a 5-point Likert scale. Answers range from Disagree Strongly (0) to Agree Strongly (4). Scores on the TAFS can range from 0 to 76, with higher scores indicating higher levels of TAF beliefs (Rassin et al., 2001). The statements listed on the TAFS tap into the different types of TAF beliefs (i.e., likelihood and moral). Twelve items measure morality TAF, while the other seven measure likelihood TAF beliefs; although the TAFS provides three subscale scores and a total score, only the total score was used for the current study (Rassin et al., 2001). The TAFS has

continued to demonstrate good reliability and validity, as well as internal consistency over time (Rassin et al., 2001; Shafran et al., 1996; Yorulmaz et al., 2004). Cronbach's alpha for this sample was indicative of acceptable scale reliability, α =.92, 95% CI [.89, .94].

Life Events Checklist - 5 (LEC-5)

The LEC-5 (Weathers et al., 2013b) is a rating scale that lists several potentially traumatic events; individuals are asked to rate their level of exposure to these events (i.e., personally experienced, witnessed, learned about it, or observed while performing job duties). The LEC-5 is available on-line through the National Center for PTSD, is strongly correlated with symptoms of PTSD, and has acceptable reliability and validity. It has also been found to be comparable to more heavily researched rating scales of traumatic experiences, such as the Traumatic Life Events Questionnaire (TLEQ). Despite these strengths, the LEC-5 is limited in that it does not measure the emotional experience of individuals that occurs during trauma (i.e., horror, disgust; Gray et al., 2004; Weathers et al., 2013b). For the purposes of the present study, a variable was computed from the sum of the number of PTE's that were endorsed by participants on the LEC-5 as having happened to them. This variable was used as a measure of traumatic experiences of participants. This approach has been used by researchers in several other studies (Chopko et al., 2022; Stewart et al., 2020). There are some limitations to the decision to leave out other potentially traumatic experiences; it is possible that individuals could be traumatized by experiences that they witnessed, heard about, or experienced as a part of their job. This will be discussed further in the limitations portion of this paper. Cronbach's alpha for this sample was indicative of acceptable scale reliability, α =.91, 95% CI [.88,.93].

PTSD Checklist for DSM-5 (PCL-5)

The PCL-5 (Weathers et al., 2013a) is a self-report rating scale that measures PTSD symptom severity by asking individuals to rate how severe their symptoms are on a scale from 0 (Not at All) to 4 (Extremely). The PCL-5 is an updated version of the originally developed PTSD Checklist (PCL; Weather et al., 1993); it was updated to reflect updates that were made in the DSM-5 regarding PTSD diagnosis. The PCL-5 has been identified as having good reliability and validity (Blevins et al., 2015). There are a few different versions of the PCL-5; one that is meant to measure the occurrence of symptoms over the past month, one that is meant to measure the occurrence of symptoms over the past week, one that includes a description of criterion A (what qualifies as a "traumatic event" in accordance with the DSM-5), and one that includes the LEC-V as a measure of traumatic events experienced (Blevins et al., 2015). For the purposes of the present study, PCL-5 scores were used as a measure of trauma symptomatology, which is the outcome variable. The version without a description of Criterion A was used due to the research question; the primary investigator was not interested in how individuals respond to Criterion A events, but rather differences in trauma symptomatology regardless of Criterion A traumatic experiences. To obtain qualitative information about the events that participants were thinking of as they filled out the survey, an additional question was added prior to the PCL-5 rating scale items followed by a free text response box; the question read "Please identify the very stressful experience that you are thinking of while filling out this questionnaire." Cronbach's alpha for this sample was indicative of acceptable scale reliability,

α =.91, 95% CI [.88, .93].

The Test of Self-Conscious Affect – Version 3 (TOSCA-3)

The TOSCA-3 is a measure of guilt and shame propensity that has been revised twice since the first TOSCA was released in 1989 (Tangney et al., 1989; see also Averill et al., 2002). The TOSCA-3 is made up of items that describe potentially embarrassing, hurtful, or guilt inducing scenarios and individuals are asked to describe how likely they would be to engage in shame self-talk, guilt-self talk, attempts to correct the situation, or to blame others. The TOSCA has a range of versions that are meant to target different age groups (i.e., adolescents, children, and adults; Broerman, 2018). Additionally, the TOSCA has been used among non-clinical populations, which has demonstrated that elevated levels of psychopathology are correlated with TOSCA scores, especially among individuals who engage in more shame driven thoughts and behaviors (Tangney et al., 1992). The TOSCA has good reliability, and mixed findings regarding validity dependent upon the sample. For example, validity was not as strong among a sample of women with borderline personality disorder (Broerman, 2018). Cronbach's alpha for this sample was indicative of acceptable scale reliability, α =.85, 95% CI [.81, .88]).

Data Cleaning

Some categorical variables were consolidated into fewer categories for analysis due to sparse endorsement of some groups; this was done to increase the accuracy of estimation. For example, the variable measuring racial group membership initially contained ten categories (i.e., White, Black, Asian, Latino/a/e, Indigenous American, Native Hawaiian/Pacific Islander, Biracial, Mixed Race, Other - Not Listed, and Prefer not to Say); however, no participants reported that they preferred not to state their racial group membership, or identified as being Native Hawaiian/Pacific Islander or Biracial. Furthermore, less than 5% of participants reported being Black, Asian, Indigenous American, or Other – Not Listed. Thus, for the regression

analyses, a dummy code was computed where participants were categorized as being either White or Not White. The larger group, participants who identified as white in this case, were used as the referent group. Similarly, although the gender variable initially contained six categories (i.e., Male, Female, Nonbinary, Transgender Male, Transgender Female, and Gender Fluid) no participants endorsed being Gender Fluid or Transgender Female. Additionally, 12.4% of participants reported being Nonbinary and less than 5% of participants endorsed being Transgender Male. Thus, individuals who identified as being nonbinary and transgender male were collapsed into one group. Two dummy codes were included in the subsequent analyses, comparing cisgender males and the collapsed nonbinary and transgender male group to those who identified as being cisgender female.

CHAPTER IV: RESULTS

Data Screening and Preliminary Analyses

Data Screening

For more in depth data screening and analyses, the author used IBM SPSS Versions 28 and 29 for data analysis, R Version 4.3.0, for data management, and BLIMP Version 3.2.7 for imputation. Correlational analyses demonstrated that PCL-5 scores were significantly and positively associated with traumatic experiences, three symptom dimensions of OCD (i.e., contamination, fear of causing harm to others, and unacceptable thoughts), total DOCS scores, MIS scores, and TOSCA-3 Shame scores. The only primary study variables that were not associated with PCL-5 scores were TOSCA-3 Guilt scores and TAF scores. It is also important to note that approximately 73.64% of participants endorsed scores on the PCL-5 that were at or above one of the proposed cutoff scores (total score of 31) for a provisional diagnosis of PTSD (Weathers et al., 2013a). Univariate descriptive statistics for the primary variables of interest are displayed in Table 7, and bivariate correlations are presented in Table 8.

Table 7

Primary Study Variables – Univariate Descriptive Statistics

Variables	*M*	*SD*	*SE*	Skewness	Kurtosis (SE)
Contamination	6.27	5.48	.49	.741 (.22)	-.396 (.43)
Harm	10.51	4.40	.39	-.097 (.21)	-.350 (.42)
Unacceptable Thoughts	11.10	4.74	.42	-.369 (.21)	-.395 (.43)
Order/Symmetry	6.93	5.36	.47	.443 (.21)	-.633 (.43)
DOCs Total Score	34.97	12.08	1.08	.742 (.22)	.508 (.43)
MIS	10.25	5.95	.53	.520 (.22)	-.322 (.43)
TAF	36.39	15.08	1.35	-.130 (.22)	-.712 (.43)
TOSCA-3 Guilt	69.17	7.13	.70	-1.485 (.24)	4.348* (.47)
TOSCA-3 Shame	62.25	9.38	.92	-.864 (.24)	1.060 (.47)
PCL-5 Total Score	45.81	15.87	1.49	-.379 (.23)	-.474 (.45)

*Slightly outside of what would normally be observed for normally distributed data.

Table 8

Pearson's Correlations – Primary and Control Study Variables[1]

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	---	---	---	---	---	---	---	---	---	---	---	---
2. Traumatic Experiences	.377**	---	---	---	---	---	---	---	---	---	---	---
3. Contamination	.039	.088	---	---	---	---	---	---	---	---	---	---
4. Harm	-.035	.127	.090	---	---	---	---	---	---	---	---	---
5. Unacceptable Thoughts	.080	.041	.007	.282**	---	---	---	---	---	---	---	---
6. Order/Symmetry	.130	.165	.259**	.134	.104	---	---	---	---	---	---	---
7. DOCs Total Score	.090	.167	.607**	.578**	.551**	.657**	---	---	---	---	---	---
8. MIS	-.007	.201*	.089	.251**	.187*	.263**	.325**	---	---	---	---	---
9. TAF	-.030	-.046	-.028	.204*	.184*	-.004	.136	.496**	---	---	---	---
10. TOSCA-3 Guilt	-.025	.165	.081	.151	.033	-.010	.088	.199*	.405**	---	---	---
11. TOSCA-3 Shame	-.171	.157	.264**	.179	.001	.033	.194	.355**	.410**	.515**	---	---
12. PCL-5 Total Score	.169	.436**	.197*	.256**	.352**	.177	.400**	.319**	.175	.113	.338**	---

[1]Categorical variables were not included in this correlation analysis.
*Indicates that the correlation is significant at ≤ .05; ** Indicates that the correlation is significant at ≤ .01.

Missing Data

Missing data were examined to inform decisions on the best way to manage missing data. Overall, 3.58 % of the values in the study were missing, with variable-wise missingness between 0% and 11.63 %. The highest non-responses rates pertained to the PCL-5 total score (11.63%), age (10.08%), and PCL-5 Question 8 (9.3%). Using BLIMP, a Fully Bayesian Model-Based Multiple Imputation was performed for each regression model; 100 multiple imputation data sets were generated by running 2 chains with a 20000-iteration burn-in period and 10,000 iterations. Consistent with current best practices, to minimize coefficient and standard error bias, scale item-level missingness was imputed prior to the sum-score construction, all managed within the imputation estimation process (Enders, 2022). PSR and other imputation diagnostics were examined to ensure sufficient convergence of the MCMC chains (algorithm: Full conditional Metropolis sampler with Auto-Derived Conditional Distributions). Outputs for the full imputation are provided in Supplementary Materials A, and all results for the Bayesian focal

model estimation were consistent in direction, approximate magnitude, and significance with the subsequent presented frequentist analysis.

Analyses of Study Hypotheses

Quantitative Results

Hypothesis 1.

Data collected during this study were analyzed using linear multiple regression to determine if scores from the DOCS, MIS, TAFS, and TOSCA-3 (Guilt and Shame subscales) predicted severity of trauma symptomatology (PCL-5 scores) while accounting for the variance explained by traumatic experiences, gender, age, and race. A regression model with traumatic experiences, gender, age, and race (Model 1), was fit. In Model 1, trauma symptomatology was positively related to traumatic experiences. Furthermore, gender demonstrated having a significant relationship with trauma symptomatology, although the other control variables did not. Results for Model 1, including coefficient estimates and squared semi-partial correlations are presented in Table 9.

Table 9

Regression Model 1 - Pooled Coefficients

Predictor	*B*	*LLCI*	*ULCI*	*se*	*t*	*P*	sr^2
b0 (Constant)	40.51	23.96	57.07	8.45	4.80	<.001**	-
Traumatic Experiences	3.567	2.093	5.040	.75	4.745	<.001**	.210
Gender	-4.707	-8.814	-.600	2.10	-2.246	.025*	.046
Age	-.007	-.435	.422	.22	-.031	.976	.000
Race	-1.078	-8.510	6.353	3.79	-.284	.776	.001

*Indicates that the correlation is significant at ≤ .05; ** Indicates that the correlation is significant at ≤ .01.

After fitting Model 1, the author fit Model 2 in which OCD symptom severity (DOCS), magical thinking (MIS), TAF beliefs (TAFS), guilt and shame (TOSCA-3) were added as

predictors. In Model 2, OCD symptom severity and shame positively predicted trauma symptomatology as hypothesized. As control variables, traumatic experiences and gender once again predicted trauma symptomology. Magical thinking, TAF beliefs, and guilt did not predict trauma symptomatology as hypothesized. Results for Model 2, including coefficient estimates and squared semi-partial correlations are presented in Table 10.

Table 10

Regression Model 2 - Pooled Coefficients

Predictor	*B*	*LLCI*	*ULCI*	*se*	*t*	*P*	sr^2
b0 (Constant)	5.707	-32.61	44.02	19.55	.*292*	.770	-
Traumatic Experiences	2.520	1.058	3.981	.75	3.378	<.001**	.086
Gender	-4.191	-7.940	-.442	1.91	-2.191	.028*	.035
Age	.138	-.267	.543	.21	.669	.504	.004
Race	-1.931	-8.816	4.954	3.51	-.550	.582	.002
DOCS	.374	.102	.646	.14	2.692	.007**	.052
MIS	.352	-.297	1.001	.33	1.063	.288	.008
TAF	-.075	-.332	.183	.13	-.567	.570	.002
TOSCA-3 (Guilt)	-.126	-.699	.446	.29	-.432	.666	.001
TOSCA-3 (Shame)	.477	.086	.868	.20	2.392	.017*	.041

*Indicates that the correlation is significant at ≤ .05; ** Indicates that the correlation is significant at ≤ .01.

Distributional assumptions and outlier diagnostics were assessed on the residuals from each estimated regression model, for each of the 100 imputed datasets. PP plots were checked for indications of non-normality or non-linearity. Malhanobis distance and Cook's distance were checked to identify potential outliers, as defined by values >25 and >1 respectively (Tabachnick & Fidell, 2001). No outliers were identified, and relative efficiency was >.999 for all coefficients, indicating a sufficient number of multiple imputations, were generated. A representative PP plot for Model 1 is presented in Figure 2. Finally, plots of standardized

residuals vs standardized predicted values were examined to check assumptions of homoscedasticity for all imputed datasets. An example of representative plots for Model 1 are presented in Figure 3.

Figure 2

Representative PP-Plot – Model 2

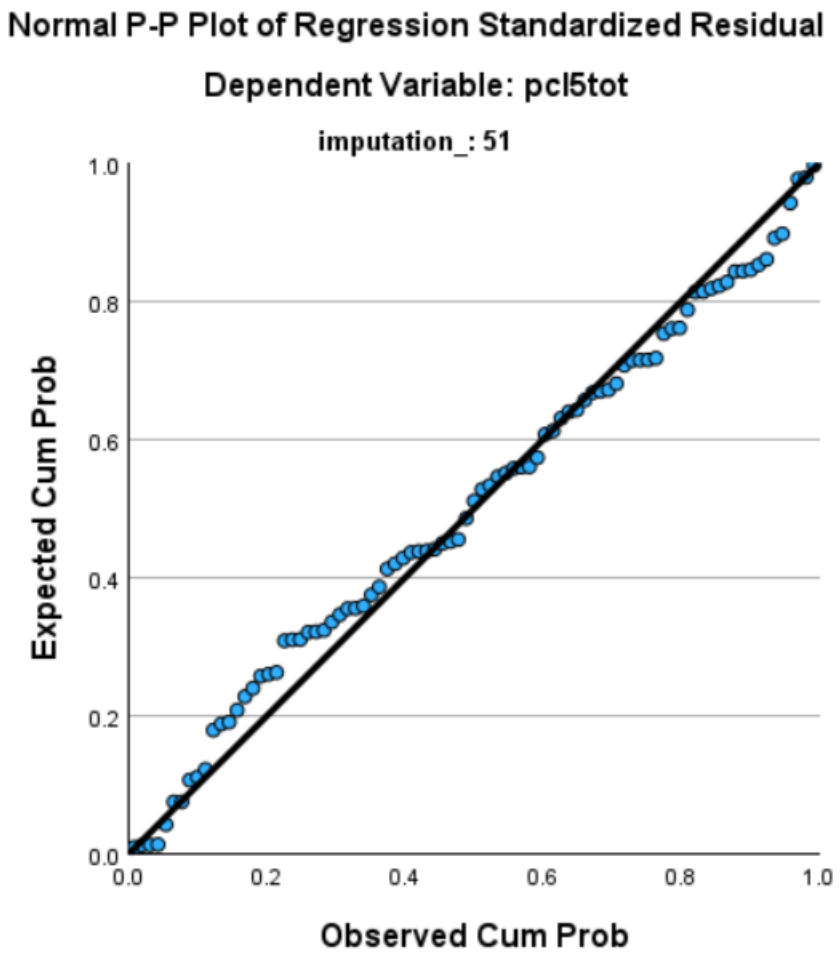
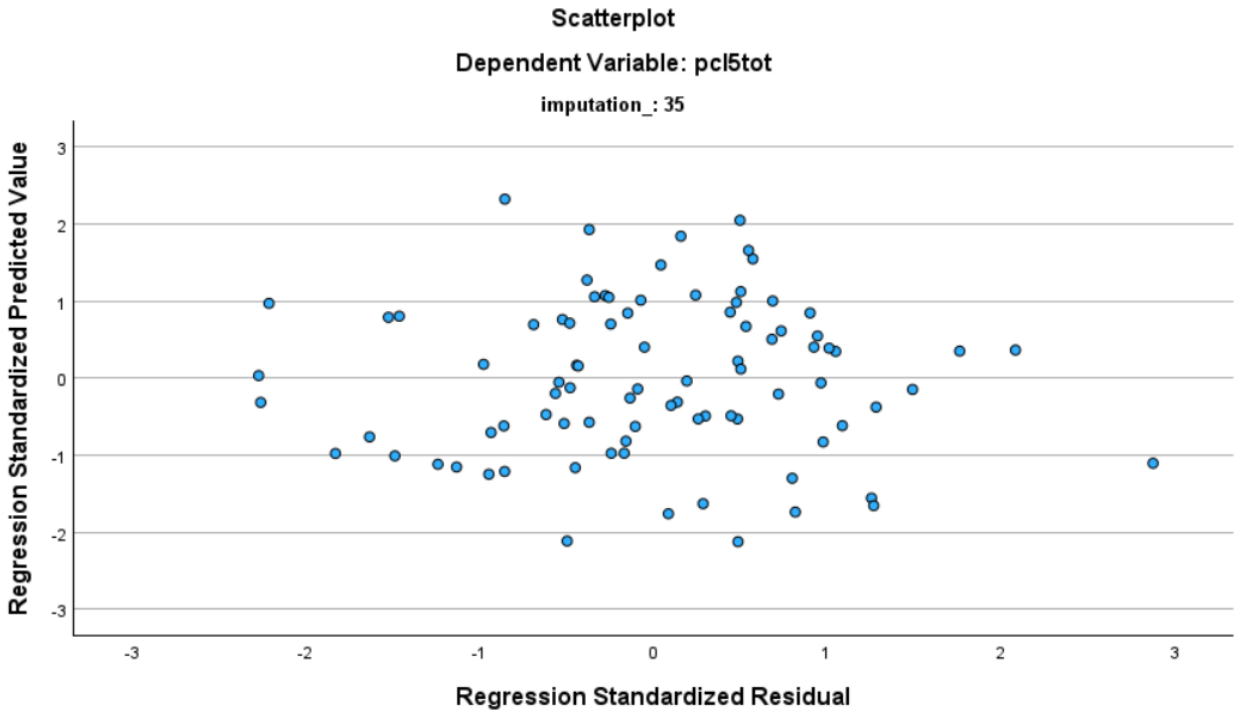


Figure 3

Representative Scatter Plot – Model 2



Hypotheses 2a and 2b.

In contrast to the hypothesized relationships, OCD symptom severity related to unacceptable thoughts was the only OCD symptom subtype that predicted trauma symptomatology; such that participants who reported more unacceptable thoughts also reported higher levels of trauma symptomatology. As shown by the squared semi-partial correlations, in Table 11, OCD symptoms related to the unacceptable thoughts dimension explained the greatest unique proportion of trauma symptomology variance (sr^2=.058), aside from traumatic experiences (sr^2 =.144). It is also important to note that in Model 4, traumatic experiences still predicted trauma symptomatology as a control variable, but gender did not.

Table 11

Regression Model 4 - Pooled Coefficients

Predictor	*B*	*LLCI*	*ULCI*	*se*	*t*	*P*	sr^2
b0 (Constant)	21.46	5.32	37.61	8.24	2.61	.009**	-
Traumatic Experiences	2.858	1.667	4.048	.61	4.706	<.001**	.144
Gender	-2.950	-6.218	.317	1.67	-1.770	.077	.019
Age	.011	-.353	.376	.19	.061	.951	.000
Race	-.228	-6.111	5.655	3.00	.076	.939	.000
Contamination (DOCS)	.162	-.357	.682	.27	.613	.540	.003
Harm (DOCS)	.385	-.238	1.007	.32	1.212	.226	.009
Order/Symmetry (DOCS)	.316	-.184	.816	.26	1.239	.215	.009
Unacceptable Thoughts (DOCS)	.882	.309	1.456	.29	3.014	.003**	.058

*Indicates that the correlation is significant at ≤ .05; ** Indicates that the correlation is significant at ≤ .01.

Again, distributional assumptions and outlier diagnostics were accessed for the residuals from each estimated regression model, for each of the 100 imputed datasets. No outliers were identified via Cook's distance, but a few outliers were identified by Mahalanobis distance (~170 cases across the 100 imputations). Further inspection indicated that none were exerting concerning leverage, and thus none were removed. Relative efficiency was >.999 for all coefficients, indicating a sufficient number of multiple imputations were generated. An example PP plot is presented in Figures 4 and an example plot of Standardized Residuals vs Standardized Predicted Values are presented in Figure 5 for Model 4.

Figure 4

Representative PP-Plot – Model 4

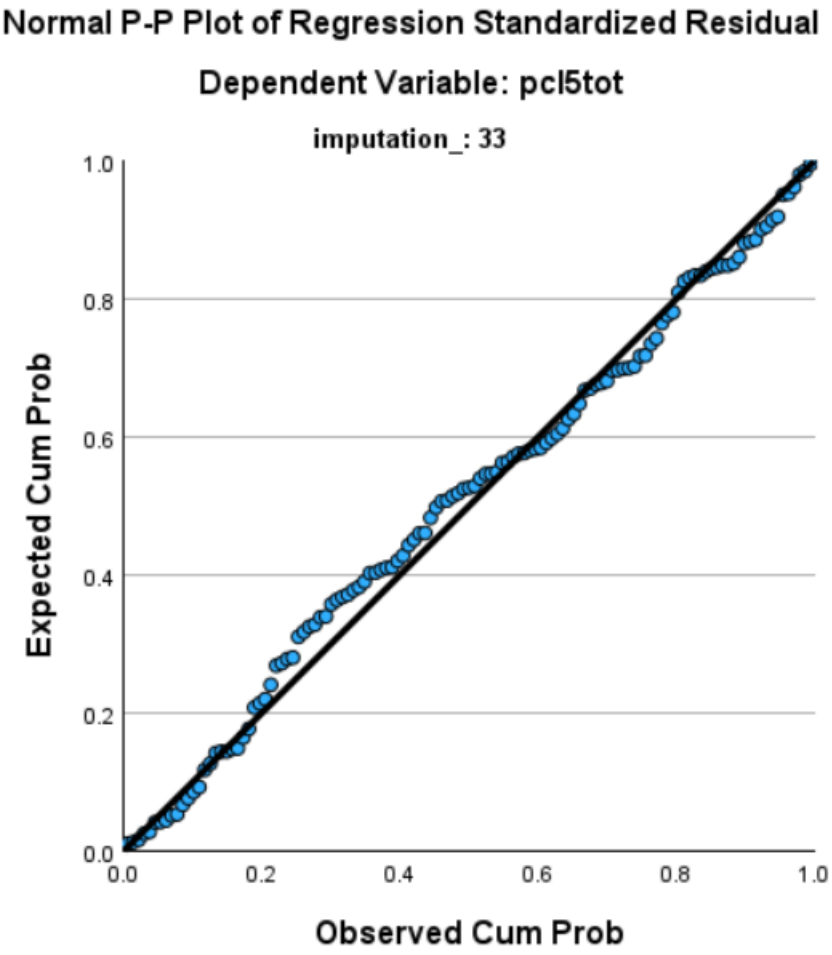
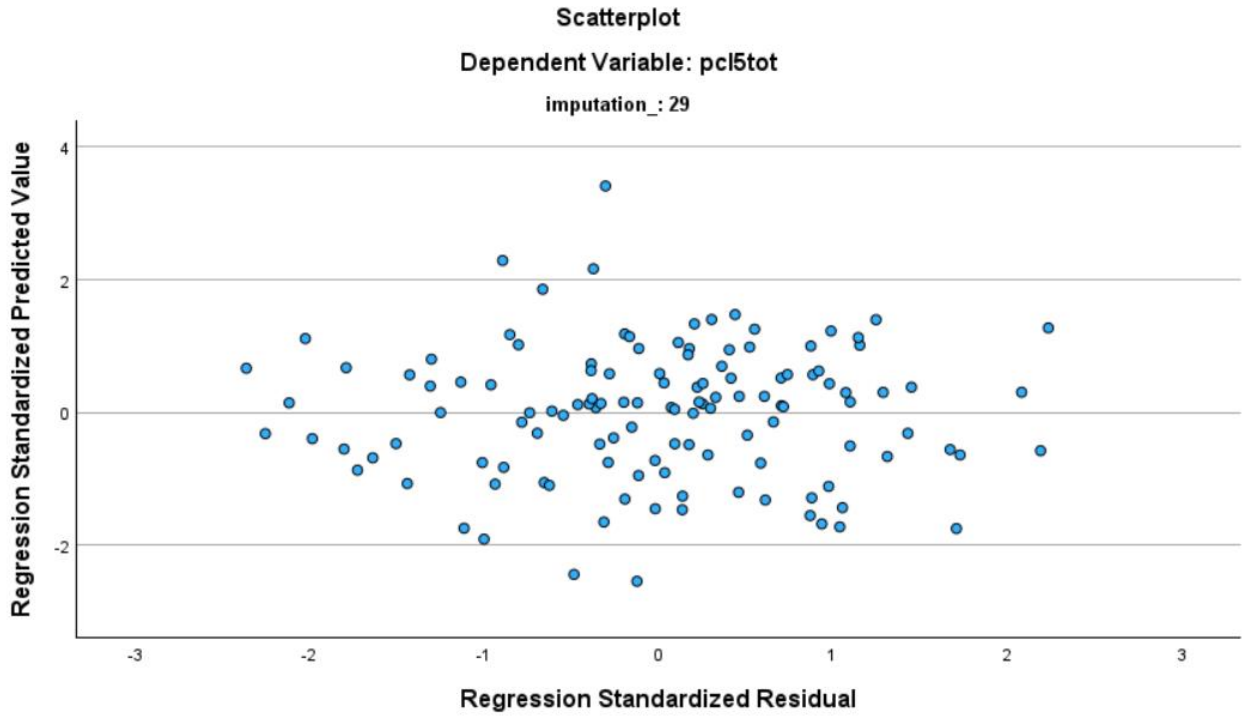


Figure 5

Representative Scatter Plot – Model 4



Qualitative Findings

As previously stated, when participants filled out the PCL-5 they were not asked to think of events that would fit within the context of Criterion A events as defined by the DSM-V TR (APA, 2022). Instead, they were provided with a free text box, along with the question "Please identify the very stressful experience that you are thinking of while filling out this questionnaire." Most participants (89.5%) provided an answer describing the event (or lack of an event) that they were thinking of when filling out the rating scale. Using an iterative qualitative coding process, the open-ended responses were analyzed. Relying on a predominantly inductive approach, thematic analysis was used to classify the reported types of events endorsed by participant; of note, only themes endorsed by participants scoring at or above one of the suggested cutoffs of the PCL-5 for a provisional diagnosis of PTSD are displayed in Table 12.

Table 12

Events Defined as Very Stressful by Participants – Associated with Elevated PCL-5 Scores

Memories of embarrassing moments	Non-life-threatening illness with unknown cause
Distressing thoughts of things that have not happened	Negative feedback from others
Work related stressors	Social stressors
Fear of losing job	False memories
Loss of friendship	Causing things to happen by thinking about them
Receiving supernatural signs about spiritual status	Fear of death/illness/injury
Concerns about contamination	Wanting things to be or feel a certain way
Memories related to making mistakes	Uncertainty in relationships
Persistence of unwanted thoughts	Vivid images/thoughts of death and suffering.
Concerns about causing harm to others	Constant questioning/doubting

The contents of Table 12 make it apparent that the experiences associated with the self-reported trauma symptomatology of participants includes events that would be considered routine for many. Events linked to elevated PCL-5 scores include stressors that are experienced by most people at home or in the workplace, internal events (e.g., thoughts and memories), symptoms of OCD (i.e., persistent thoughts and worries, concerns about contamination, doubt), or thoughts related to magical thinking (i.e., receiving signs about spiritual status or concern that thinking about things will cause them to happen). It is important to note that this observation is solely anecdotal, as several Criterion A traumatic events were endorsed as well. These findings are consistent with recent research that asked individuals with sudden onset of OCD to identify traumatic events that preceded the onset of their symptoms; participants endorsed several experiences that would not typically be considered traumatic (Murayama et al., 2020). These

findings may indicate one potential mechanism for the commonly observed comorbidity of PTSD and OCD: That individuals suffering from OCD perceive a greater range of experiences as traumatic.

CHAPTER V: DISCUSSION

Summary of Findings and Implications

The findings of the present study are important, in that they confirm the hypothesis that OCD symptom severity predicts trauma symptomatology, even when controlling for traumatic experiences. This finding is unique and contributes to the literature because it indicates that there is something above and beyond Criterion A traumatic experiences that contribute to trauma symptomatology within OCD populations. Furthermore, the findings that shame and symptoms related to the unacceptable thoughts dimension of OCD contribute to trauma symptomatology, even when accounting for variance due to traumatic experiences, indicates that these two areas could be important treatment targets among individuals with OCD. These findings underscore the importance of focusing future research in these areas. Although gender was associated with trauma symptomatology in two of the four models that were run, there are still a lot of unknowns about this relationship. This highlights the need for research in this area among more diverse populations. Regarding the hypotheses that were unfounded (i.e., that magical thinking, thought action fusion, guilt, and the three other symptom dimensions of OCD would predict trauma symptomatology), these findings are important because identifying what variables are *not* significant in the relationship between OCD and trauma symptomatology can help researchers streamline and prioritize research questions moving forward. In addition to the quantitative findings of the present study, the qualitative information gathered provides a more in-depth view into the personal impact that OCD has on individuals, especially as it pertains to what types of events are experienced as traumatic among this population.

Implications of the findings of this study are that there is something about the lived experience of OCD that contributes to trauma symptomatology. Although symptoms related to

unacceptable thoughts and shame were identified as pieces to this puzzle, the mechanisms of these relationships remain largely unknown. Additionally, there are still many other explanations that could play a role in the relationship between OCD and trauma symptomatology including the following: (a) it is possible that in addition to shame, there are other traits or social factors related to OCD that contribute to trauma symptomatology that were not explored within the confines of this paper, (b) it is possible that there is something about the experience of having OCD that is traumatic in and of itself, and (c) it is possible that individuals with OCD experience events as traumatic that would be considered only stressful or neutral to others, and (d) it is possible that increased trauma symptomatology is related to a combination of all of these factors.

Traits and Social Factors Related to OCD

Regarding other traits and social factors that are related to OCD, there are many others that could play a part in the relationship between OCD symptom severity and trauma symptomatology. The literature has identified links between traits of autism spectrum disorder (ASD) and OCD (Griffiths et al., 2017). Additionally, elevated levels of avoidance behavior (Nissen & Partner, 2018), alexithymia (trouble identifying how one is feeling; Roh et al., 2011), perfectionism (Pinto et al., 2017), and executive dysfunction (Benzina et al., 2016) have been identified as elevated among OCD populations, among other traits or features not listed here. Social factors that have been identified within the literature as being related to OCD include family dysfunction (Black et al., 1998; Wang & Zhao, 2012), decreased social support (Wang & Zhao, 2012), impaired social relationships and ability to engage in enjoyable activities (Schwartzman et al., 2017), victimization/bullying by peers in childhood (Borda et al., 2013), strained close personal relationships, and impaired work performance (Rosa et al., 2012). Quality of life has also been identified as being significantly lower among OCD populations (Macy et al.,

2013); it is possible that all the factors listed above result in poor QoL which in turn may influence the relationship between OCD and trauma symptomatology in some way. Other factors that have been identified as impacting the experience of OCD include age of onset (Anholt et al., 2014; Taylor, 2011) and level of insight into symptoms (de Avila et al., 2019). Of note, individuals with low/poor levels of insight into OCD symptoms have been identified as having higher rates of comorbid OCD and PTSD (de Avila et al., 2019). It is possible that having onset at an earlier age or having low insight regarding symptoms could make the lived experience of OCD more traumatic due to a lack of understanding about one's symptoms. This theoretically makes sense because if one believes that the relationship between obsessions and compulsions is something that is truly causal in real life, the stakes are that much greater. Children or people with low insight may feel that if they fail to follow through on a compulsion or a series of compulsions, that they are somehow responsible for undesired outcomes. This could lead to greater fear and a sense of loss of control over one's symptoms and autonomy.

OCD as a Potentially Traumatic Experience

Regarding the suggestion that the experience of having OCD may be traumatic in and of itself, the qualitative literature on this topic depicts the lived experience of OCD among adults, teenagers, and children as highly distressing. Statements given by those who suffer from OCD convey a loss of a sense of autonomy, fear, helplessness, unstable self-image (Sravanti et al., 2022), shame, living in secrecy (Keyes et al., 2018), feeling isolated or disconnected from others (Bhattacharya & Singh, 2015), feeling as though one is forced to live at odds with values (Haase, 2003), believing that one's self is inherently bad in some way (Bhattacharya & Singh, 2015), and feeling as though one's mind is a prison (Harrington, 2014). An example of the distress that is reported by children can be found in a dissertation that was completed at the University of

Alberta in 2003; a child participant referred to her OCD symptoms as a "tornado" and she stated that the OCD "tornado" takes all her control away (Haase, 2003). Individuals with OCD also report giving up the things that they value most in life; for example, avoiding one's children because of fear that one may engage in pedophilic acts (Bruce et al., 2018) or avoiding other loved ones because of an unfounded fear that they may pass on a deadly contaminant (Rachman, 2004). Of further interest to this theory is the fact that several participants of the present study endorsed OCD symptoms (i.e., intrusive thoughts/images, fears of contamination, worries about causing harm to others, persistence of unwanted thoughts, and frequent doubt) as the stressful event that they were thinking of when they filled out the PCL-5, resulting in scores above the suggested cutoff for a provisional diagnosis of PTSD (Weathers et al., 2013a).

Experiencing Stressful or Neutral Events as Traumatic

Supporting the suggestion that individuals with OCD may experience stressful or neutral events as traumatic, during a 2020 study that explored the relationship between traumatic events and OCD onset, participants were asked to report traumatic events that preceded the onset of OCD symptoms. Participants endorsed several events that would not typically be considered traumatic in nature as the traumatic event that preceded symptom onset. For example, participants identified events such as touching a sticky item, retrieving a phone from a toilet, non-life-threatening illness, smoking marijuana, and being scolded by a teacher as traumatic events (Murayama et al., 2020). Similarly, qualitative information gathered during the present study demonstrated this same pattern. Several individuals who filled out the PCL-5 reported that the events associated with their self-reported trauma symptomatology were events that would be considered routine, stressors that are experienced by most people at home or in the workplace, and/or internal events (e.g., thoughts and memories). These findings indicate that individuals

with OCD may be more susceptible to developing trauma symptomatology in response to daily stressors; this implication is important to case conceptualization and treatment, which will be discussed more in the Clinical Implications portion of this paper.

Combined Factors

Given the impact that OCD has over multiple aspects of individuals' lives, it is highly plausible that there are more than one of the proposed factors at play in the relationship between OCD and trauma symptomatology. It is possible that some or all these factors (i.e., traits related to OCD, social stressors/impairment, the lived experience of OCD, and experiencing a wider range of events as traumatic) serially or simultaneously interact with one another, resulting in the relationship discovered in the present study. Given the significantly decreased quality of life (Macy et al., 2013), unstable sense of self (Wright & Riskind, 2021), ego-dystonic nature of symptoms (Coimbra-Gomes, 2020), inflated sense of responsibility (Rhéaume et al., 1995), relational difficulties (Rosa et al., 2012), and personal cost of time and energy on symptoms (i.e., compulsions; Fineberg et al., 2019) experienced by individuals with OCD, it is likely that unmanageable levels of stress chronically persist from day-to-day. Although most individuals with OCD experience a chronic course of illness (greater than two years; Visser et al., 2014), GAS theory implies that this type of stress could only be managed for so long prior to the development of maladaptive stress responses, such as those present in PTSD (Selye, 1950).

Clinical Implications

Trauma Symptomatology Related to Unacceptable Thoughts

There are many clinical implications that can be pulled from the present study and applied to practice in the treatment of OCD or comorbid OCD and PTSD. Firstly, the finding that trauma symptomatology is predicted by symptoms related to unacceptable thoughts implies that

assessing the OCD symptom dimensions at the onset of treatment may be beneficial, to identify if comorbid trauma symptomatology exists, whether clinical or subclinical. This would be important for case conceptualization and treatment, especially because of the dynamic nature of comorbid OCD and PTSD (Gershuny et al., 2003). Although the reason that this symptom dimension is related to trauma symptomatology remains unknown, it is possible that this could be due to the ego-dystonic nature of these symptoms which have a negative impact on self-concept (Jaeger et al., 2021). Examples of symptoms that would fall under the category of symptoms related to unacceptable thoughts would be intrusive thoughts/obsessions surrounding engaging in sexually aggressive acts, pedophilia, intentionally harming others, committing acts that directly go against one's religious beliefs (e.g., blasphemy, sacrilege), and grotesque/offensive images (Abramowitz et al., 2010).

In accordance with the finding that OCD symptoms related to unacceptable thoughts impact individuals differently than the other symptom dimensions, a recent study found that OCD symptom severity related to the unacceptable thoughts dimension was associated with emotion regulation difficulties, while the other symptom dimensions were not (Berman et al., 2018). Relevant to the theory that self-concept plays a part of in the relationship between unacceptable thoughts and trauma symptomatology, a 2016 study found that self-reported fear of self as measured by the Fear of Self-Questionnaire (FSQ; Aardema et al., 2013) predicted OCD symptom severity related to unacceptable thoughts. This study highlighted that fear of the self could potentially be caused by pathological self-doubt and vulnerability which fuels obsessions and intrusive thoughts (i.e., I might be a killer, I might be a pedophile; Melli et al., 2016; also see Aardema & Wong, 2020). Finally, another study found that negative self-appraisals held prior to encountering a traumatic event acted as a risk factor for the development of PTSD among

firefighters (Bryant & Guthrie, 2007). These findings demonstrate that targeting self-concept and fear of self in treatment may be important to reducing vulnerability to trauma symptomatology among OCD populations.

Recent research has suggested pulling in aspects of cognitive dissonance theory (Festinger, 1957), self-affirmation theory (Steele, 1988), and cognitive-behavioral models of OCD (Salkovskis,1985) to target thought distortions, while also reinforcing sense of self and alleviating cognitive dissonance caused by symptoms of OCD (Wright & Riskind, 2021). Dialectical behavior therapy (DBT) may also be beneficial in stabilizing self-image, as it has been identified as creating more stability in sense of self among women with borderline personality disorder (Roepke et al., 2011; see also Linehan, 1993). Other ways that treatment could specifically target this symptom dimension along with its negative impact, is by providing more extensive psychoeducation about the nature and prevalence of intrusive thoughts, as well as other aspects of OCD. A group of researchers recently outlined best practices for treatment of symptoms related to unacceptable thoughts, which consisted of several steps including: (a) assessment, (b) psychoeducation, (c) teaching cognitive skills (e.g., identifying distortions and challenging thoughts), and (d) teaching behavioral skills (e.g., in vivo exposure, response, and ritual prevention). Of note, the authors discussed specific recommendations under each key area of treatment, which also included psychoeducation about how attempts at thought control maintain symptoms, and clarification of the difference between values and obsessions in the context of OCD (Williams et al., 2022).

Trauma Symptomatology Related to Shame

In OCD, the most prevalent forms of shame are related to symptom-based shame and shame related to the stigma of having a psychological disorder (Weingarden & Renshaw, 2015).

Although it is believed that the previously mentioned treatment practices would help reduce shame indirectly (as cognitive distortions and negative self-concept improve), additional assessment and monitoring should take place. Shame can act as a significant barrier to treatment for both OCD (Glazier et al., 2015) and PTSD (Lee et al., 2001), meaning that it requires additional attention. Despite the negative impact that shame has on individuals, it is especially responsive to several evidence-based treatments, including cognitive behavioral therapy (CBT), cognitive processing therapy (CPT), DBT, trauma focused therapy, and mindfulness-based therapy among others. Out of 37 studies assessed in a meta-analysis, 89% (*n*=32) demonstrated significant reductions in shame when it was addressed as a treatment target via these different therapies (Saraiya & Lopez-Castro, 2016). Regarding special populations, in cases of pediatric OCD, psychoeducation for parents should also be a priority; it is important that families understand the symptoms of OCD so that they can be supportive, while not enabling/accommodating symptoms of OCD (Lebowitz, 2013).

Future Directions for Research

As is clear from the discussion above, there are an abundance of leads for future research to follow up on. Although a relationship between OCD symptoms related to unacceptable thoughts and trauma symptomatology has been identified, there are still many unknowns about this relationship. Future research may want to delve further into these findings to examine what other variables play a role in this relationship. Specific variables of interest include fear of self, ambivalence of self, age of OCD onset, level of insight into symptoms, and social factors (i.e., social support, familial variables). Similarly, the present study provides anecdotal information about the types of events that individuals with OCD experience as traumatic; however, this question has not yet been formally answered with quantitative results. A study specifically

focused on this research question would be valuable to the body of research on OCD and trauma symptomatology, as it would clarify the nature of this relationship and inform clinical practice moving forward. Regarding the possibility that several factors play a role in the relationship between PTSD and OCD, more complex statistical analyses might be valuable in identifying direct effects, indirect effects, and interactions between the various factors discussed above. For example, identifying whether certain life circumstances or family related variables mediate this relationship could help identify those who are at risk of developing trauma symptomatology. Additionally, understanding the nature of the relationship between variables can help further elucidate the body of knowledge surrounding OCD and trauma symptomatology, potentially leading to better outcomes for individuals with OCD. Another possible avenue for future research would be to explore what symptoms of PTSD (i.e., intrusions, avoidance, changes in cognitions/mood, and alterations in arousal/reactivity; APA 2022) are specifically linked to the different symptom dimensions of OCD. In addition to these proposed directions of research, it is also important to explore these research questions among more diverse groups of individuals to ensure that diverse populations are included in the conversation about trauma symptomatology and OCD. Failing to include racially, ethnically, or gender diverse individuals in research can lead to ineffective practice, causing already marginalized groups to feel even more marginalized (Williams et al., 2020).

Strengths and Limitations

The present study has many strengths, including that it is addressing a gap in the literature and attempting to build upon previous research regarding pre-traumatic and post-traumatic subtypes of OCD. The present study also has good statistical power and used best practices for managing missing data. To address the replication crisis in the field of psychology

(Wiggins & Christopherson, 2019) the author provided detailed rationale for choices made throughout the study as well as outlined procedures to increase transparency to facilitate replication of the present findings. The findings of the present study are also unique, in that a relationship between PTSD and OCD has been found to exist even after controlling for traumatic experiences. This is a finding that will hopefully lead to a deeper understanding of this complex relationship, as well as inform future research and clinical practice.

In addition to these strengths, there are also several weaknesses. Regarding the sample that was used in this study, it is likely that there is bias in the sample due to the principal investigator sharing the survey with friends and family over social media. Additionally, nearly all recruitment was conducted online and participants self-referred, meaning that there was no way of knowing that the participants were who they said they were, or had the symptoms that they endorsed on the rating scales. Another significant limitation to the present study is that there was no measure of SES; given the link between poverty and chronic stressors (Evans & Kim, 2013), there is a chance that an SES variable would have provided a more complete picture of the relationship of these variables. Finally, although the author controlled for traumatic experiences, the current study only used a measure of the number of *types* of traumatic experiences that participants experienced. There was no measure for cumulative traumatic experiences throughout a person's life. For example, although someone may have endorsed eight different types of traumatic experiences, it did not document how many instances of each type of traumatic experience they may have experienced. This limitation is significant because research has shown that traumatic experiences generally have a cumulative effect on individuals (Suliman et al., 2009.

Conclusion

The present study had four main purposes: (a) to identify if OCD symptom severity predicts trauma symptomatology, even when controlling for traumatic experiences, (b) to identify if any traits (TAF, magical thinking, guilt, and shame) related to OCD predict trauma symptomatology, (3) to identify which OCD symptom dimensions (i.e., contamination, harm, unacceptable thoughts, and order/symmetry) predict trauma symptomatology, and (d) to determine which symptom dimension of OCD explained most of the variance in the relationship between trauma symptomatology and OCD. OCD symptom severity does in fact predict trauma symptomatology; however, when looking at specific symptom dimensions, only symptoms related to unacceptable thoughts demonstrated this relationship. Furthermore, it was found that shame significantly predicted trauma symptomatology; however, guilt, TAF, and magical thinking did not. The findings of the present study contribute to the literature by confirming that even when accounting for differences in trauma symptomatology due to traumatic experiences, there remains a significant relationship between OCD symptom severity and trauma symptomatology. Additionally, the author recommends several areas for follow up research surrounding variables of interest (e.g., age of onset, level of insight, social variables). Overall, these findings contribute to the body of research on the relationship between post-traumatic and pre-traumatic subtypes of OCD and indicate that there is much more work to be done along this line of research.

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APPENDIX A. IRB APPROVAL LETTER

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board
4N-64 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** ·
rede.ecu.edu/umcirb/

Notification of Initial Approval: Expedited

From: Social/Behavioral IRB
To: Dorothy Dator
CC: Jeannie Golden
Dorothy Dator
Date: 5/1/2022
Re: UMCIRB 21-000967
Trauma Symptomatology and OCD

I am pleased to inform you that your Expedited Application was approved. Approval of the study and any consent form(s) occurred on 5/1/2022. The research study is eligible for review under expedited category # 7. The Chairperson (or designee) deemed this study no more than minimal risk.

As the Principal Investigator you are explicitly responsible for the conduct of all aspects of this study and must adhere to all reporting requirements for the study. Your responsibilities include but are not limited to:

1. Ensuring changes to the approved research (including the UMCIRB approved consent document) are initiated only after UMCIRB review and approval except when necessary to eliminate an apparent immediate hazard to the participant. All changes (e.g. a change in procedure, number of participants, personnel, study locations, new recruitment materials, study instruments, etc.) must be prospectively reviewed and approved by the UMCIRB before they are implemented;

2. Where informed consent has not been waived by the UMCIRB, ensuring that only valid versions of the UMCIRB approved, date-stamped informed consent document(s) are used for obtaining informed consent (consent documents with the IRB approval date stamp are found under the Documents tab in the ePIRATE study workspace);

3. Promptly reporting to the UMCIRB all unanticipated problems involving risks to participants and others;

4. Submission of a final report application to the UMICRB prior to the expected end date provided in the IRB application in order to document human research activity has ended and to provide a timepoint in which to base document retention; and

5. Submission of an amendment to extend the expected end date if the study is not expected to be completed by that date. The amendment should be submitted 30 days prior to the UMCIRB approved expected end date or as

soon as the Investigator is aware that the study will not be completed by that date.

The approval includes the following items:

Name	Description
Dator_Dissertation	Study Protocol or Grant Application
Demographics Form	Data Collection Sheet
Dissertation Recruitment Flyer	Recruitment Documents/Scripts
Informed Consent	Consent Forms
LEC-5	Surveys and Questionnaires
Magical Ideation Scale	Surveys and Questionnaires
Mental Health Resources	Additional Items
OCD Dimensional Scale 1	Surveys and Questionnaires
OCD Dimensional Scale 2	Surveys and Questionnaires
OCD Dimensional Scale 3	Surveys and Questionnaires
OCD Dimensional Scale 4	Surveys and Questionnaires
PCL-5	Surveys and Questionnaires
TAF	Surveys and Questionnaires
TOSCA-3	Surveys and Questionnaires

For research studies where a waiver or alteration of HIPAA Authorization has been approved, the IRB states that each of the waiver criteria in 45 CFR 164.512(i)(1)(i)(A) and (2)(i) through (v) have been met. Additionally, the elements of PHI to be collected as described in items 1 and 2 of the Application for Waiver of Authorization have been determined to be the minimal necessary for the specified research.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

APPENDIX B: SUPPLEMENTAL FILES AVAILABLE UPON REQUEST

1. BLIMP Output
2. SPSS Output
3. SPSS Syntax

To make requests, please contact the principal investigator at dottiemdator@yahoo.com.

APPENDIX C: INFORMED CONSENT

Informed Consent

Please read the following, and check the box stating "yes" at the end if you agree to participate in this study. Thank you!

Informed Consent to Participate in Research

Information to consider before taking part in research that has no more than minimal risk.

Title of Research Study: OCD and Trauma Symptomatology

Principal Investigator: Dorothy (Dottie) Dator, MA

Institution, Department or Division: Psychology

Telephone #: 336-970-8821

Address: East Carolina University

Department of Psychology

104 Rawl Building

Greenville, NC 27858

Researchers at East Carolina University (ECU) study issues related to society, health problems, environmental problems, behavior problems and the human condition. To do this, we need the help of volunteers who are willing to take part in research.

Why am I being invited to take part in this research?
The purpose of this research is to explore the relationship between obsessive compulsive disorder (OCD) and post-traumatic stress disorder (PTSD). You are being invited to take part in this research because you have reported a history of having / being diagnosed with OCD. The decision to take part in this research is yours to make. By doing this research, we hope to learn how OCD might impact PTSD symptoms.

If you volunteer to take part in this research, you will be one of about 120 people to do so.

Are there reasons I should not take part in this research?

Reasons that you should not take part in this research include if you are under 21 years old, do not speak English fluently, or cannot fill out surveys over the internet independently for any reason.

What other choices do I have if I do not take part in this research?

You can choose not to participate. Also, if you would like to seek out treatment rather than participate, the researchers can provide you with a mental health resources handout sheet, which will help in finding a therapist or mental health provider.

Where is the research going to take place and how long will it last?

The research will be conducted over the internet in the form of online surveys and questionnaires. You can fill out these surveys wherever you want, but we ask that you be in a private place so that you feel like you can answer truthfully, with little stress. The total amount of time you will be asked to volunteer for this study is approximately 30 minutes to one hour.

What will I be asked to do?

You will be asked to do the following: Answer questions about difficult emotions, beliefs or thoughts that you have, guilt, shame, traumatic events you may have experienced, symptoms of OCD and PTSD, and personal information about yourself (demographic information).

What might I experience if I take part in the research?

We don't know of any risks (the chance of harm) associated with this research. Any risks that may occur with this research are no more than what you would experience in everyday life. We don't know if you will benefit from taking part in this study. There may not be any personal benefit to you, but the information gained by doing this research may help others in the future.

Will I be paid for taking part in this research?

We will not be able to pay you for the time you volunteer while being in this study; however, you will have the chance to win at random one of four $50 Greenphire debit gift cards.

Will it cost me to take part in this research?

It will not cost you any money to be part of the research.

Who will know that I took part in this research and learn personal information about me?

ECU and the people and organizations listed below may know that you took part in this research and may see information about you that is normally kept private. With your permission, these people may use your private information to do this research:

The University & Medical Center Institutional Review Board (UMCIRB) and its staff have responsibility for overseeing your welfare during this research and may need to see research records that identify you. Principal Investigator and Mentor, as well as other members of the research study team. How will you keep the information you collect about me secure? How long will you keep it?

Participants will put their names on the digital consent form but will fill out surveys that are only associated with a code number, rather than their name. Digital copies of consent forms will be kept in RedCap (HIPAA compliant software for data collection) as well as be downloaded and kept in a secure encrypted file on the researcher's password protected computer; all identifying information will be destroyed/deleted after five years. Deidentified survey data will be kept electronically after the data collection is finished in the format of an excel document indefinitely. Names and consent forms will not be associated with this file; only code numbers will be used.

What if I decide I don't want to continue in this research?

You can stop at any time after it has already started. There will be no consequences if you stop, and you will not be criticized. You will not lose any benefits that you normally receive.

Who should I contact if I have questions?

The people conducting this study will be able to answer any questions concerning this research, now or in the future. You may contact the Principal Investigator at (336)970-8821 all days of the week, between 8:00 am and 8:00 pm.

If you have questions about your rights as someone taking part in research, you may call the University & Medical Center Institutional Review Board (UMCIRB) at phone number 252-744-2914 (days, 8:00 am-5:00 pm). If you would like to report a complaint or concern about this research study, you may call the Director for Human Research Protections, at 252-744-2914.

Is there anything else I should know?

The primary researcher may reach out to you via phone, email, or messenger in case there are concerns about suicidality or risk of harm. The primary researcher would assess your safety and assist you in locating appropriate support. In cases where the primary investigator determines that you are an immediate danger to yourself or others, or there is a report of abuse or neglect of a child, elderly person, or disabled person, the primary investigator would have to contact authorities in order to keep everyone safe. This does not apply to you reporting things that happened to you as a child, while you are now an adult in a safe environment.

The unidentified data might be used in the future for other research studies, publications, or presentations but your name will not be associated with the data in any way. This will not impact the amount of time that research data is stored.

I have decided I want to take part in this research. What should I do now?

The person obtaining informed consent will ask you to read the following and if you agree, you should type your name and check yes on this form below:

I have read (or had read to me) all of the above information. I have had an opportunity to ask questions about things in this research I did not understand and have received satisfactory answers. I know that I can stop taking part in this study at any time. By checking yes on this informed consent form, I am not giving up any of my rights. I have been given the opportunity to keep a copy of this consent form, and I will let the principal investigator (Dottie Dator) know if I would like a copy via email (datord16@students.ecu.edu) or phone (336)970-8821.

Please click on the PDF attachment below in order to download a copy of the consent form for your records.

[Attachment: "Informed-Consent-Dissertation Good .pdf"]

1)	Please type your name in the text box:	_____
2)	Please click yes if you agree to participate in the study:	◯ Yes ◯ No

APPENDIX D: PUBLICLY AVAILABLE MEASURES

Dimensional Obsessive-Compulsive Scale

This questionnaire asks you about 4 different types of concerns that you might or might not experience. For each type there is a description of the kinds of thoughts (sometimes called *obsessions*) and behaviors (sometimes called *rituals* or *compulsions*) that are typical of that particular concern, followed by 5 questions about your experiences with these thoughts and behaviors. Please read each description carefully and answer the questions for each category based on your experiences in the last month.

Category 1: Concerns about Germs and Contamination

Examples…

-Thoughts or feelings that you are contaminated because you came into contact with (or were nearby) a certain object or person.
-The feeling of being contaminated because you were in a certain place (such as a bathroom).
-Thoughts about germs, sickness, or the possibility of spreading contamination.
-Washing your hands, using hand sanitizer gels, showering, changing your clothes, or cleaning objects because of concerns about contamination.
-Following a certain routine (e.g., in the bathroom, getting dressed) because of contamination
-Avoiding certain people, objects, or places because of contamination.

The next questions ask about your experiences with thoughts and behaviors related to contamination over the last month. Keep in mind that your experiences might be different than the examples listed above. Please circle the number next to your answer:

1. About how much time have you spent each day thinking about contamination and engaging in washing or cleaning behaviors because of contamination?

   0 None at all
   1 Less than 1 hour each day
   2 Between 1 and 3 hours each day
   3 Between 3 and 8 hours each day
   4 8 hours or more each day

2. To what extent have you avoided situations in order to prevent concerns with contamination or having to spend time washing, cleaning, or showering?

   0 None at all
   1 A little avoidance
   2 A moderate amount of avoidance
   3 A great deal of avoidance
   4 Extreme avoidance of nearly all things

3. If you had thoughts about contamination but could not wash, clean, or shower (or otherwise remove the contamination), how distressed or anxious did you become?

   0 Not at all distressed/anxious
   1 Mildly distressed/anxious
   2 Moderately distressed/anxious
   3 Severely distressed/anxious
   4 Extremely distressed/anxious

4. To what extent has your daily routine (work, school, self-care, social life) been disrupted by contamination concerns and excessive washing, showering, cleaning, or avoidance behaviors?

   0 No disruption at all.
   1 A little disruption, but I mostly function well.
   2 Many things are disrupted, but I can still manage.
   3 My life is disrupted in many ways and I have trouble managing.
   4 My life is completely disrupted and I cannot function at all.

5. How difficult is it for you to disregard thoughts about contamination and refrain from behaviors such as washing, showering, cleaning, and other decontamination routines when you try to do so?

   0 Not at all difficult
   1 A little difficult
   2 Moderately difficult
   3 Very difficult
   4 Extremely difficult

continued →

Category 2: Concerns about being Responsible for Harm, Injury, or Bad Luck

Examples…

-A doubt that you might have made a mistake that could cause something awful or harmful to happen.
-The thought that a terrible accident, disaster, injury, or other bad luck might have occurred and you weren't careful enough to prevent it.
-The thought that you could prevent harm or bad luck by doing things in a certain way, counting to certain numbers, or by avoiding certain "bad" numbers or words.
-Thought of losing something important that you are unlikely to lose (e.g., wallet, identify theft, papers).
-Checking things such as locks, switches, your wallet, etc. more often than is necessary.
-Repeatedly asking or checking for reassurance that something bad did not (or will not) happen.
-Mentally reviewing past events to make sure you didn't do anything wrong.
-The need to follow a special routine because it will prevent harm or disasters from occurring.
-The need to count to certain numbers, or avoid certain bad numbers, due to the fear of harm.

The next questions ask about your experiences with thoughts and behaviors related to harm and disasters over the last month. Keep in mind that your experiences might be slightly different than the examples listed above. Please circle the number next to your answer:

1. About how much time have you spent each day thinking about the possibility of harm or disasters and engaging in checking or efforts to get reassurance that such things do not (or did not) occur?

   0 None at all
   1 Less than 1 hour each day
   2 Between 1 and 3 hours each day
   3 Between 3 and 8 hours each day
   4 8 hours or more each day

2. To what extent have you avoided situations so that you did not have to check for danger or worry about possible harm or disasters?

   0 None at all
   1 A little avoidance
   2 A moderate amount of avoidance
   3 A great deal of avoidance
   4 Extreme avoidance of nearly all things

3. When you think about the possibility of harm or disasters, or if you cannot check or get reassurance about these things, how distressed or anxious did you become?

   0 Not at all distressed/anxious
   1 Mildly distressed/anxious
   2 Moderately distressed/anxious
   3 Severely distressed/anxious
   4 Extremely distressed/anxious

4. To what extent has your daily routine (work, school, self-care, social life) been disrupted by thoughts about harm or disasters and excessive checking or asking for reassurance?

   0 No disruption at all.
   1 A little disruption, but I mostly function well.
   2 Many things are disrupted, but I can still manage.
   3 My life is disrupted in many ways and I have trouble managing.
   4 My life is completely disrupted and I cannot function at all.

5. How difficult is it for you to disregard thoughts about possible harm or disasters and refrain from checking or reassurance-seeking behaviors when you try to do so?

   0 Not at all difficult
   1 A little difficult
   2 Moderately difficult
   3 Very difficult
   4 Extremely difficult

Continued →

Category 3: Unacceptable Thoughts

Examples…

-Unpleasant thoughts about sex, immorality, or violence that come to mind against your will.
-Thoughts about doing awful, improper, or embarrassing things that you don't really want to do.
-Repeating an action or following a special routine because of a bad thought.
-Mentally performing an action or saying prayers to get rid of an unwanted or unpleasant thought.
-Avoidance of certain people, places, situations or other triggers of unwanted or unpleasant thoughts

The next questions ask about your experiences with unwanted thoughts that come to mind against your will and behaviors designed to deal with these kinds of thoughts over the last month. Keep in mind that your experiences might be slightly different than the examples listed above. Please circle the number next to your answer:

1. About how much time have you spent each day with unwanted unpleasant thoughts and with behavioral or mental actions to deal with them?

   0 None at all
   1 Less than 1 hour each day
   2 Between 1 and 3 hours each day
   3 Between 3 and 8 hours each day
   4 8 hours or more each day

2. To what extent have you been avoiding situations, places, objects and other reminders (e.g., numbers, people) that trigger unwanted or unpleasant thoughts?

   0 None at all
   1 A little avoidance
   2 A moderate amount of avoidance
   3 A great deal of avoidance
   4 Extreme avoidance of nearly all things

3. When unwanted or unpleasant thoughts come to mind against your will how distressed or anxious did you become?

   0 Not at all distressed/anxious
   1 Mildly distressed/anxious
   2 Moderately distressed/anxious
   3 Severely distressed/anxious
   4 Extremely distressed/anxious

4. To what extent has your daily routine (work, school, self-care, social life) been disrupted by unwanted and unpleasant thoughts and efforts to avoid or deal with such thoughts?

   0 No disruption at all.
   1 A little disruption, but I mostly function well.
   2 Many things are disrupted, but I can still manage.
   3 My life is disrupted in many ways and I have trouble managing.
   4 My life is completely disrupted and I cannot function at all.

5. How difficult is it for you to disregard unwanted or unpleasant thoughts and refrain from using behavioral or mental acts to deal with them when you try to do so?

   0 Not at all difficult
   1 A little difficult
   2 Moderately difficult
   3 Very difficult
   4 Extremely difficult

Continued →

Category 4: Concerns about Symmetry, Completeness, and the Need for Things to be "Just Right"

Examples…

-The need for symmetry, evenness, balance, or exactness.
-Feelings that something isn't "just right."
-Repeating a routine action until it feels "just right" or "balanced."
-Counting senseless things (e.g., ceiling tiles, words in a sentence).
-Unnecessarily arranging things in "order."
-Having to say something over and over in the same way until it feels "just right."

The next questions ask about your experiences with feelings that something is not "just right" and behaviors designed to achieve order, symmetry, or balance over the last month. Keep in mind that your experiences might be slightly different than the examples listed above. Please circle the number next to your answer:

1. About how much time have you spent each day with unwanted thoughts about symmetry, order, or balance and with behaviors intended to achieve symmetry, order or balance?

   0 None at all
   1 Less than 1 hour each day
   2 Between 1 and 3 hours each day
   3 Between 3 and 8 hours each day
   4 8 hours or more each day

2. To what extent have you been avoiding situations, places or objects associated with feelings that something is not symmetrical or "just right?"

   0 None at all
   1 A little avoidance
   2 A moderate amount of avoidance
   3 A great deal of avoidance
   4 Extreme avoidance of nearly all things

3. When you have the feeling of something being "not just right," how distressed or anxious did you become?

   0 Not at all distressed/anxious
   1 Mildly distressed/anxious
   2 Moderately distressed/anxious
   3 Severely distressed/anxious
   4 Extremely distressed/anxious

4. To what extent has your daily routine (work, school, self-care, social life) been disrupted by the feeling of things being "not just right," and efforts to put things in order or make them feel right?

   0 No disruption at all.
   1 A little disruption, but I mostly function well.
   2 Many things are disrupted, but I can still manage.
   3 My life is disrupted in many ways and I have trouble managing.
   4 My life is completely disrupted and I cannot function at all.

5. How difficult is it for you to disregard thoughts about the lack of symmetry and order, and refrain from urges to arrange things in order or repeat certain behaviors when you try to do so?

   0 Not at all difficult
   1 A little difficult
   2 Moderately difficult
   3 Very difficult
   4 Extremely difficult

LEC-5 Standard

Instructions: Listed below are a number of difficult or stressful things that sometimes happen to people. For each event check one or more of the boxes to the right to indicate that: (a) it happened to you personally; (b) you witnessed it happen to someone else; (c) you learned about it happening to a close family member or close friend; (d) you were exposed to it as part of your job (for example, paramedic, police, military, or other first responder); (e) you're not sure if it fits; or (f) it doesn't apply to you.

Be sure to consider your *entire life* (growing up as well as adulthood) as you go through the list of events.

Event	Happened to me	Witnessed it	Learned about it	Part of my job	Not sure	Doesn't apply
1. Natural disaster (for example, flood, hurricane, tornado, earthquake)	☐	☐	☐	☐	☐	☐
2. Fire or explosion	☐	☐	☐	☐	☐	☐
3. Transportation accident (for example, car accident, boat accident, train wreck, plane crash)	☐	☐	☐	☐	☐	☐
4. Serious accident at work, home, or during recreational activity	☐	☐	☐	☐	☐	☐
5. Exposure to toxic substance (for example, dangerous chemicals, radiation)	☐	☐	☐	☐	☐	☐
6. Physical assault (for example, being attacked, hit, slapped, kicked, beaten up)	☐	☐	☐	☐	☐	☐
7. Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)	☐	☐	☐	☐	☐	☐
8. Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)	☐	☐	☐	☐	☐	☐
9. Other unwanted or uncomfortable sexual experience	☐	☐	☐	☐	☐	☐
10. Combat or exposure to a war-zone (in the military or as a civilian)	☐	☐	☐	☐	☐	☐
11. Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war)	☐	☐	☐	☐	☐	☐
12. Life-threatening illness or injury	☐	☐	☐	☐	☐	☐
13. Severe human suffering	☐	☐	☐	☐	☐	☐
14. Sudden violent death (for example, homicide, suicide)	☐	☐	☐	☐	☐	☐
15. Sudden accidental death	☐	☐	☐	☐	☐	☐
16. Serious injury, harm, or death you caused to someone else	☐	☐	☐	☐	☐	☐
17. Any other very stressful event or experience	☐	☐	☐	☐	☐	☐

PCL-5

Instructions: Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

In the past month, how much were you bothered by:	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4
14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being "superalert" or watchful or on guard?	0	1	2	3	4
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4