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Do Obsessive Beliefs Moderate the Relationship Between Obsessive-Compulsive
and Depressive Symptoms?

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Abstract

There has been limited research investigating potential mechanisms that drive the association between obsessive-compulsive (OC) and depressive symptoms. Obsessive beliefs are implicated in the etiology and maintenance of OC symptoms and have been shown to correlate with depressive symptoms amongst OCD patients. I assessed whether obsessive beliefs moderate the relation between obsessive compulsive and depressive symptoms to replicate analyses from a study conducted by Teller et al. (2017). Forty-six participants with elevated OC symptoms were recruited through Amazon's Mechanical Turk. Each participant completed the obsessing subscale of the *Revised Obsessive-Compulsive Inventory (OCI-R)*, *Dimensional Obsessive Compulsive Scale (DOCS)*, the *Revised Obsessive Beliefs Questionnaire (OBQ-44)*, and the 7-item depression subscale of the *Depression Anxiety and Stress Scale (DASS-21)*. Obsessive-compulsive symptoms were not a significant predictor of depressive symptoms ($B = 1.20, p = .28$). Additionally, obsessive beliefs ($B = .00, p = .85$), and the interaction between obsessive beliefs and obsessive-compulsive symptoms ($B = .01, p = .53$), were not significant predictors of depressive symptoms. In exploratory analyses, obsessive-compulsive symptoms were a significant predictor of overall distress ($B = 6.91, p \leq .01$). However, obsessive beliefs ($B = .00, p = .93$), and the interaction between obsessive beliefs and obsessive-compulsive symptoms ($B = .04, p = .41$), were not significant predictors of distress. In exploratory post-hoc probing, the influence of OC symptoms on distress was greater when obsessive beliefs were high (+1 *SD* [$t = 2.85, p \leq .01$]) compared to average obsessive beliefs (*Mean* [$t = 2.72, p \leq .01$]) or when obsessive beliefs were low (-1 *SD* [$t = 1.56, p = .13$]). This was particularly true with respect to the relationship between responsibility/threat related OC symptoms and beliefs about the need to control thoughts.

Key Words: Obsessive Beliefs; Obsessive-Compulsive Symptoms; Obsessive-Compulsive Disorder (OCD); Depression

Do Obsessive Beliefs Moderate the Relationship Between Obsessive-Compulsive and Depressive Symptoms?

Obsessive Compulsive Disorder (OCD) is defined as the presence of obsessions and/or compulsions that cause significant distress or impairment. Common obsessions include recurrent, persistent, and unwanted intrusive thoughts, images, impulses, or urges whereas compulsions include attempts to neutralize or suppress these thoughts with repeated and ritualized behaviors (American Psychiatric Association, 2013). OCD is a heterogeneous psychological disorder with a one-year prevalence of approximately 1.2% and a lifetime prevalence of approximately 2.3 % (Ruscio, Stein, Chiu, & Kessler, 2010). Research suggests that prevalence rates across gender are similar, although females may have a slight increase in symptoms compared to males (Antony, Downie, & Swinson, 1998). However, in many cases, males may have an earlier onset of symptoms (during prepuberty) compared to females (during adolescence) (Geller, 2006; Tukul et al., 2005). Additionally, across cultures, prevalence rates and symptom presentation seem to be consistent (Weissman, Bland, Canino, & Greewald, 1994).

Although obsessions and compulsions may present themselves in various forms, they typically fall into separate, distinct, categories. Bloch et al. (2008) found that obsessive-compulsive symptoms cluster into three broad categories: (1) contamination obsessions and washing compulsions; (2) aggressive obsessions and checking compulsions including sexual and religious obsessions, and (3) not-just-right or incompleteness obsessions and exactness compulsions. Other research by Abramowitz et al. (2010) clustered obsessive-compulsive symptoms into four broader categories: (a) contamination obsessions and washing/cleaning compulsions; (b) obsessions about responsibility for causing harm or making mistakes and checking compulsions; (c) obsessions about order and symmetry and ordering/arranging

compulsions; and (d) repugnant obsessional thoughts concerning sex, religion, and violence along with mental compulsive rituals and other covert neutralizing strategies. Abramowitz et al. (2010) created the *Dimensional Obsessive-Compulsive Scale* (DOCS; Abramowitz et al., 2010) to assess the four previously mentioned categories of OC symptoms.

Previous research suggests that OCD can have a significant impact on one's quality of life and functional impairment (Huppert, Simpson, Nissenson, Liebowitz, & Foa 2009; Markarian et al., 2010) and can be associated with disability, an increased need for health care services and financial problems (e.g., Bobes et al., 2001; Koran, 2000). Huppert et al. (2009) examined the factors related to functional impairment and quality of life in patients with OCD compared to healthy controls and those in remission. Results from this large comprehensive assessment indicate that, compared to healthy controls as well as patients in remission, individuals with OCD report a decreased quality of life as well as an increase in functional impairment/distress (i.e., work, social, family). Additionally, participants who had few symptoms present at the time of the study, but a previous history of OCD, reported poorer quality of life and overall functioning compared to healthy controls. Findings from this study are consistent with previous research that suggests that symptom severity in patients with OCD is directly negatively correlated with quality of life (i.e., Eisen et al., 2006; Lack et al., 2009). Previously conducted research also suggests that, in general, patients with OCD have an increased risk for comorbidity with major depressive disorder (Crino & Andrews, 1996; Hong et al., 2004; Nestadt et al., 2001; Tükel et al., 2002). The purpose of the present study was to further investigate the role of obsessive beliefs in the etiology and maintenance of obsessive-compulsive (OC) and depressive symptoms.

Among those people diagnosed with OCD, approximately one-quarter to one-half will also meet criteria for comorbid major depressive disorder (MDD), making it the most common comorbid diagnosis (Crino & Andrews, 1996; Hong et al., 2004; Nestadt et al., 2001; Tukul et al., 2002). There is evidence that people with OCD and comorbid depression have an earlier onset of symptoms compared to non-depressed OCD patients (Hong et al., 2004; Tukul et al., 2006). Research has shown that, compared to their non-depressed OCD counterparts, OCD patients with depression show elevated levels of functional impairment, an increase in unemployment rates, more severe symptoms of generalized anxiety, and increased rates of comorbid psychiatric disorders (Hong et al., 2004; Ricciardi & McNally, 1995; Tukul, Polat, Ozdemir, Sksut, & Turksoy, 2002; Tukul et al., 2006).

Some people with OCD end up meeting full criteria for depression—however, OCD and depressive symptoms are related to one another in important ways, even among those who are not currently experiencing major depression. For example, a study conducted by Storch et al. (2006) assessed the relationship between OCD and depression among 130 treatment-seeking adults with OCD. Participants in this study completed a battery of questionnaires including the *Yale-Brown Obsessive-Compulsive Scale-II* (Y-BOCS-II; Stoch et al., 2010), and the *Inventory of Depressive Symptomatology-Self Report* (IDS-SR; Rush et al., 1986; Rush, Gullion, Basco, Jarrett, & Triveldi, 1996). Results from this study indicated that all measures assessing OC symptoms were correlated with depression: Y-BOCS-II Severity scale ($r = .35, p < .01$), Y-BOCS-II Obsessing subscale ($r = .36, p < .01$), and the Y-BOCS-II Compulsions subscale ($r = .27, p < .01$). In fact, previous research suggests that OC and depressive symptoms are correlated among various population types. These include patients (Abramowitz et al., 2000; Crino & Andrews, 1996; Eisen et al., 1999; Hong et al., 2004; Nestadt et al., 2001; Rasmussen et al.,

1992; & Whittal et al., 2005), convenience samples (Abramowitz et al., 2007; Hong et al., 2004; Tukul, Meteris, Koyuncu, Tecer, & Yazici, 2006), and community samples (Karno et al., 1988). And, in fact, understanding how and why full-blown depression occurs requires studying processes that link OCD to depressive symptoms before they become MDD.

There is a substantial amount of theory and research that suggests OC symptoms precede depressive symptoms, and are also implicated in the development of such symptoms among patients with OCD (Bellodi, Scioto, Diaferia, Ronchi, & Smiraldi, 1992; Demal, Lenz, Mayrhofer, Zapotoczky, & Zitterl, 1993). However, although previous research has consistently shown this correlation between OC and depressive symptoms, there is very little understanding as to what mechanisms may be driving this relationship. The role of obsessive beliefs may be one possible factor contributing to the association between OC and depressive symptoms.

Although no studies have directly examined the role of obsessive beliefs and their relation to depressive symptoms, the cognitive theory of OCD suggests that the development of OC symptoms may be the result of the negative appraisal of intrusive thoughts (Clark & Purdon, 1993; Rachman, 1997, 1998; Salkovskis, 1985, 1989; Wells, 1997). This theory suggests that intrusive thoughts are normal life experiences that occur within the general population and that the obsessions that people with OCD experience are no different than their healthy counterparts. Additionally, compared to those without the disorder, OCD patients tend to believe that these thoughts are highly significant and they should be responsible for any harm resulting from the their thoughts (Markarian et al., 2010). There are several different belief domains which may influence these negative appraisals and, in turn, may be associated with obsessive-compulsive symptoms (Faull, Joseph, Meaden, & Lawrence, 2004).

In order to condense the large number of possible obsessive beliefs and instruments used to measure them, the Obsessive Compulsive Cognitions Working Group (OCCWG, 1997) has categorized the six most relevant belief domains as follows: (1) inflated responsibility, (2) overimportance of thoughts, (3) importance of controlling thoughts, (4) overestimation of threat, (5) intolerance of uncertainty, and (6) perfectionism. The OCCWG then devised The Obsessional Beliefs Questionnaire (OBQ) which was used to validate and measure these belief domains (OCCWG, 2001, 2003). A series of validation studies was conducted on the OBQ (OCCWG, 2001, 2003, unpublished data) investigating the association between obsessive beliefs and OC symptoms. In these studies, various samples were used including healthy controls, anxious controls, and patients with OCD. Results demonstrated that all belief scales used in the studies were significantly correlated with OC symptoms. A notable finding from this first study is that each of the belief domains were highly correlated with each other ($p < 0.005$), with most correlations being greater than 0.7 (OCCWG, 2001). Results from this initial validation study were replicated in additional studies using similar sample types (OCCWG, 2003).

Rhéaume et al. (2000) conducted a study specifically investigating the association between the inflated responsibility and perfectionism belief domains and OC symptoms. Results from this study indicated that both of these belief domains were significantly and comparably associated with OC symptoms. However, hierarchical regression analyses showed that scores from a scale measuring perceived danger were not associated with OC symptoms. Although the cognitive model has been well regarded as a way to better conceptualize OCD, there are several limitations to its adequacy in describing the disorder (Markarian et al., 2010). For example, the cognitive model of OCD puts great emphasis on the inflated responsibility belief domain. However, research suggests that many OCD sufferers may not be significantly impaired in this

domain (Makarian et al., 2010). Although there may be some limitations to the cognitive model of OCD, research has shown that it provides important information for helping to better understand the role of obsessive beliefs and how they may give rise to OC symptoms.

Previous research suggests that depressive symptoms are driven by and associated with OC symptoms among many different population types. However, it is not entirely clear which mechanisms may be driving this association. Besides being associated with OC symptoms, research suggests that obsessive beliefs are also associated with depressive symptoms among OCD patients (Taylor et al., 2006; Faull et al., 2004). Among OCD patients, obsessive beliefs may interact with OC symptoms, which can then lead to depressive symptoms. For example, a patient with OCD may have strong beliefs that failure to prevent harm is just as bad as directly causing harm. These beliefs, may interact with OC symptoms such as the person constantly ruminating that they forgot to turn off their stove when they left their house earlier that day. Compared to their healthy counterparts, people with OCD believe that the possibility of forgetting to turn off the stove must mean that they are a bad person and did not act appropriately to try and prevent harm. These thoughts experienced by the sufferer may lead to an increased amount of self-blame, which can cause the person with OCD to experience symptoms of depression. However, limited research has been conducted investigating the factors that influence the relationship between obsessive-beliefs and depression. In one study conducted by Abramowitz et al. (2007), differences in the ways depressed OCD patients interpreted their intrusive thoughts were compared to their non-depressed counterparts. Results from this study indicated that compared to non-depressed OCD patients, depressed OCD patients give more importance to their intrusive thoughts, feel the need to control their thoughts more, and feel greater responsibility for their thoughts.

In a recent study conducted by Teller et al. (2017), moderation analyses were used to test whether obsessive beliefs moderate the relation between OC and depressive symptoms. Moderation is an interaction effect; a variable affects the direction or strength of the relationship between two other variables. For example, Treatment X is more effective at reducing Symptom Y for men than for women. Therefore, gender is a moderator of the effect of Treatment X on Symptom Y. On the other hand, mediation is a model that seeks to identify or explain the mechanism or process that underlies a relationship between two variables. The third variable that explains this relationship is known as the mediator. For example, Treatment X reduces Symptom Y, but we want to know more about why it is effective. We think that Treatment X actually reduces levels of Factor Z, which in turn affects Symptom Y. Therefore, the level of Factor Z is a mediator of the relationship between Treatment X and Symptom Y. In clinical studies, the mediator can help to explain better how or why treatments work.

There is little theoretical research that suggests that a person's obsessive beliefs mediate their OC and depressive symptoms. In other words, there is no reason to hypothesize that a person's OC symptoms give rise to their obsessive beliefs, and in turn, cause depression. However, there may be reason to believe that a person's obsessive beliefs *moderate* the relation between OC and depressive symptoms. In other words, as suggested by the findings of Abramowitz et al. (2007), a person's OC symptoms may interact with their obsessive beliefs to result in depression. For example, two people can have the same levels of OC symptoms. However, one of these people may have more elevated obsessive beliefs than their counterpart. It is very possible that the person who has elevated obsessive beliefs about their OC symptoms will also experience elevated levels of depressive symptoms.

The study conducted by Teller et al. (2017) used a convenience sample of 478 participants who were enrolled in an undergraduate introductory psychology course. Results from the study revealed that OC symptoms, obsessive beliefs, and the interaction between the two predicted depressive symptoms. The influence of OC symptoms on depressive symptoms was greater when obsessive beliefs were high, compared to when obsessive beliefs were low. In other words, when a person has both high OC symptoms and high obsessive beliefs (e.g., responsibility/threat estimation), their depressive symptoms were at their highest levels. Interaction effects were significant for all subscales of the *Revised Obsessional Beliefs Questionnaire* (OBQ-44; Obsessive Compulsive Cognitions Working Group, 2005) and all but one of the *Dimensional Obsessive-Compulsive Scale* (DOCS; Abramowitz et al., 2010) subscales (contamination).

In the present study, I hypothesize that obsessive beliefs will moderate the relation between OC and depressive symptoms within a sample of participants who had clinically elevated OC symptoms. Moderation analyses were used to test this hypothesis. The goal of the present study was to replicate analyses from Teller et al. (2017), which used a convenience sample, using a sample of participants with clinically elevated OCD symptoms.

Methods

Participants

One thousand three hundred participants from Amazon's Mechanical Turk completed a brief, three question screener which was used to assess their eligibility for being invited back to participate in the main study. Of these participants, 126 qualified and were invited to participate in the main study and 101 of these consented to participate. Forty-six participants had valid data that were analyzed. (See below for screening procedures and inclusion criteria.) Of those who

participated in the main study and met all screening criteria, 24 of the participants were females ($n = 24, 52.2\%$), 21 were male, ($n = 21, 45.7\%$), and one participant identified as transgender male ($n = 1, 2.1\%$). Participants ages ranged from 18 to 54 ($M = 32.70, SD = 8.04$). Additionally, 36 (78.26%) of the participants self-reported that they had been previously diagnosed with a psychological disorder and all of these suffered from some type of depression or anxiety disorder. A majority of the participants were European-American ($n = 38, 82.6\%$), four of the participants (8.7%) were African American, and four of the participants (8.7%) were Asian-American.

Screening and Selection

The initial screening assessment consisted of the three-question Obsessing subscale drawn from the 18-item *Revised Obsessive Compulsive Inventory* (OCI-R) (Foa et al., 2002). These questions included (1) *I find it difficult to control my own thoughts*, (2) *I am upset by unpleasant thoughts that come into my mind against my will*, and (3) *I frequently get nasty thoughts and have difficulty getting rid of them*. Each of these items asks participants to indicate the number that best describes how much that experience has distressed or bothered them during the past month. Participants are able to choose a score that ranges from 0 (No distress was caused at all during the past month) to 4 (There was an extreme amount of distress caused during the past month). Scores were then summed and ranged from 0-12.

I used a cutoff score of nine or higher on the three-question screener to represent participants with clinically elevated OC symptoms and to define eligibility to participate in the main study. In determining the optimal cutoff score, I screened approximately 200 participants, calculated the mean score, and added two standard deviations to this number. By calculating the cutoff score this way, I was able to use the initial sample of 200 to determine what score would

count as an “extreme” score among Mechanical Turk workers. Previously conducted research by Foa et al. (2002), found that using a cutoff score of six results in a specificity of ~82%. However, participants in the Foa et al. (2002) study completed the entire 18-items of the OCI-R, not just the three-question obsessing subscale.

Eligible participants who decided to complete the main study questionnaire battery completed the three-question OCI-R screener a second time. I used these data to screen out inconsistent responders between the two different time points of answering the three questions. All participants who did not score a nine or above upon the second time of completion were excluded from the dataset before the main analyses. Of the 101 participants who completed the main study, 55 participants did not score a nine or above the second time they completed the three-question OCI-R screener, a screen-out rate of 54.5%. Because of this, these participants were not included in the final data analysis. Additionally, nine of these 55 participants (16.4%) were excluded because they answered three or more questions incorrectly on the infrequency scale (see *Procedure* below).

Measures

Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995). The 7-item depression subscale from the *DASS* was used to measure depressive symptoms. The entire 21 item scale was used in exploratory analyses to measure distress. Participants are asked to read each statement and circle a number 0-3 which indicates how much the statement applied to them *over the past week*. Scores range from 0 (*did not apply to me at all*) to 3 (*applied to me very much, or most of the time*) and total from 0-21. Previous research has shown adequate internal consistency for the depression subscale as well as test-retest reliability (Brown, Chorpita,

Korotitsch, & Barlow, 1997). In the present sample, internal consistency for the depression scale was excellent ($\alpha = .91$).

The obsessing subscale of the ***Revised Obsessive-Compulsive Inventory (OCI-R; Foa et al., 2002)*** is a three question self-report measure. Statements refer to experiences that many people have in their everyday lives. Participants are asked to circle the number that best describes how much that experience has distressed or bothered them during the past month. The numbers range from 0 (*no distress or bother*) to 4 (*extreme amount of distress or bother*) and total score of 0-12. Previous research has shown good internal consistency for the obsessing subscale ($\alpha = .88$) as well as adequate convergent validity (Huppert et al., 2007). In the present study, internal consistency was questionable ($\alpha = .68$)

The ***Revised Obsessive Beliefs Questionnaire (OBQ-44; Obsessive Compulsive Cognitions Working Group, 2005)*** is a self-report measure of beliefs implicated in the etiology and maintenance of OC symptoms. The OBQ-44 has a total of 44 questions that are divided into three subscales: responsibility and threat estimation (OBQ-RT; 16 items), perfectionism and intolerance of uncertainty (OBQ-PC; 16 items), and importance and the need to control one's thoughts (OBQ-ICT; 12 items). The questionnaire lists different attitudes or beliefs that people sometimes hold. Participants are asked to read each of the statements and decide how much they agree or disagree with it. For each statement, participants choose the number that best matches how they think. Each of the questions uses a 7-point scale from 1 (*disagree very much*) to 7 (*agree very much*). Scores are then totaled out of a possible 308 points. Previous research has shown that the OBQ-44 has both high internal consistency for all subscales ($\alpha = .89$ to $.95$) as well as adequate convergent validity (OCCWG, 2005). In the present study, internal consistencies for the OBQ-44 total and all of the subscales was good to excellent ($\alpha = .88$ to $.95$).

The *Dimensional Obsessive-Compulsive Scale (DOCS; Abramowitz et al., 2010)* is a 20-item self-report measure that assesses four distinct categories of obsessive-compulsive symptoms: (A) concerns about germs and contamination; (B) concerns about being responsible for harm, injury, or bad luck; (C) unacceptable thoughts; and (D) concerns about symmetry, completeness, and the need for things to be “just right.” For each of the categories there is a description of the kinds of thoughts (obsessions) and behaviors (compulsions) that are typical of that particular concern, followed by five questions about one’s experiences with these thoughts and behaviors. Participants are asked to answer each question for each category based on their experiences in the last month. Items on the DOCS are rated from 0 (*none/not at all*) to 4 (*extreme/severe*) with a score ranging from 0-80. Previous exploratory and factor analyses have shown strong factor reliability in both student and clinical samples (Abramowitz et al., 2010) as well as adequate test-retest reliability over a three-month period ($r = .55-.66$). In the present sample, internal consistency was good to excellent ($\alpha = .85$ to $.92$).

Procedures

Data from this study were collected online using Amazon’s Mechanical Turk internet platform (MTurk; <http://www.mturk.com>; Shapiro, Chandler, & Mueller, 2013). Previous research has shown that there is little variability between collecting data online or in person when assessing OCD symptoms and cognitions (Coles, Cook, & Blake, 2007). On Amazon’s Mechanical Turk, participants are able to complete HITs (Human Intelligence Tasks) that can vary in both length and time. For the purposes of this study, I created two separate HIT’s- one that was used as a screener to assess participant’s eligibility for the main study, and another HIT which consisted of the main study questionnaire battery itself. Those who wished to participate in the screening assessment were compensated with \$0.10 and participants were informed that it

should take approximately three to five minutes to complete. All subjects who qualified were sent an invitation email through Amazon Mechanical Turk inviting them to participate in the main study. All participants provided written consent before the completion of any study measures. Participants who completed the main study received \$3.00. This study was approved by the Institutional Review Board at the University of Richmond.

Approximately 126 participants were invited to participate in the main study. Of these, 101 participants decided to complete the entire battery of questionnaires. Forty-six participants met all screening criteria and their data were included in the final analysis. The main study consisted of several self-report questionnaires measuring obsessive beliefs, OC, and depressive symptoms, respectively. Obsessive beliefs were assessed using the *Revised Obsessive Beliefs Questionnaire* (OBQ-44; Obsessive Compulsive Cognitions Working Group, 2005), OC symptoms were measured using the *Dimensional Obsessive-Compulsive Scale* (DOCS; Abramowitz et al., 2010), and depressive symptoms were evaluated using the *Depression Anxiety Stress Scale* (DASS-21; Lovibond & Lovibond, 1995). In addition to completing these measures, all subjects who participated in the main study were asked to complete the brief three-question obsessing subscale for a second time. Participants also completed the 13 items of the *Infrequency Scale for Personality Traits* (Chapman & Chapman, 1983). The questions from this scale are randomly intermixed with another measure to ensure that participants were completing the study in a valid way. Consistent with the authors' recommendations, any participant who endorsed more than two questions on the infrequency scale was dropped from further analysis (N= 9, 16.4 % of participants).

Results

Statistical Assumptions

Data were inspected for completeness and distributional assumptions. Data were relatively normally distributed; skewness and kurtosis were within acceptable limits for all mean scores used in the analyses. All analyses were carried out using Statistical Package for the Social Sciences (Version 21; International Business Machines, 2012).

Zero-Order Correlations

Pearson correlations were calculated between all variables (Table 1). The DOCS-Total showed a statistically significant positive correlation with the OBQ-44-Total ($r = .49, p < .001$). All subscales of the DOCS were significantly correlated with OBQ-44-Total except for the symmetry subscale. The depression subscale of the DASS-21 did not show a statistically significant correlation with the DOCS-Total ($r = .22, p = n.s.$). Additionally, none of the DOCS subscales showed a statistically significant correlation with the depression subscale of the DASS-21. The depression subscale of the DASS-21 did not show a statistically significant correlation with the OBQ-44-Total, and was not significantly correlated with any of the OBQ-44 subscales.

Moderation Analyses Predicting Depressive Symptoms

Moderation analyses were carried out using the PROCESS macro (Hayes, 2012). The PROCESS macro can be used to automatically center independent and moderator variables, calculate interaction terms, estimate main and interaction effects of the predictor and moderator on an outcome variable, and calculate conditional effects of the independent variable on the dependent variable at varying levels of the moderator for plotting purposes (Hayes, 2012). Regression analyses showed that OC symptoms were not a significant predictor of depressive symptoms ($B = 1.20, p = .28$). Additionally, obsessive beliefs ($B = .00, p = .85$), as well as the interaction between obsessive beliefs and OC symptoms ($B = .01, p = .53$), were not significant predictors of depressive symptoms, suggesting that obsessive beliefs did not moderate the effects of OC symptoms on depressive symptoms. Despite the lack of statistically significant effects,

post-hoc probing showed that the effect of OC symptoms on depressive symptoms was greater when obsessive beliefs were high (+1 *SD* [$t = 1.35, p = .19$]) compared to average obsessive beliefs (*Mean* [$t = 1.10, p = .28$]) or when obsessive beliefs were low (-1 *SD* [$t = .45, p = .66$]) (**Figure 1**).

Exploratory Analyses Predicting Distress

Exploratory analyses showed that OC symptoms were a significant predictor of overall distress measured by the DASS-21 ($B = 6.91, p \leq .01$). However, obsessive beliefs ($B = .00, p = .93$), as well as the interaction between obsessive beliefs and OC symptoms ($B = .04, p = .41$), were not significant predictors of overall distress, suggesting that obsessive beliefs did not moderate the effects of OC symptoms on overall distress. Despite the lack of statistically significant effects, post-hoc probing showed that the effect of OC symptoms on overall distress was greater when obsessive beliefs were high (+1 *SD* [$t = 2.85, p \leq .01$]) compared to average obsessive beliefs (*Mean* [$t = 2.72, p \leq .01$]) or when obsessive beliefs were low (-1 *SD* [$t = 1.56, p = .13$]) (**Figure 2**). Furthermore, exploratory analyses of the DOCS subscales showed that the importance/control of thoughts subscale of the OBQ-44 by DOCS subscale had a marginally significant interaction effect with the concerns about being responsible for harm subscale of the DOCS ($B = .16, p = .05$) in predicting overall distress. Post-hoc probing showed that the effect of harm related OC symptoms on overall distress was greater when one's beliefs about the need to control their thoughts were high (+1 *SD* [$t = 3.26, p \leq .01$]) compared to average beliefs about needing to control thoughts (*Mean* [$t = 2.43, p = .02$]) or when beliefs about needing to control thoughts were low (-1 *SD* [$t = .69, p = .50$]; see **Figure 3**). However, interaction effects between OBQ-ICT and concerns about symmetry subscale of the DOCS ($B = .15, p = .10$), OBQ-ICT and unacceptable thoughts subscale of the DOCS ($B = .13, p = .23$), and

OBQ-ICT and the contamination subscale of the DOCS ($B = -.08, p = .50$) were all nonsignificant at the $p < .05$ level.

Discussion

Findings from the present study demonstrated that OC symptoms were not highly and positively correlated with depressive symptoms ($r = .22, p = n.s.$) among a sample of 46 individuals with elevated OC symptoms recruited through Amazon's Mechanical Turk. However, OC symptoms were highly and positively correlated with obsessive beliefs ($r = .49, p < .01$). In contrast to findings from Teller et al. (2017), conducted with a convenience sample, the present study showed that obsessive-beliefs did not moderate the relation between OC and depressive symptoms. However, exploratory analyses demonstrated that the importance/need to control thoughts marginally moderated the relation between the responsibility/threat symptoms and overall distress.

It is possible that results in this study failed to replicate the results found in the Teller et al. (2017) study because there was a restriction of range issue. The only participants that were recruited in the present study were those that had elevated OC symptoms. Furthermore, it is possible that these participants with elevated OC symptoms, also had elevated levels of depressive symptoms. Because of this, it may have been difficult to see the true effect of OC symptoms on depressive symptoms that one may expect to see if participants were recruited from the general population (i.e., not just participants with elevated OC symptoms).

The results found through exploratory analyses in the present study may be of significance in trying to better understand what specific types of obsessive beliefs may be driving the relation between OC symptoms and distress. In other words, it may not be just obsessive

beliefs in general that are influencing the strength of the relationship between OC symptoms and distress. Specifically, a person's obsessive-compulsive symptoms may be interacting with their beliefs that they need to have control over their own thoughts. When this interaction occurs, the person with OCD may end up feeling distressed. For example, mothers with newborn babies may experience postpartum obsessions which include but are not limited to: the idea that the baby could die in her sleep (S.I.D.S); the thought of dropping the baby from a high place; the thought of putting the baby in the microwave; the image of the baby dead; thoughts of the baby choking and not being able to save him; unwanted impulses to shake the baby to see what would happen; thoughts of yelling at the baby; thoughts of poking the baby in the soft spot of her head (fontanel); thought of stabbing the baby; and, thoughts of drowning the baby in a bath. With these obsessions, a common ritual may include checking on the baby during the night to make sure it is still alive. Although these types of obsessions and compulsions are common for mothers with OCD, research indicates that up to 80% of mothers without clinical obsessive-compulsive symptoms will also report unacceptable, nasty, senseless, and unwanted thoughts related to postpartum (Abramowitz, IOCDF). Many of these postpartum OC symptoms fall into the category of the mother fearing that she will be responsible for harming her child. These obsessions may in turn exacerbate her obsessive beliefs that she must do everything she can in order to control these thoughts. This interaction between the mother's postpartum OC symptoms (i.e., fear that she will harm her baby), and her beliefs that she needs to control her thoughts and do whatever she can to rid these thoughts, may lead to her experiencing of distress when, ultimately, these thoughts cannot be controlled.

Furthermore, it is quite possible that the mother who is experiencing postpartum obsessions is also experiencing high levels of guilt. For example, it is possible that the mother's

urge to harm her child as well as her beliefs of needing to control these obsessions, may act together to produce guilt. It is probable that the mother is not going to act on these thoughts/urges, however, just the fact that she is experiencing them at all (i.e., they are entering into her head), is enough to make her feel guilty and feel like a bad person. Additionally, if the mother is experiencing these levels of guilt, she may in turn experience elevated levels of distress. The type of guilt that a mother with postpartum obsessions will experience is most likely attributed to “obsessive guilt,” which is when the guilt a person is experiencing is tied directly to their OC symptoms (i.e., fear of harming a child).

Although obsessive beliefs, particularly the need for one to control their own thoughts, may be acting as one possible mechanism driving the relation between OC symptoms and distress, the role of guilt may also be a contributing factor. However, researchers have paid very little attention to the role of guilt in OCD (Shapiro & Stewart, 2011), and the few studies that have been conducted have primarily focused on healthy populations producing contradictory results (Niler & Beck, 1989). In a study conducted by Stekette, Quay, and White, (1991), guilt was examined in an obsessional population by using the Problematic Situations Questionnaire (PSQ; Klass, 1987). Surprisingly, results from this study indicated that the levels of guilt amongst these people were not elevated compared to published norms. However, guilt was strongly associated with obsessional complaints (Steketee et al., 1991). In another study, Shafran (1996) investigated the role of guilt in OCD by (1) comparing the guilt of a group of 30 subjects with OCD to the guilt of 30 normal controls; and (2) comparing the relationship among guilt, anxiety, depression, and obsessions between these two groups. Results from this study indicated that the group of subjects with OCD reported significantly more guilt than the healthy controls. In particular, there was an increased amount of trait guilt (guilt beyond immediate

circumstances), state guilt, as well as an increase in moral standards. Furthermore, in both the OCD group and the control group, trait guilt was a significant predictor of OC complaints, which were not influenced by anxiety and depression (Shafran, 1996). Although this study indicated that guilt may play an important role in the impact of OCD, there is much need for future research investigating this potential mechanism.

The present study is not without limitations. First, our sample size was limited to only 46 people. This may have been partly attributed to the rigor of the screening cutoff score I used to allow participants to participate in the main study. Additionally, the way in which our data was collected may have had an impact on the number of participants I was able to recruit, and is also an additional limitation to this study. As outlined in the methods section, data for this study were collected using Amazon's Mechanical Turk internet interface. As with any survey, it is possible that the participants are not fully paying attention while they are filling out the questions. This can lead to inaccurate reporting from participants. In order to try and reduce this problem of distractibility, I used infrequency questions throughout the entire battery of questionnaires. Future research should be conducted with a larger sample size which may enable findings to generalize more broadly into the larger population. Additionally, although it is difficult to recruit participants into the lab, collecting data this way may help to reduce participants being distracted, and in turn may result in more honest reporting while filling out the questionnaires. Another limitation to the present study is that I recruited a sample of people with elevated OC symptoms only. In other words, although the participants displayed elevated OC symptoms, they were never diagnosed with OCD. Future research should be conducted in a clinical sample of participants with an OCD diagnosis. Moreover, many participants in this study had reported a history of other psychiatric disorders. It is possible that these past diagnoses may influence our

results and the true interaction effects between obsessive beliefs, OC symptoms, and depressive symptoms. Additionally, the measurement scales that were used in the present study were all self-report questionnaires. Future research should be replicated with multimodal assessments (e.g., Cogle et al., 2012), which may increase the accuracy of reporting from participants. Lastly, notwithstanding these limitations, the present study adds to the already sizeable body of research implicating obsessive beliefs in the etiology of OC and depressive symptoms.

The results found through exploratory analyses in the present study may have significant clinical implications for treating people with OCD and their overall levels of distress. First, the results indicate that clinicians should be measuring both OC symptoms and obsessive beliefs. For those clinicians who do administer these questionnaires, I believe that after administering these questionnaires, the clinician should narrow their focus into what specific types of obsessive beliefs and OC symptoms the patient is experiencing. In other words, the clinician should conduct a further assessment to target each patient's specific beliefs and symptoms. By doing this, the clinician can administer therapy that is more tailored towards each specific patient. For example, if a patient has specific OC symptoms that are related to responsibility/threat and harm, the clinician can focus on exposure therapies that focus on situations where the client would feel responsible for causing harm. Additionally, if the client has specific obsessive beliefs such as the need for them to have control over their own thoughts, the clinician can tailor the treatment and expose the clients to situations where they do not have the ability to control their own thoughts. If the clinician is successful at treating specifically the client's most disturbing OC symptoms and obsessive beliefs, the client may experience a reduction in their overall levels of distress.

In conclusion, in a sample of adults with elevated OC symptoms, I found that obsessive beliefs did not moderate the relation between OC and depressive symptoms. In exploratory

analyses, I found that obsessive beliefs did not moderate the relation between OC symptoms and overall distress. However, the belief that a person needs to control their own thoughts marginally moderated the relation between harm-related OC symptoms and overall distress.

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	Mean (SD)	DOCS-C	DOCS-R	DOCS-U	DOCS-I	DOCS- Total	OBQ-RT	OBQ-ICT	OBQ-PC	OBQ-Tot
DOCS-C	1.93 (0.82)	$\alpha = .85$								
DOCS-R	2.67 (1.12)	.45**	$\alpha = .94$							
DOCS-U	3.10 (1.03)	.09	.49**	$\alpha = .89$						
DOCS-I	2.25 (1.13)	.44**	.48**	.15	$\alpha = .95$					
DOCS-Tot	2.49 (0.74)	.65**	.85**	.62**	.74**	$\alpha = .92$				
OBQ-RT	81.76 (16.86)	.27	.53**	.33*	.16	.45**	$\alpha = .89$			
OBQ-ICT	46.00 (16.44)	.39**	.52**	.49**	.09	.51**	.62**	$\alpha = .88$		
OBQ-PC	83.35 (17.45)	.15	.30*	.18	.26	.32*	.68**	.60**	$\alpha = .92$	
OBQ-Tot	211.11 (44.11)	.30*	.52**	.38**	.19	.49**	.88**	.85**	.88**	$\alpha = .95$
DASS-Tot	38.39 (11.88)	.27	.39**	.32*	.32*	.45**	.32*	.17	.12	.23
DASS-Dep	15.35 (4.69)	.09	.15	.27	.11	.22	.21	.16	-.02	.13

Table 1. Descriptives and zero-order correlations between the DOCS, OBQ-44, and the depression subscale of the DASS-21.

Note. DOCS = Dimensional Obsessive Compulsive Scale; OBQ = Obsessive Beliefs Questionnaire-44; RT = Responsibility and Threat Estimation factor; ICT = Importance and Control of Thoughts Scale; PC = Perfectionism and Need for Certainty Scale; and DASS = Depression, Anxiety, and Stress Scale-21.

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

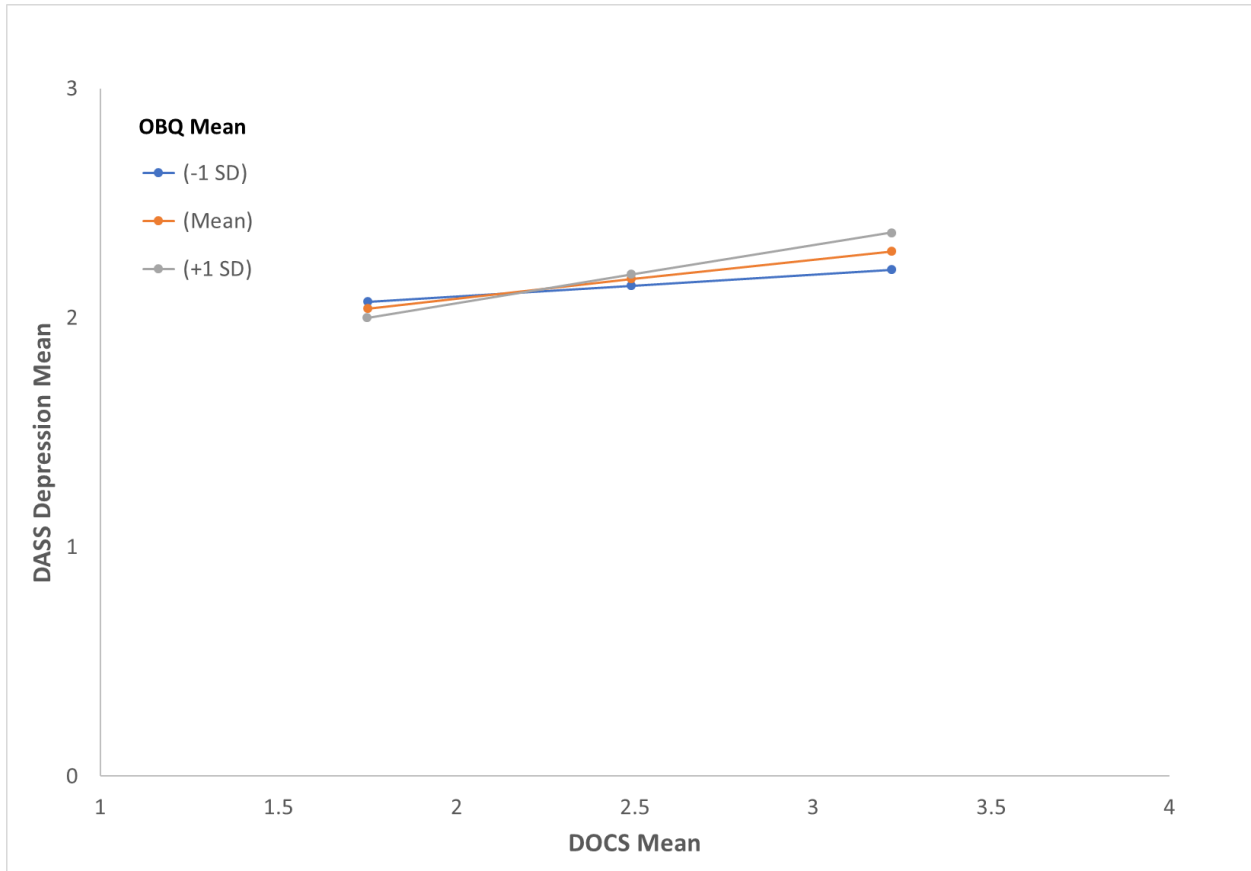


Figure 1. The effect of obsessive-compulsive symptoms on depressive symptoms was greatest when obsessive beliefs were high (+1 SD) compared to average obsessive beliefs (Mean), or when obsessive beliefs were low (-1 SD).

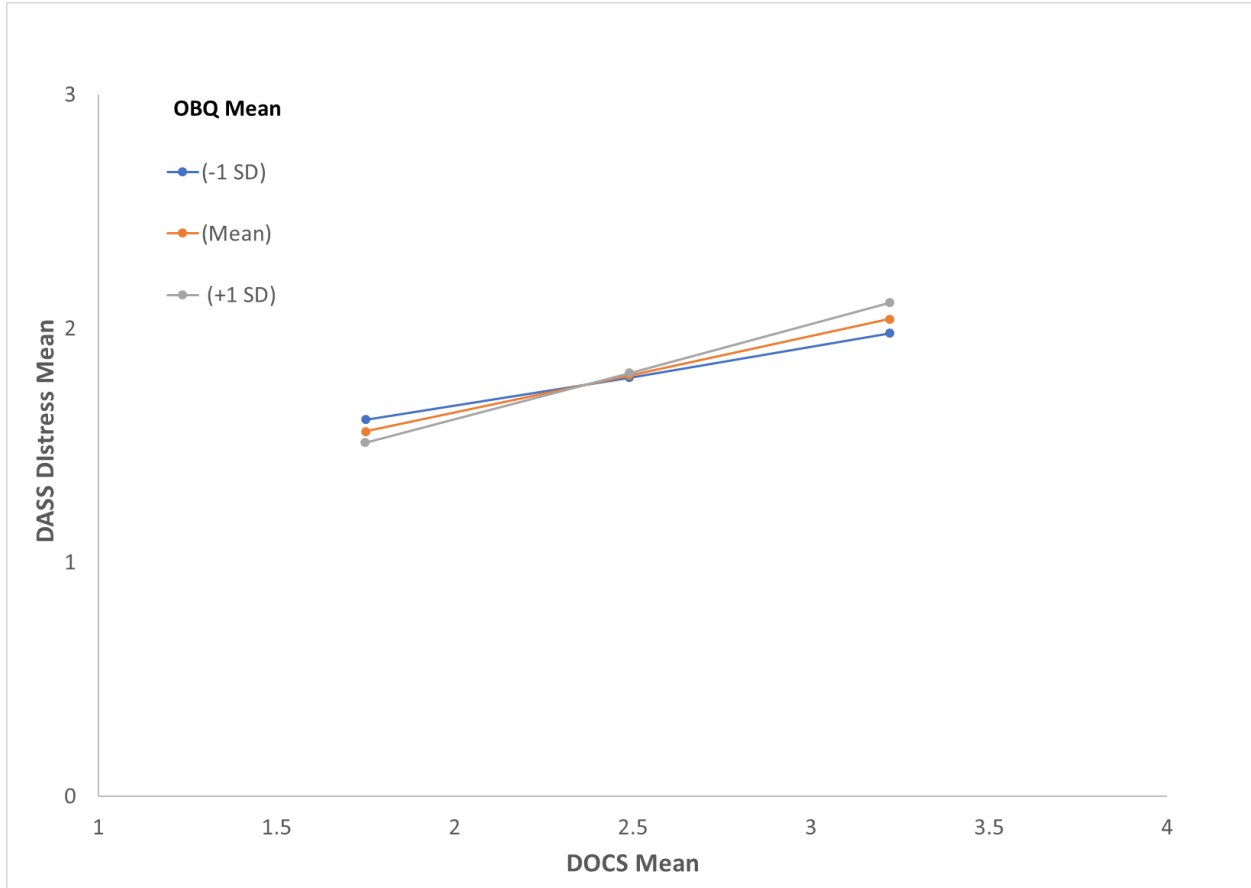


Figure 2. The effect of obsessive-compulsive symptoms on overall distress was greatest when obsessive beliefs were high (+1 SD) compared to average obsessive beliefs (Mean), or when obsessive beliefs were low (-1 SD).

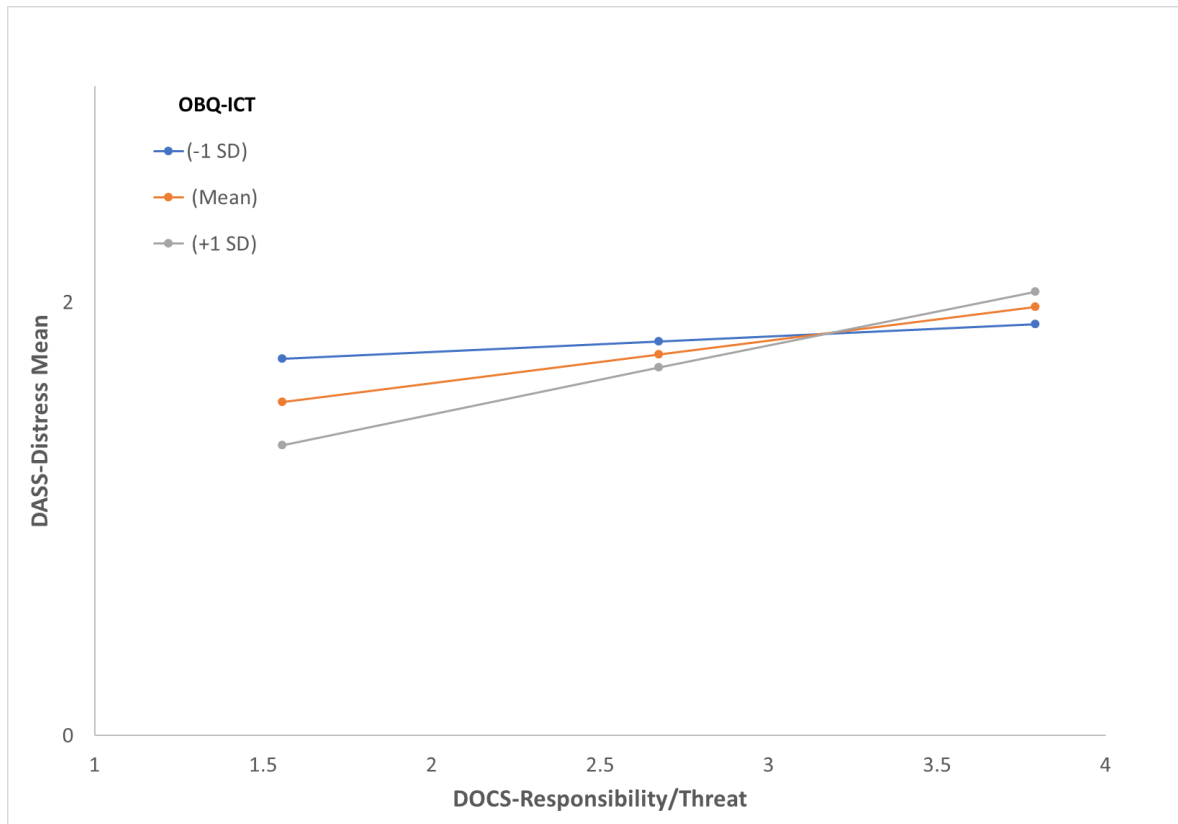


Figure 3. The effect of harm-related OC symptoms on overall distress was greatest when one’s need to control their own thoughts was high (+1 SD) compared to average need to control thoughts (Mean), or when one’s need to control their own thoughts was low (-1 SD).