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A MEDIATIONAL MODEL OF RELIGIOSITY AND OBSESSIVE-COMPULSIVE SYMPTOMOLOGY: THE ROLE OF GUILT AND SHAME IN A NONCLINICAL SAMPLE

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Abstract

High levels of religiosity have been associated as a precursor for obsessive-compulsive disorder (OCD) and obsessive-compulsive symptomology (OCS), with previous studies finding positive correlations between the two variables. To date, however, the literature on the connection is limited, especially regarding nonclinical samples. The role of mediating variables has also been severely underresearched. The current study investigated the relationship between religiosity and OCS in a nonclinical religious-populace sample. It was hypothesized that strict followings of high religiosity would be associated with heightened OCS. Shame-proneness and guilt-proneness were additionally investigated and evaluated as potential mediators for the relationship of religiosity and OCS. A sample of 92 participants from the religious population participated in this nonclinical study, completing unique self-report questionnaires assessing guilt-proneness, shame-proneness, religiosity, and OCS. As hypothesized, there was a significant relationship between religiosity and OCS in this novel sample; however, this interaction was not mediated by guilt- and shame-proneness, although shame-proneness mediated the intellect dimension of religiosity. This therefore suggests that the association between religiosity and OCS in a nonclinical religious-populace sample cannot be explained by guilt- and shame-proneness. Future research should investigate the potential moderating impact of religious type/denomination and culture (external customs associated with a particular religious affiliation) separately to parse out the influence of these factors in the relationship, because of the stigma surrounding diagnosis and therapeutic help that is present and perpetuated in some religious cultures, remedying with a prescription of further prayer. Longitudinal designs and examination of other potential mediators in the relationship of religiosity and OCS (due to insignificant mediation), such as thought-action fusion (TAF), will also be an avenue for future research, as TAF has been found as a mediator in a clinical sample of this relationship.

Key words: religiosity, obsessive-compulsive symptomology, shame, guilt, mediation

Introduction

Religion has through time been revered as a belief system to help understand and interact with the world and, in turn, to aid individuals in their daily lives and in dealing with day-to-day stresses. Scientific research has evidenced the positive influence of a belief system in people's lives, with religion being associated with greater sense of self-esteem, sense of belonging, and emotional support (Krause & Wulff, 2005; Sharma & Singh, 2019). In juxtaposition to this, however, research has also indicated that particularly high levels of religiosity (religious aptitude) may counteract these positive influences and be associated with detriments to mental health.

One such mental health illness associated with high religiosity is obsessive-compulsive disorder (OCD), with highly religious individuals also being shown to have increased (if not diagnosable) obsessive-compulsive symptomology (OCS). OCD is an anxiety disorder in which an individual has recurring and unwanted thoughts, otherwise known as obsessions. These obsessions compel the individual to act out behavioral rituals (compulsions). The condition has a lifetime prevalence of 1%–2% in the global populace (American Psychiatric Association, 2013; Krzanowska & Kuleta, 2017). The notion that high religiosity and OCD are associated was initially popularized by Sigmund Freud (1856–1939), who described religion as being similar to OCD, but with the obsessional rituals being universal rather than unique to the individual, and with both sharing similar feelings of guilt when these rituals were not completed. Research regarding the relationship between religiosity and OCD is limited, although a few scientifically objective studies have been published that investigate this relationship and demonstrate that the level of religiosity is positively associated with OCS and accompanying behaviors (Asghar et al., 2020; Ok & Gören, 2018; Zohar et al., 2005).

Ok & Gören (2018) conducted a study on the connections between religiosity and OCS and the role of personality traits in a nonclinical Muslim sample of 298 participants. Participants fell into three separate age groups: adolescents ages 16–19 (n = 32), young adults ages 20–35 (n = 219), and middle-age participants ages 36–66 (n = 47), with a gender distribution of 113 men (38%) and 184 women (62%). Notably, most of the participants in the study's sample were studying in various Turkish universities. This study used the Brief Obsessive-Compulsive Scale (BOCS), which is a highly used assessment for diagnosing OCD and is based on the Yale-Brown Obsessive-Compulsive Scale (Bejerot et al., 2014). Also implemented in this study was the Ok-Religious Attitude Scale (Ok, 2016), developed to measure the degree of Islamic religiosity, appropriate for the study's sample. The Big Five inventory, a 44-item scale developed by John and Srivastava (1999), was also used in the study to acquire a measurement and subsequent analysis of the role of personality on the OCS-

religiosity relationship in participants. The following study's analysis concluded that there was a significant relationship between OCS and religiosity.

Zohar et al. (2005) conducted and reported on two studies regarding religiosity and obsessive–compulsive behavior in Israeli Jews. Both studies' samples were collected via a snowball method, beginning with some people the authors knew personally and continuing from there. The first study had a sample of 256 volunteers, with all participants being Jewish undergraduate students, constituting 154 women (60.1%) and 99 men (38.7%). The second study's sample consisted of 61 participants, with 30 who had been more religious but had relaxed their religious observance and 31 who had become more religious. On a four-category item, 14.8% described themselves as ultraorthodox, 34.4% as orthodox, 9.8% as traditional, and 41.1% as secular. The studies used different instruments. Study 1 used the Student Religiosity Questionnaire (SRQ) and the Obsessive Thought Checklist, and the Maudsley Obsessive-Compulsive Inventory (MOCI), which has four scales: checking, cleaning, doubt, and slowness. The MOCI was translated into Hebrew, then revised, being normed in a previous study (Zohar et al., 1995), expressing reliability and validity. Study 1 also used the Child-Adolescent Perfectionism Scale, as well as upbringing and background items. Study 2 uniquely used the Parental Bonding Instrument, which includes 25 items on a five-category Likert scale that have been translated into Hebrew (Canetti et al., 1997), assessing maternal warmth and control. Study 2 also used the MOCI and SRQ. This study found that individuals who changed from being less religious to being more religious scored highly on measurements of OCD.

Psychological theories of obsessions and compulsions have suggested for a long time that strict religious codes and moral principles that hold so much personal weight may be involved in the role of transforming typically occurring intrusive thoughts into clinically distressing obsessions. This also usually arises because the content and makeup of the intrusive thoughts are disturbingly personal to the individual (Inozu et al., 2014; Rachman, 1998). These moral principles also may contribute to the overvaluation of religious individuals' thoughts, as intrusions involving blasphemous thoughts, images, or impulses have the propensity to draw attention quickly, which can result in an abundance of distress for a devout person. This emphasizes that strong religiosity may serve as a potential risk factor for OCS/OCD (Rachman, 1998; Rasmussen & Tsuang, 1986). The factors involved in this risk blossoming into a relationship between OCS-religiosity are, however, largely unknown and require future research.

The overarching issue with most studies investigating the relationship between religiosity and OCS/OCD is that they usually focus on simple bivariate correlations and therefore do not attempt to explain the phenomenon (Greenberg & Shefler, 2002). To understand the relationship of religiosity and OCS, investigation of the underlying mechanisms (mediators) is required. This therefore means that it is necessary to assess potential mediating factors of the relationship. This assessment

would help offer more holistic, informed insight into religious individuals who are likely to be vulnerable to distressing OCS. Furthermore, this would aid in the implementation of complementary preventive strategies; early interventions in particular have been shown to increase quality of life (García-Grau et al., 2019). Additionally, more-effective interventions can be crafted to combat the relationship, which is a particularly pressing matter, as research has noted that religious themed-OCD may be more resistant to present treatments than are other manifestations (e.g., Williams et al., 2014).

Some research evidences that religious denomination, as well as other cultural influences, has an impact (in part) on the presentation of OCD symptoms (Sica et al., 2002). A study by Williams et al. (2017) provided a review on the OCS presented across different cultures and religions. In Christian samples, the obsessive symptoms reported most highly were obsessions regarding contamination and thought control. The Catholic subgroup, however, appeared to have prominence of perfectionism as an OCS trait, which emphasizes the uniqueness of branches of a particular religion on OCD presentation and their contrast. Compellingly, some study samples of washing behaviors appeared to be related to concerns about spiritual purity rather than physical contamination (Ghassemzadeh et al., 2005; Okasha et al., 1994).

One critique of studies investigating OCS among religious types/denominations is that they have focused primarily on a clinical sample of religious individuals with diagnosed OCD rather than researching the general religious populace (nonclinical sample), which is understudied (Al-Solaim & Loewenthal 2011; Asghar et al., 2020). As evidenced in Al-Solaim and Loewenthal's (2011) study, some religious cultures/societies cause the OCD sufferer to not seek out diagnosis. Instead, the individual may be ushered toward incorrect spiritual-healer guidance prescribing additional prayer rather than professional help as treatment, which can alleviate immediate distress but act to maintain and/or increase religious OCS symptomology in the long term. Furthermore, occurrence of mental health stigma can deter individuals from seeking treatment and confirming diagnoses (Ali & Gul, 2018). Future research is therefore required to assess OCS in a nonclinical sample of religious individuals, to postulate whether this presence persists in this generalizable sample, potentially resulting from stigma/incorrect spiritual healer guidance (Mahintorabi et al., 2015).

Guilt has been shown to be associated with both high religiosity and OCS, being described as "where religiosity and psychology meet" (Wulff, 1996), and is also depicted as motivating OCD patients' compulsions and obsessions (Malamateniou & Savvidou, 2018). Guilt is an emotion characterized by feelings of regret and remorse over one's behavior and actions. There is some evidence that moderate levels of guilt can be beneficial in prosocial behaviors, motivating individuals to rehabilitate their behaviors and wrongdoing. There is also evidence that excessive guilt is present in an abundance of psychopathology (Adamczyk, 2017; Tilghman-Osborne et al., 2008).

Empirical research also indicates that highly religious individuals experience more guilt than do nonreligious individuals. This may be because of immoral actions and/or thoughts leading to higher frequency of this self-inspective emotion (guilt) due to propagated commitment to virtue and avoidance of sin (Albertsen et al., 2006). One such study investigating guilt's importance on this research topic was conducted by Inozu et al. (2012), in which it was found that highly religious Christians and Muslims had a higher likelihood of feeling more generalized guilt than did their nonreligious counterparts. This study also found that the relationship between religiosity and OCS were partially mediated by guilt. This is somewhat understandable, given that the basic Islamic and Christian doctrines stress the fear of God's punishment as an important attitude.

In the regression analyses of their study, Inozu and colleagues (2012) found that guilt accounted for the majority of the variance between religiosity and obsessiveness. This comfortably and objectively led to the speculation that an enduring state of excessive guilt may cause religious individuals to become more distressed by unwanted, unacceptable intrusive thoughts and images. Guilt-ridden religious individuals with OCD may have difficulty directly confronting situations and thoughts that are perceived as deviation from perfect faith (Abramowitz & Jacoby, 2014). This study was also further supported by more recent literature, such as that from Inozu et al. (2020), yet again evidencing a mediation of guilt in the relationship. This further provided objective scientific support of the underlying mechanism's importance in the relationship.

One critique of Inozu and colleagues' (2020) study and other recent literature on the mediation of religiosity and OCS is that these studies primarily use samples of undergraduates, who are less likely to have experienced or attained their religiosity peak. A religiosity peak has predominantly been evidenced to be reached later in life; future research should therefore widen this demographic for generalizability purposes (Inozu et al., 2012; Petts, 2015). Furthermore, previous literature on this relationship has focused on one or two religions or denominations (Ok & Gören, 2018), thereby weakening the generalizability of the study's data to the pool of religious individuals. The scope of religions and their denominations in this research should therefore be widened to improve generalizability of findings and to further improve insight into different religious practices' unique idiosyncrasies in OCS manifestation (Williams et al., 2017). Because OCS is uniquely influenced by religious denominations, research should also measure this as such; the Obsessive-Compulsive Inventory (OCI) measurement in the study by Inozu et al. (2020) is a categorical and objective way to assess the subtypes of OCS and provide an objectively comprehensive total score (Foa et al., 1998).

Shame, like guilt, is a self-reflective emotion; however, it is provoked by moral/personal transgressions and failures, in which the self is judged as being flawed and impure. In addition, this self-reflective emotion functions as a barometer of the

achievement of internalized moral standards, being a motivation for change (Dickerson et al., 2004; Tangney et al., 2007). Shame, however, has not been investigated as a mediator in the relationship between religiosity and OCS. A paucity of research exists regarding this emotion even in relation to psychopathology, religiosity, and OCD separately, therefore requiring further research (Weingarden et al., 2016).

Regarding literature that investigates guilt, research has pointed out that this "guilt" should be viewed as guilt with shame (Tangney, 1996). Guilt is usually described as a bad feeling concerning the overall self, and it is assumed that the individual feels bad. Research shows that this does not specifically hold true, however. In guilt, the focus is directed on a particular behavior and not on the self. It is instead in shame where the focus lies on the self; therefore, in guilt, one says, "I *did* that horrible *thing*," and in shame, one says, "*I* did that horrible thing" (Tangney, 1996). In reflection, the fact that guilt and shame are often confused with each other therefore makes it necessary from a theoretical point of view to parcel out shame from guilt, and vice versa, to allow assessment of the unique effects of both. The previous literature on guilt's mediation of religiosity and OCS may thus be flawed because of a failure to account for shame and its symbiotic relationship with guilt; shame may act as a confounding variable and affect the results of said research (Inozu et al., 2020). This would therefore call for shame to be assessed as (a) a covariate in the mediation of the relationship of religiosity and OCS or (b) a mediator of the relationship, which previous literature has failed to do (Inozu et al. 2020; Luyten et al., 1998).

The relations between shame, anxiety disorders, and OCD have recently been examined in a meta-analysis by Cândea and Szentagotai-Tătar (2018). This analysis found significant medium effect-size associations between shame, nonspecific anxiety symptoms, symptoms of several anxiety disorders (i.e., generalized anxiety), and OCD symptomology. Furthermore, elevated levels of state shame in individuals with OCD diagnosis (in contrast to healthy controls) were evidenced in a study that included individuals with moral/nonmoral obsessions (which place particular emphasis in scrupulosity) and a control group. This provides motive for the notion that shame may potentially play a mediating role in the relationship of religiosity and OCS, and its importance in perpetuating high religiosity and OCS, respectively (Szentágotai-Tătar et al., 2020).

On this basis, the aims of the present study were (1) to investigate the relationship between religiosity and OCS in a nonclinical sample of the religious populace of numerous religions/denominations and (2) to establish whether self-reported measures of shame-proneness and guilt-proneness mediate the relationship between religiosity and OCS in this sample. It was hypothesized that increased religiosity would be associated with an increase in OCS and that shame-proneness and guilt-proneness would fully mediate the link between religiosity and OCS in the study sample.

Methodology

Design

This study used a quantitative correlational design. The predictor variable in the study was religiosity (devoutness of religion), and the outcome variable was obsessive-compulsive symptoms. Guilt and shame were the potential mediators investigated in this interaction. A mediational analysis was therefore selected to accurately infer whether guilt and shame mediated the relationship between predictor and outcome variables.

Participants

A priori power analysis with G power based on an alpha value of 0.5 and a power value of 0.80 indicated that N = 77 would be adequate to significantly determine the role of guilt and shame in the interaction between religiosity and OCS with a medium effect size (F^2 = 0.15). An opportunity sample of 118 participants provided consent to take part in the present study; however, 21 participants failed to complete the survey successfully and were therefore removed from the data set. Furthermore, Z scores were calculated for each participant's total score for each scale. A benchmark of ± 3.29 was used because Tabachnick and Fidell's (2013) multivariate statistics indicated that this benchmark was reliable in terms of data omission. One participant's data exceeded the benchmark Z score of ± 3.29 for the OCI total, and that participant's data were therefore excluded from this study because of the potential data skew with this outlier. No other outliers were found in any of the other measures using this benchmark score. Furthermore, the amount of time taken by participants to complete the study was recorded. All recorded times of respondents who successfully completed the study met the expected minimum threshold of five minutes; therefore, no participants were removed for unreliable results regarding this.

Statistical analysis was then conducted on a final sample of 92 participants who completed the study in its entirety. Demographics indicated the following religion /denomination and quantities: 26 Catholic, 13 Muslim, 29 Christian, 5 Protestant, 3 Hindu, 5 Buddhist, 1 Jewish, and 10 "Other."

Participants were recruited online via social media platforms. The exclusion criteria were maintained as inclusively as possible to reach the desired sample size, excluding from participation only individuals under the age of 18 and nonreligious individuals. Participants did not receive any financial or other remuneration for their contribution in this study.

Measures

The demographic information for religious denomination was embedded in the first page of the survey, then followed by the three self-report measures detailed below (no reverse scoring was required).

Obsessive Compulsive Inventory

The Obsessive Compulsive Inventory (OCI) involved 42 statements scored on a 4-point Likert scale, with low scores indicating low OCS and high scores indicating high OCS. This inventory was employed to measure participants' OCS and accompanying behaviors. The inventory comprised seven unique subscales: Washing, Checking, Doubting, Ordering, Obsessions, Hoarding, and Neutralising.Total possible cumulative scores for OCI ranged from 0 to 168.

A revised version of this inventory was used to measure OCS in a recent study regarding guilt's mediation of the research topic (Inozu et al., 2020), with reliability being good (Cronbach's alpha = 0.90). In relation to previous studies, this study achieved a Cronbach's alpha of 0.96, which expresses very good reliability of this measurement in this study.

Guilt and Shame Proneness Scale

The Guilt and Shame Proneness scale (GASP) is a 16-question scale (eight questions each for Guilt and Shame) answered using a 7-point Likert scale. This scale was employed in this study in order to self-report participants' levels of guilt- and shame-proneness regarding the scenario-based questions. High scores indicated high guilt/shame, and low scores indicated low levels of guilt/shame (Cohen et al., 2011). This scale contains four subscales: two subscales assigned to guilt—Guilt-Negative-Behavior-Evaluation (NBE) and Guilt-Repair—which merge to create a total guilt score, and two shame subscales—Shame-Withdraw and Shame-Negative-Self-Evaluation (NSE)—which merge to form an overall shame score.

Total possible scores for GASP ranged from 16 to 112, with each possible subscale total ranging from 4 to 28. The GASP scale's reliability exceeded the benchmark (Cronbach's alpha = 0.60), demonstrating evidence of reliability, given that the GASP is a scenario-based measure with only four items in each subscale (Cohen et al., 2011). In relation to previous studies, this study achieved a Cronbach's alpha of 0.76, which indicates satisfactory reliability of the measure in this study.

The Centrality of Religiosity Scale

The Centrality of Religiosity Scale (CRS-15) involves 15 questions scored on a 5-point Likert scale, with low scores indicating low religiosity and high scores

indicating high religiosity (Huber & Huber, 2012). The scale was employed in this study to measure the degree of participant religiosity. Participants were asked to rate their levels of religiosity, with questions focused on five subscales: Intellect, Ideology, Public Practice, Private Practice, and Experience.

A recent study by Abbasi et al. (2019) investigated the reliability of the CRS-15 and assessed the internal consistency of the CRS-15 items as equating to a Cronbach's alpha of 0.773, indicating satisfactory reliability, especially for scale translation (such as in Urdu). Furthermore, there were high correlations between CRS-15 values in relation to self-reports upon importance of religion for daily life, with coefficients of 0.78 in a student sample and 0.67 in the international Religion Monitor (Huber, 2004; Huber & Krech, 2008). In relation to these previous studies, this study achieved a Cronbach's alpha of 0.96, presenting very good reliability.

Procedure

This study received full ethical approval from the Health and Life Sciences Research Ethics Committee at Northumbria University. Complete study information was presented to participants via the Qualtrics platform. Informed consent was also provided by all participants included in the study, following the participant information sheet. After providing consent, participants completed an electronic survey assessing guilt-proneness, shame-proneness, religiosity, and OCS. Prior to completing the study's questionnaires, participants provided demographic information solely about their religion/denomination.

This study took approximately 5–10 minutes to complete. Participants completed this survey using their own personal electronic devices and in their own time. A debrief was also presented to the participants after study completion. Responses to the online survey were automatically logged using Qualtrics system, with all data in this study collected between December 2020 and January 2021. IP addresses, which were automatically collected from participants via Qualtrics, were removed and deleted after exportation of data to SPSS. Data analysis then took place using a bootstrapping macro.

Statistical Analysis

Prior to analysis, the quality of the study's data was checked using normality testing via the statistical program SPSS. With visual inspection of the data distribution via histogram (which was provided via this specific test), it is apparent that for each measure, abnormal distribution of data is observable. This observation was also further supported by a significant Shapiro–Wilk value for each individual measure. Inverse distribution functions were, however, not required to fix the data distribution in this instance, as SPSS PROCESS uses bootstrap resampling, which circumvents this issue (Bland & Altman, 2015). Pearson's bivariate correlations were

also conducted so as to examine the associations between all study variables, most particularly OCI and CRS-15 scores.

The SPSS PROCESS macro (model 4) with bootstrapping (INDIRECT), as per Hayes (2018), was utilized in this study to assess the indirect/direct association/relationships between perceived shame-proneness, guilt-proneness, religiosity, and OCS. The study's mediational results are based on the conduction of 5000 bootstrapped samples, with 95% confidence intervals.

The conducted bootstrap mediation analyses are represented in Figure 1 (model 1), Figure 2 (model 2), and Figure 3 (model 3). For models 1 and 2, each mediator was analyzed as a mediator separately in its own statistical model, with the other mediator analyzed as a covariate because of the significant correlation of shame and guilt, there being need to parcel this out for reasons of validity. This analysis permitted the determination of the direct relationship between CRS-15 scores and OCI scores without the presence of mediating variables (path c). The relationship between CRS-15 scores and of both mediators of interest (path a) and between these mediators and the OCI scores (path b) was successively established.

To establish whether shame-proneness scores or guilt-proneness scores fully mediated the relationship between CRS-15 scores and OCI scores, two conditions must be met: (1) the confidence intervals relating to the indirect effect between CRS-15 scores and OCI scores, via the relevant mediator in the analysis, do not overlap with 0, and (2) the direct effect between CRS-15 scores and OCI scores, when the mediator is included in the model (path c′) need to become nonsignificant. Providing that just the first of these conditions was met, leads to the conclusion that partial mediation had occurred (religiosity's influence on OCS reduced after mediator was controlled for). For all mediational analyses, significance was considered at the $p < 0.05$ level (two-tailed).

Figure 1. Model of Religiosity as a Predictor of OCS, Mediated by Guilt-Proneness (Shame as a Covariate)
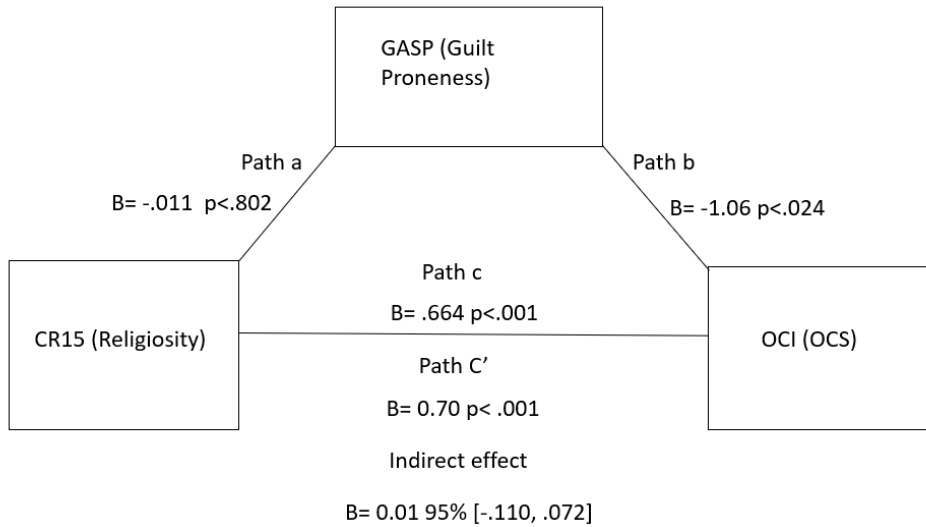
Note: The CI for the indirect effect is a bias-corrected and accelerated (BCa) bootstrapped CI, which is based on 5000 samples.

Figure 2. Model of Religiosity as a Predictor of OCS, Mediated by Shame-Proneness (Guilt as a Covariate)
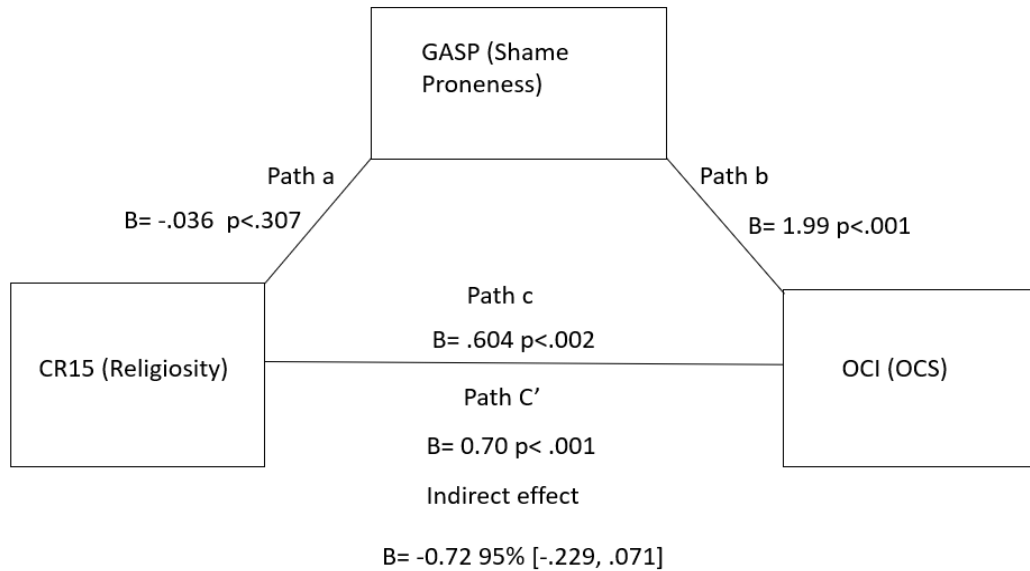
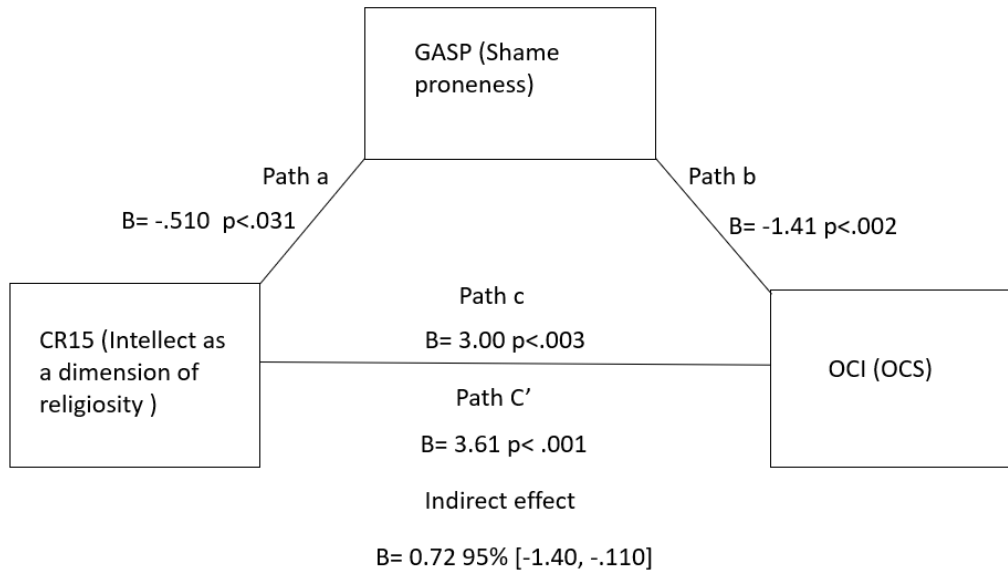*Note:* The CI for the indirect effect is a bias-corrected and accelerated (BCa) bootstrapped CI, which is based on 5000 samples.

Figure 3. Model of Intellect (Dimension of Religiosity) as a Predictor of OCS, Mediated by Shame-Proneness

Note: The CI for the indirect effect is a bias-corrected and accelerated (BCa) bootstrapped CI, which is based on 5000 samples.

Results

Table 2 and its corresponding mediation were exploratory analyses to assess whether singular dimensions of religiosity were mediated by shame/guilt in the relationship of OCS. Furthermore, the box plot in Figure 4 provides a visual inspection of religion/denomination and the associated degree of OCS and is another exploratory analysis in the current study. All other analyses specifically corresponded to the current study's research question hypothesis.

Correlational Analyses

In testing if mediation occurs, significant associations are expected between (a) the predictor and the mediator, (b) the mediator and the outcome, and (c) the predictor and the outcome (Baron & Kenny, 1986). As hypothesized, religiosity was significantly associated with OCS, $r = .377$ (Table 1). Religiosity scores were not correlated with either guilt- or shame-proneness ($r = -.52$ and $r = -.117$, respectively). Shame-proneness and guilt-proneness were, however, significantly positively correlated with each other ($r = .619$)

Table 1. Correlation Coefficients Between All Study Variables (*N* = 92)

	Religiosity	Guilt	Shame	OCS
Religiosity				
Guilt	−.052			
Shame	−.117	.619**		
OCS	.317**	−.020	.229*	

*Correlation is significant at the 0.05 level (two-tailed). ** Correlation is significant at the 0.01 level (two-tailed).

Table 2 includes all five dimensions of religiosity with outcome and mediator variables. Significant correlations were found between intellect and shame (r = −.288, p = .29) and between shame and OCS (r = .229). This therefore led to running a mediation using these variables.

Table 2. Correlation Coefficients of Study Variables With the Five Dimensions of Predictor Variable (N = 92)

		Intellect	Ideology	Public practice	Private practice	Experience
Shame	Pearson correlation	−.288*	−.064	−.125	−.022	−.097
	Sig. (2-tailed)	0.29	.546	.237	.838	.360
Guilt	Pearson correlation	−.188	.007	−.073	.082	−.091
	Sig. (2-tailed)	.073	.946	.490	.436	.387
OCS	Pearson correlation	.303**	.246*	.229*	.256*	.347**
	Sig. (2-tailed)	.003	.018	.028	0.14	.001

* Correlation is significant at the 0.05 level (two-tailed). ** Correlation is significant at the 0.01 level (two-tailed).

Mediation of Relationship Between Religiosity (CRS-15) and OCS (OCI) by Shame and Guilt (GASP)

Visual diagrams of the nonmediated relationships are depicted in Figures 1 and 2. In addition, Figure 3 depicts a partial mediation of the religiosity dimension Intellect and its relationship with OCI via shame-proneness. CRS-15 scores were not significantly associated with GASP's shame and guilt scores (path a); however, shame and guilt were both significantly correlated/related to OCI scores (path b).

With respect to the indirect effects of CRS-15 and OCI scores, significant effects were not observed, therefore expressing that the bootstrapped confidence interval of the indirect effect of this pathway included 0. It is thus believed to not have occurred via the (mediator) shame and guilt scores. For each model (Figures 1 and 2), the direct effect between OCI and CRS-15 scores (known as path c') remained significant when each potential mediator was considered; therefore, neither shame nor guilt scores mediated the relationship between CRS-15 and OCI). In comparison, model 3 (Figure 3) also showed this significance, although for the indirect effect, the confidence interval (CI) did not overlap with 0, indicating that partial mediation occurred.

In model 1 (Figure 1), there is an approximate 10% variance, which is accounted for by the study's predictor variable (R^2 = 0.10). Comparatively, in model 2, an approximate 17% of the variance was accounted for by the predictors (R^2 = 0.17). This is providing the nonfocused mediator of each model was not placed as a covariate during analysis, like in Figures 1 and 2, where variance of approximately 22% was accounted for via the study's predictor variables (R^2 = 0.22) in each model. In model 3, with Intellect (a dimension of religiosity) as the predictor variable, an approximate 19% of the variance was accounted for by the study's predictor variables (R^2 = 0.19).

Denomination and OCS Box Plot Data

As seen in Figure 4, the average OCS total of Muslim participants was exceedingly greater than that of any other denomination. A total median score of 80, in comparison to the next highest denomination score of 45, evidences the high levels of reported OCS in the Muslim populace of the current study.

Figure 4. Religions/Denominations and OCS Total
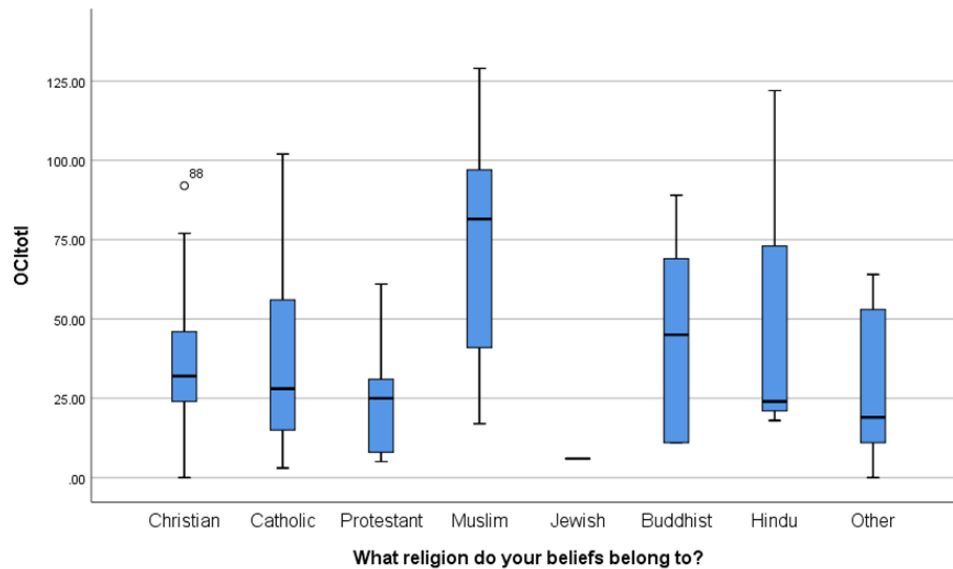
Discussion

The overall aims of this investigative study were examine the relationship between religiosity and OCS and to investigate shame-proneness and guilt-proneness as mediators underlying the previously evidenced relationship between religiosity and OCS. It was hypothesized that religiosity would be related to experiencing more OCS and that shame-proneness and guilt-proneness would both fully mediate the link between religiosity and OCS. The analyses conducted supported the relationship between religiosity and OCS but did not support the relationship resulting from mediation regarding shame-proneness and guilt-proneness.

Through conduction of bivariate correlations, the current study was able to produce empirical evidence significantly demonstrating that high levels of religiosity are also associated with the experience of higher levels of OCS. The results of this study provide additional support to the small body of previous literature stating the positive association of these two variables (Asghar et al., 2020; Ok & Gören, 2018). In addition, the current study also provides support toward the cognitive model of OCD (proposed by Salkovskis, 1985) and its relation to religiosity. Cognitive behavior models of OCD and scrupulosity propose that dysfunctional beliefs are conceptualized as causing the individual to incorrectly interpret intrusive thoughts as meaningful and significant. The significant findings in this study further support religion fitting this model, that these strict moral religious principles can result in faulty appraisal of intrusive thoughts in some individuals, thus leading to compulsions such as prayer to

extinguish the heightened anxiety (Nance et al., 2018; Obsessive Compulsive Cognitions Working Group, 2003).

In contrast to the promising findings that were demonstrated in this current study, some polarizing results were also found. Guilt and shame were both found to have a nonsignificant relationship with religiosity. This nonsignificant correlation of guilt (self-introspection) is dissimilar to the findings of previous literature on the topic (e.g., Inozu et al., 2020). The research of Inozu and colleagues (2020) diverges from the current study because their research sample was focused exclusively on Islamic undergraduates, whereas the current study used a sample of religious individuals from numerous faiths and without inclusion criteria of being an undergraduate. Furthermore, shame was not analyzed in Inozu and colleagues' study, which is a weakness in comparison to the current study, as shame and guilt have a symbiotic relationship and shame needs to be used as a covariate in the mediational analysis of guilt (Tangney, 1996), which the current study used accordingly. Inozu and colleagues (2020) may therefore have measured the mediation of guilt in the relationship inefficiently.

In addition, the findings of the current study were polarizing to the proposed hypothesis anticipated because of the results of recent and past literature. This result was therefore concerning, as for successful mediation to have occurred, it is important that shame and guilt (the selected potential mediators) be significantly related with both the predictor and outcome variables. The conducted mediation models in this study further indicated that mediation did not occur with the study's variables (Baron & Kenny, 1986).

Additionally, however, because of the CRS-15 measurement dividing religiosity into five dimensions, bivariate correlations were also run on these dimensions in accordance with the current study's mediators and outcome variable. Surprisingly, the intellect dimension was found to be significantly related to both shame-proneness and OCS. A mediation analyses was promptly conducted and indicated partial mediation (due to CI interval not overlapping with 0), which is a novel and interesting finding. This mediation, however, was not present when guilt was controlled for, potentially indicating that the self-reflection that encapsulates both these mediators may be difficult to parcel out, hence the significant correlations between each mediator in question (Tangney, 1996). Intellect as a dimension of religiosity, however, entails desire to seek out answers and questioning of religious elements. This dimensional measurement therefore may serve as a barometer for questioning of the religious participant's doctrine. A study by Exline et al. (2020) found that when individuals mature in age and a sense of authority associated with religious teachings reduces, space for doubt emerges. This can be quite distressing for the individual. These questioning intrusive thoughts can also potentially be perceived as blasphemous to the individual, resulting in feelings of guilt and shame. As previous literature indicates, religious intrusive thoughts cause compulsions to pray so as to

circumvent the resulting emotions (Abramowitz & Buchholz, 2020). This mediational model focusing on the dimension of intellect may therefore indicate that this aspect of religiosity and its relationship to OCS is mediated by shame-proneness.

Interestingly, as this study used the OCI measurement, which measures OCD presentation, box plot data of OCS and denomination indicated that Muslim participants' average OCS scores appeared to be exceedingly higher than those of the participants of other religions/denominations in the current study. These results appear to reflect and converge with previous literature using clinical samples of religious OCD participants. The current study's data mirror that OCD symptoms are more common in Muslim countries and Orthodox Jewish people compared with Christians and other faiths from Western cultures, with religious type/denomination also affecting the intensity of OCD symptomology and even religiosity. Furthermore, the current study emphasizes the vulnerability of OCS in a nonclinical sample regarding this Islamic affiliation (Inozu et al., 2012; Yorulmaz et al., 2009). Because of the current study finding that guilt and shame were not mediators in the relationship of the nonclinical religious sample, it may be speculated that guilt and shame may have varying or nonexistent mediation upon OCS-religiosity dependent on the individual's religion/denomination. For instance, guilt has been shown to be a significant mediator of religiosity and OCS in the Muslim populace, as evidenced by Inozu and colleagues' 2020 study. This may therefore indicate that unique methodological expertise is required to treat patients' OCD symptomology dependent on their religious branches/denominations, the underlying mechanisms for the relationship being unique to the doctrine. Cultural competence and education on the part of the therapist, as well as a comprehensive understanding of a patient's belief system, are therefore essential (Chapman et al., 2014).

In addition, a study by Al-Solaim and Loewenthal (2011) focusing on religious individuals dealing with OCD found that all the Muslim participants first approached faith-based healers rather than mental health professionals for their religious-themed OCD (scrupulosity). Because having a fear of God is a cherished attitude in Muslim worship and is one of the elements of Islamic doctrine (Inozu et al., 2012), imams or members of the clergy (faith healers) may potentially be providing advice that perpetuates OCD symptoms and even delaying treatment-seeking and diagnosis.

Findings of the current study must, however, be considered in the light and context of the study's limitations. Foremost, the cross-sectional design of this study is not complementary for the testing of mediational effects, including drawing of casual inferences from data. Future research may therefore operate causality more effectively with the use of prospective studies. Furthermore, because of the symbiotic and sometimes complexing nature of guilt and shame's relationship, researchers may also wish to implement functional magnetic resonance imaging measures, as these have shown promising evidence in objectively differentiating the self-inspective emotions measurably (Zhu et al., 2019).

Previous research has indicated that religious denomination has an impact on the presentation of OCS. The current study therefore listed religious denomination as a demographic to analyze the impact of specific doctrine on the presentation of OCS symptoms (Buchholz et al., 2019; Yorulmaz et al., 2009). The religions/denominations in the current study did not have equal weighting, however. Although a G-power priori analysis indicated that the study's sample size was efficient to determine the role of guilt and shame as mediators in the research topic, sample size was too small (only one Jewish participant took part in this study) to offer scientifically objective data on the influence of denomination on OCS representation. This is due to small sample sizes being more likely to be affected by individual differences, therefore causing potential to skew the data and reduce the validity of findings (Pfund et al., 2020).

Furthermore, the mediating factors in the relationship of religiosity and OCS may potentially deviate depending on religion type/denomination due to the OCS presentation being dispersed because of the religious principles (Sica et al., 2002). This has been evidenced by a previous study conducted by Inozu et al. (2014) which indicated that "disgust sensitivity" only mediated religiosity and several subsets of OCS, such as washing and checking in Muslim participants. The data fit the evidence base, as Muslims have shown in previous research to have emphasis of OCS presentation regarding purity compared to other religious groups, which may therefore indicate that significance of mediators involved in the relationship of religiosity and OCS are influenced and/or moderated by religion type/denomination (Williams et al., 2017).

Future research should therefore investigate participant samples of specific religions/denominations separately because of the uniqueness of each category on OCD representation, as well as potential mediational differences. It may be difficult to generalize results across religions; research should therefore focus on mediating factors in the relationship of religiosity and OCS regarding each religion/denomination separately. In addition, as culture has been evidenced as a transmissible force for religious code and principles (Beyers, 2017; Sica et al., 2002), a variable for the individual's culture should also be placed in the analysis as a covariate to attempt to parcel out culture from religion via placement in a multiple regression to evaluate the impact of this societal influence on the relationship as a potential moderator. A culture variable would be a construct to help infer the societal ideas, social behaviors, and religiosity of the individual's society. Questions that can be asked to identify one's culture may be the country they reside within, the community/family they live within, and the associated societal norms (Beyers, 2017)—for example, "Is shunning a family member for renouncing religion an acceptable practice in your community?" This moderator potentiality has been indicated by dominant-Muslim and -Jewish cultures having stricter religious foundations as well as higher religiosity than Western cultures. This therefore may serve as a confounding variable in mediational analyses of the research topic (Yorulmaz et al., 2009).

Despite the above-mentioned limitations of the current study, one notable strength of the study is that it assessed OCS in a nonclinical sample of religious individuals, which in turn led to more generalizability of the study's findings. One reason this is an important strength is that those with diagnosed OCD, specifically in highly religious cultures, have a much higher propensity than those without diagnosed OCD to exhibit scrupulosity regarding the moral codes provided by their society. In addition to this, the accompanying faulty appraisal of intrusive thoughts common in some religions can encourage and nourish OCD in susceptible individuals (Nance et al., 2018); hence, a nonclinical sample of religious participants allowed for the attainment of data of OCS regarding religiosity that was generalizable and not disproportionality influenced by potentially innate psychopathology and/or uniquely disturbing personal experiences (Bozorgmehr et al., 2017).

Additionally, an online basis for distribution of study questionnaires was administered using Qualtrics. The use of an online platform for the current study allowed the reduction of burden-of-time pressure on the participants who took part in the study and made the study particularly easy to administer, in addition to providing more-trustworthy and improved perception of anonymity (Branley et al., 2014). The study was also of short duration, which reduced order effects and increases reliability of the data collected, coupling to improve objectivity of the data (Linek, 2017).

The implications of this study raise awareness toward the OCS/religiosity relationship also being present in a nonclinical sample of religious individuals, regardless of religion/denomination. In addition, the partial mediation of intellect and OCS via shame-proneness also indicates that this intellectual seeking of religious individuals may serve to cause feelings of shame, which perpetuates OCD symptomology. The current study may indicate a need for further research regarding tailored psychological interventions for combating shame in the OCS-religiosity relationship. This sort of intervention can be provided using therapy such as compassionate mind training (CMT), which acts to reduce feelings of self-criticism, shame, and negative self-reflection. This therapy focuses on helping people understand that the way the human brain has evolved has made us vulnerable to rumination, negativity bias, and self-critical self-monitoring. These insights act to shift attention from blaming and shaming the self for these difficulties to how to work with them compassionately (Gilbert & Procter, 2006). CMT involves practices to develop physical and mental competencies to facilitate self-grounding as well as the ability to slow down, taking a compassionate focus and orientation to self and to others, and to work with life difficulties. A study by Matos and colleagues (2017) conducted a pilot randomized controlled study using this form of therapy and found significant improvement in the experimental condition regarding self-compassion and self-kindness, which, if employed in religious individuals, may help to reduce negative self-reflection and therefore theoretically act to subdue the intensity of OCS.

In conclusion, to date, research on the topical area of religiosity and OCS has focused primarily on undergraduate samples employing participants from one or two religions/denominations. Findings from the current study add to previous literature, indicating that this relationship is present in a nonclinical sample of the religious populace, and support an emphasis for stigma regarding OCS in religious groups/cultures needing to be broken down. Furthermore, this study suggests that shame and guilt do not mediate this relationship in the study's participant populace but that intellect as a dimension of religiosity is mediated by shame-proneness. These findings therefore contribute valuable insight into the underlying mechanisms that operate this religiosity-OCS association, acting as a conduit for future research.

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