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Forgiveness, Obsessive-Compulsive Symptoms, and Locus of Control in a College Sample

A thesis

presented to

the faculty of the Department of Psychology

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Master of Arts in Psychology

by

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Keywords: forgiveness, obsessive-compulsive symptoms, locus of control, college students

ABSTRACT

Forgiveness, Obsessive-Compulsive Symptoms, and Locus of Control in a College Sample

by

Elizabeth Conway-Williams

Although forgiveness has been associated with reduced anxiety in several studies, and Obsessive-Compulsive Disorder is an anxiety disorder, the potential association between forgiveness and obsessive-compulsiveness has been generally unexplored. The current study examined the association between three dimensions of forgiveness and obsessive-compulsive (OC) symptoms as mediated by locus of control (LOC) in a college student sample (N = 241). Forgiveness of self (FS) and of others, but not feeling forgiven by God, were associated with overall OC symptoms and with a majority of symptom subscales. LOC was limited in its role as a mediator that was restricted to associations with FS. Furthermore, LOC-Chance was the only dimension found to be a specific mediator, as control attributed internally and to powerful others did not mediate any of the forgiveness-OC associations. These findings are discussed in the context of both past and future research related to forgiveness, obsessive-compulsiveness, and control constructs.

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CHAPTER 1

INTRODUCTION

The ability to forgive has repeatedly been found to be associated with better psychological functioning (see Toussaint & Webb, 2005; Webb, Toussaint, & Conway-Williams, 2011). However, the association between forgiveness and symptoms associated with Obsessive-Compulsive Disorder (OCD) has been essentially unexplored. Although there is theoretical and empirical support for an association between perceived control and 1) forgiveness (Benson, 1992; Coleman, 1998; Hope, 1987; Toussaint & Webb, 2005; Witvliet, Ludwig, & Vander Laan, 2001; Worthington, Berry, & Parrott, 2001) and 2) obsessive-compulsive (OC) symptoms (Altin & Karanci, 2008; Barlow, Corbita, & Turovsky, 1996; Moulding, Doron, Kyrios, & Nedeljkovic, 2008; Moulding & Kyrios, 2006, 2007; Moulding, Kyrios, & Doron, 2007; Moulding, Kyrios, Doron, & Nedeljkovic, 2009; Rapee, Brown, & Barlow, 1996; Schorr & Rodin, 1984; Sookman, Pinard, & Beck, 2001; Zebb & Moore, 2003), the relationships between locus of control and these variables are also under studied. This study of undergraduate college students examined the relationship between Forgiveness of Self (FS), Forgiveness of Others (FO), and Feeling Forgiven by God (FFG) and the severity of both general and specific obsessive-compulsive symptoms. Furthermore, since forgiveness is theorized to influence feelings of personal control, and control has been demonstrated to be salient to OC symptoms, the potential for a mediating effect of locus of control was also explored.

Forgiveness

Defining Forgiveness

While researchers have historically struggled to agree on a definition of forgiveness, in the last several years there has been a growing consensus in the literature regarding what

forgiveness is and is not (Worthington, 2005; Worthington et al., 2011) Forgiveness has been defined as a unique coping mechanism (Toussaint & Webb, 2005) and a prosocial change (McCullough & Witvliet, 2002) involving cognitive, emotional, and behavioral processes (Enright & The Human Development Study Group, 1991) in response to an offense. Forgiveness is distinct from pardoning, condoning, excusing, or forgetting an offense (Enright & Coyle, 1998) and does not require relinquishing accountability for or reconciliation with the offender (Enright, Freedman, & Rique, 1998; Freedman & Enright, 1996). Forgiveness is not the reciprocal opposite of unforgiveness. While there is significant overlap between the two constructs, neither fully accounts for variance in the other (Wade & Worthington, 2003). While forgiveness is not necessarily a religious construct, as it is also found in psychology and philosophy (McCullough & Worthington, 1994), the concept of forgiveness is present in all mainstream world religions (Rye et al., 2000; Webb et al., 2011; Worthington et al., 2001), though relative emphasis on forgiveness may vary.

Forgiveness is a multi-dimensional concept that, similar to health, may be best understood as a latent construct consisting of a distillation of multiple variables (Thoresen, Luskin, & Harris, 1998). Forgiveness has been suggested to have a tripartite typology involving cognitive, affective, and relationship-constraint components (Fehr, Gelfand, & Nag, 2010). Forgiveness can be conceptualized as both a state variable in relation to a single incident and a trait variable in the form of forgivingness (see Toussaint & Webb, 2005). Forgiveness is also multi-dimensional in its application, as it can be studied in terms of forgiving, seeking forgiveness from, and feeling forgiven by others and God, as well as forgiving one's self (Toussaint & Webb), situations (Thompson et al., 2005), one's family (DiBlasio & Proctor, 1993), and society (Sandage, Hill, & Vang, 2003). Finally, forgiveness can also be

conceptualized as being primarily emotional or decisional in nature (Worthington, 2006; Worthington et al., 2001; Worthington & Scherer, 2004).

Forgiveness and Mental Health

Forgiveness has been found to have a salutary association with a number of mental health outcomes. Worthington et al. (2001) proposed that forgiveness may be a primary means by which religion impacts mental and physical health. Toussaint and Webb (2005) expanded on this hypothesis by identifying potential direct and indirect pathways for the forgiveness-mental health relationship and summarized the available theoretical and empirical evidence associating forgiveness with mental health. Forgiveness may directly influence mental health due to its association with rumination and subsequent negative emotions and may also have an indirect effect on mental health through its impact on social support, interpersonal functioning, health behaviors, and perceived control. In their review of empirical evidence linking forgiveness and mental health Toussaint and Webb found support for the positive effects of forgiveness on several mental health variables including depression, anxiety, general mental health, and well-being. Since the publication of Toussaint and Webb's (2005) review, research investigating the effect of forgiveness on mental health has proliferated. Webb et al. (2011) updated Toussaint and Webb's review in a summary of all studies examining the relationship between forgiveness and mental and physical health published since 2005. The authors found that research into the effects of forgiveness on mental and physical health variables has grown considerably over the last 5 years. While Toussaint and Webb identified only 13 correlational studies examining the effect of forgiveness on mental health and 4 investigating the impact of forgiveness interventions on mental health outcomes, Webb et al. found approximately double this number, with 37 correlational studies and 9 intervention studies. They found evidence for salutary effects of

forgiveness on a variety of mental health variables including general mental health, depression, possession of a DSM diagnosis, suicidal behavior, and substance use. In addition, forgiveness was related to better overall emotional functioning, including reduced anger, hostility, aggression, negative affect, mood disturbance, and rumination. Fehr et al. (2010) sought to integrate research findings regarding correlates of forgiveness via a meta-analysis and found that several mental-health related variables were negatively associated with forgiveness, including negative mood, rumination, state and trait anger, neuroticism, and depression.

Models of Forgiveness Interventions

Given the association between forgiveness and mental health outcomes, it is not surprising that interventions have been developed that aim to directly impact the forgiveness process (e.g., Enright et al., 1998; Rusbult, Hannon, Stocker, & Finkel, 2005; Wade & Worthington, 2005). The steps encouraged in forgiveness interventions can also be understood as the phases of the forgiveness process itself, even outside of a structured therapeutic intervention (Enright, et al.). In reviewing the literature Enright et al. devised a model of interpersonal forgiveness that includes 20 units that make up four general phases of forgiveness. In the first phase, *uncovering*, the individual recognizes the problem and the injury it caused. In the second phase a *decision* is made to engage in forgiveness that results in the third phase, *work*, during which empathy is developed and the negative event is reframed. Finally, in the *deepening* phase the offended person continues to find meaning in the forgiveness process and develops further insight and awareness into the positive benefits of forgiveness. Importantly, the authors note that these phases are not typically experienced sequentially, instead, individuals often move back and forth between them. Rusbult et al. (2005) described a three-stage model of forgiveness in the context of relational repair. This process involves *restraint* against acting vengefully,

forbearance, or taking a prosocial interpretation of the offense, and *extended forgiveness*, or development and growth of forgiveness over the long term. A third model of forgiveness intervention is the REACH Model (Wade & Worthington, 2005; Worthington, 2006).

Worthington summarized common elements in published forgiveness intervention models and identified stages in the forgiveness process including: *recalling* the offense, development of *empathy* toward the offender, making a decision to act *altruistically* in forgiving the offender, making a formal *commitment* to forgive, and *holding on* to progress achieved in forgiveness.

Forgiveness interventions have been found to have salutary effects on a broad number of mental health outcomes and on overall mental health functioning in general. Toussaint and Webb (2005) identified four and Webb et al. (2011) identified nine articles that implemented forgiveness interventions and measured mental health outcomes. Specifically, forgiveness interventions have been found to result in reductions of feelings of depression, anxiety, stress, and anger, to reduce symptoms of substance abuse, and to aid in the development of increased self-esteem and environmental mastery (Toussaint & Webb; Webb et al.). Based on findings from both correlational and intervention research, it appears that higher levels of forgiveness are associated with better mental health functioning as seen in a number of outcome measures, and that interventions that help participants forgive also result in improvements in mental and physical well-being.

Obsessive-Compulsive Disorder

Obsessive-Compulsive Disorder (OCD) is defined in the *Diagnostic and Statistical Manual of Mental Disorders* [DSM-IV-TR] by the presence of obsessions and/or compulsions (American Psychiatric Association [APA], 2000). *Obsessions* are defined as intrusive, repetitive thoughts, impulses, or images that result in marked distress and are experienced as being outside

of the person's control. *Compulsions* are repetitive behaviors or mental acts conducted in response to obsessions in order to manage distress or prevent a negative event from occurring (APA, 2000). Diagnosis of OCD requires not only the presence of obsessions or compulsions, but these symptoms must also cause marked distress or impairment and should not be restricted to a comorbid Axis I disorder or caused by the physiological effects of a substance or general medical condition (APA). Finally, at some point, the individual should be able to recognize the obsessions or compulsions to be excessive or unreasonable; however, insight into the irrational nature of these symptoms varies (APA).

The lifetime prevalence of OCD in adults is approximately 2%-3% of the US population (Karno, Golding, Sorenson, & Burnam, 1988; Kessler et al., 2005). The prevalence of OCD does not appear to differ substantially across cultures (Horwath & Weissman, 2000). Approximately 1.0% of US adults age 18 or over, or approximately 2.2 million Americans, have OCD in a given year (Kessler, Chiu, Demler, & Walters, 2005). While symptoms may begin in childhood, the median age of onset is 19 years old (Kessler, Berglund, et al., 2005) and typically ranges from early adolescence to young adulthood. OCD is slightly more common in female adults compared to males, though childhood-onset OCD is more common in males (Rasmussen & Tsuang, 1986). Although OCD is relatively rare, other disorders thought to be within an OCD spectrum, such as tic disorders, eating disorders, body dysmorphic disorder, and trichotillomania, among others, are collectively far more prevalent than OCD itself (Kessler, Ruscio, Shear, & Wittchen, 2009).

Obsessive-Compulsive Disorder is a highly heterogeneous disorder with a range of presentations (Watson, Wu, & Cutshall, 2004). "With poor insight" is an optional specifier in the DSM-IV-TR, and individuals with OCD often have a range of insight. Patients with poor

insight are less likely to experience at least partial remission, often have greater symptom severity, and often require more extensive treatment (Catapano et al., 2010). Not only do individuals with OCD vary in their degree of insight, but there is also variety in the clustering and presentation of symptoms. Although discussion of either dimensions or subtypes of OCD is absent from the current DSM, a significant body of research has been conducted to identify subtypes of OCD. Most subtype classifications are centered around symptom themes (McKay et al., 2004). However, some (e.g., Bartz & Hollander, 2006) have questioned both the subtype approach and the current DSM-IV-TR classification of OCD as an anxiety disorder, calling instead for an OC spectrum of disorders listed as its own category within the DSM. Indeed, an OC spectrum of disorders has been recommended for inclusion in the DSM-V (Phillips et al., 2010).

Etiology of OCD

Obsessive-Compulsive Disorder has multiple causal factors. There appear to be genetic contributions to OCD, as concordance rates for monozygotic twins range from 53%-87%, while concordance rates for dizygotic twins are between 22%-47% (Rasmussen & Tsuang, 1986). However, some have suggested that there may be multiple etiological subtypes of OCD, as while there is evidence for a genetic link, the disorder can sometimes appear sporadically (Pauls, Alsobrook, Goodman, & Rasmussen, 1995). Generally, in regards to brain functioning OCD appears to involve subtle structural abnormalities in the caudate nucleus and functional dysregulation of neural circuits that involve the orbitofrontal cortex, cingulate cortex, and the caudate (Rauch, Whalen, Dougherty, & Jenike, 1998). There is also evidence for imbalances in the serotonergic, and more recently, dopaminergic neurotransmitter systems in OCD (Dougherty, Rauch, & Jenike, 2007).

Dollard and Miller (1950) provided an early behavioral conceptualization of OCD in their application of Mowrer's (1939) two-factor theory of fear acquisition and maintenance to the development of OCD. In this model, a fear is initially learned via classical conditioning but is maintained through operant learning, in which the compulsion serves to reduce the fear and is hence reinforcing (Mowrer, 1960). Salkovskis (1985, 1998) developed the first comprehensive cognitive-behavioral conceptualization of OCD, and his work has been further developed by other cognitive theorists (Clark, 2005; Obsessive Compulsive Cognitions Working Group, 1997) to identify cognitions characteristic to OCD. These theorists have identified belief domains relevant to OCD including: 1) inflated responsibility, 2) thought-action fusion 3) overestimating the importance of thoughts, 4) excessive emphasis on controlling one's thoughts, 5) overestimation of threat, 6) intolerance of uncertainty, 7) need for perfectionism, and 8) intolerance of anxiety or distress (Clark, 2005; Obsessive Compulsive Cognitions Working Group, 1997). Cognitive therapy for OCD targets these dysfunctional thoughts in the patient.

Treatment for OCD

The first line of treatment for OCD includes serotonin reuptake inhibitors (SRIs), *selective* serotonin reuptake inhibitors (SSRIs), and cognitive-behavioral therapy (CBT) that involves exposure and response prevention (ERP) (Dougherty et al., 2007). The serotonin reuptake inhibitor Clomopramine has been the most extensively studied pharmacological treatment for OCD, and there is substantial evidence for its efficacy in treating OCD symptoms (Dougherty et al.). There have been very few studies that directly compared the effects of pharmacological versus cognitive-behavioral treatments, and research in this area is insufficient to draw broad conclusions about the superiority of either approach (Dougherty et al.). While combining pharmacotherapy and psychological treatments for OCD is common practice and

does not seem to be harmful, any benefits of combined treatments over monotherapies seem to be transient at best and to have no identified long-term benefits (Franklin & Foa, 2008).

Exposure and Response Prevention (ERP) is considered a well-established treatment for OCD (Chambless & Ollendick, 2001). It was developed in line with the assumption that obsessions are anxiety-provoking stimuli that result in avoidant responding or a compulsion; the compulsion serves to reduce fear surrounding obsessions or to prevent threats from occurring (Clark, 2005). After developing a hierarchy of distressing situations, patients are then exposed for approximately 90 minutes to a situation that provokes an average-intensity level of anxiety while refraining from performing the compulsion (Podea, Suciu, Suciu, & Ardelean, 2009). Sessions last up to 2 hours each and are often held multiple times a week for an average of 12-16 total sessions. With repeated exposures, habituation occurs and anxiety diminishes (Podea et al.).

Cognitive therapy (CT) for OCD addresses and modifies the dysfunctional beliefs described earlier using cognitive techniques and behavioral experiments (see Clark, 2004). For example, a patient who overestimates the threat of bathroom germs and hence engages in compulsive handwashing may be encouraged to test the belief that not washing his or her hands after using the restroom will lead to developing an illness through both rational and behavioral means.

Both ERP and CT have been well demonstrated to be efficacious through a number of Type I studies (Franklin & Foa, 2007). Comparisons of cognitive therapy to exposure and response prevention have generally found little difference in efficacy between the two approaches (Abramowitz, Franklin, & Foa, 2002; Cottraux et al., 2001; McLean et al., 2001; Rosa-Alcazar, Sanchez-Meca, Gomez-Conesa, & Marín-Martínez, 2008; van Balkom et al.,

1998; van Oppen, van Balkom, de Haan, & van Dyck, 2005; Whittal, Thordarson, & McLean, 2005), though there is some evidence that group ERP may be more effective than group CT (Whittal, Robichaud, Thordarson, & McLean, 2008).

The lack of differences in efficacy found between ERP and CT may be the result of the use of similar techniques, as the behavioral experiments implemented in CT are often very similar to the exposure exercises found in ERP (Abramowitz, 2006). This is supported by the meta-analytic finding that adding behavioral components to CT improved its efficacy (Abramowitz et al., 2002). Furthermore, although CT and ERP are distinct theoretical approaches, both treatment methods may capitalize on the same mechanisms and/or may share common “active ingredients” in their treatment of OCD (Abramowitz, 1997). Although CT devotes more attention to cognitive factors compared to ERP, there is significant overlap between these treatments and both contain both cognitive and behavioral components (Abramowitz, Taylor, & McKay, 2005). Recently, many researchers have combined CT and ERP into a general cognitive-behavioral therapy (CBT) in their discussion of the treatment of OCD (e.g., Franklin & Foa, 2007), perhaps recognizing that cognitive and behavioral elements cannot be extracted and treated separately (Clark, 2005). CBT that combines CT and ERP has been increasingly recommended in an effort to reduce drop-out rates and improve treatment adherence (Clark).

Although both ERP and CT have been found to effectively reduce OCD symptoms for many patients, these treatments also have a number of limitations. Exposure and response prevention has a high patient drop-out rate, often leads to only partial remittance of symptoms, and may not be as effective for certain types of OCD such as those with mental compulsions, sexual or religious obsessions, or hoarding symptoms (Abramowitz et al., 2005; Clark, 2005).

Furthermore, adding cognitive elements does not appear to successfully address these limitations (Clark, 2005; Whittal et al., 2005). Although CBT has been demonstrated to be effective, cognitive conceptualizations of OCD may be incomplete, as the results of investigations testing the relationship between the proposed dysfunctional beliefs and severity of OCD symptoms have been mixed (Wheaton, Abramowitz, Berman, Riemann, & Hale, 2010). Although Wheaton et al. proposed that this may be due to the assessment methods used, others (e.g., Moulding & Kyrios, 2006, 2007) have proposed that the current list of OC dysfunctional beliefs is incomplete, and there may be additional beliefs that are contributing to OC symptoms. While CT and ERP have been found to be effective, there is still work to be done to improve both the conceptualization and the treatment of OCD.

Forgiveness and Anxiety Disorders

As will be described further, there have been virtually no studies conducted that specifically sought to investigate the impact of forgiveness on obsessive-compulsive disorder or symptoms thereof either correlationally or through a forgiveness intervention. However, there have been numerous studies researching the association between forgiveness and anxiety. OCD is classified as an anxiety disorder and the experience of anxiety is prevalent among its symptoms (APA, 2000). OCD may also share mechanisms in common with other anxiety disorders. In a nonclinical sample, OC and Generalized Anxiety Disorder (GAD) symptoms were associated with several of the same cognitive processes including intolerance of uncertainty, negative problem orientation, responsibility and threat estimation, and perfectionism and certainty (Fergus & Wu, 2010). Because of the overlap in both presenting symptoms and underlying cognitive processes, the extent to which forgiveness is demonstrated to have healthful

associations with anxiety provides indirect support for the merit of exploring the connection between forgiveness and obsessive-compulsiveness.

There is theoretical support for a relationship between forgiveness and anxiety disorders. Enright and Fitzgibbons (2000) described the use of forgiveness in the therapeutic treatment of anxiety disorders, including the treatment of OCD, as well as other disorders such as GAD, social phobia, and PTSD. They proposed that forgiveness may relieve anxiety symptoms because of the resultant resolution of anger, particularly when unconscious anger is giving rise to anxious symptoms, a situation commonly seen with OCD according to the authors (Enright & Fitzgibbons, 2000). Although the association between forgiveness and OCD remains essentially unexplored, there is empirical support for an association between forgiveness and anxiety symptoms from both correlational and forgiveness intervention research.

Correlational studies of Forgiveness and Anxiety

Several studies have found associations between a number of forgiveness dimensions and both state and trait anxiety. Forgiveness of self (FS), of others (FO), and total forgiveness scores have been repeatedly associated with anxiety symptoms. Seybold, Hill, Neumann, and Chi (2001) examined physiological and psychological correlates of forgiveness in a community sample and found that both state and trait anxiety were negatively correlated with all three forgiveness scales used: forgiveness of self, forgiveness of others, and total forgiveness. Maltby, Macaskill, and Day (2001) examined the associations between forgiveness of self and others and scores on the Revised Eysenck Personality Questionnaire and the General Health Questionnaire in an undergraduate sample. A failure to forgive oneself was associated with greater anxiety as well as higher neuroticism and depression for both genders, while failure to forgive others was associated with anxiety in women but not men. In a sample of college

females forgiveness total scores as well as forgiveness-related affect, behavior, and cognition were each significantly negatively correlated with anxiety scores taken at two time points as well as with overall psychological distress (Orcutt, 2006). Furthermore, in this study it was found that forgiveness levels at Time 1 predicted depression, anxiety, and stress levels at Time 2 over and above psychological distress at Time 1. Anxiety was found to be negatively correlated with two of the four measures of forgiveness given in an undergraduate sample; anxiety was negatively associated with the absence of negative thoughts, feelings, or behaviors towards the offender and anger rumination but not with forgiveness likelihood or the presence of positive reactions to the offender (Stoia-Caraballo et al., 2008). The authors also found that anxiety and depression combined (as negative affect) mediated the association between forgiveness and sleep quality. Webb, Robinson, and Brower (2009) assessed the relationship between FS, FO, and feeling forgiven by God (FFG) and the Brief Symptom Inventory (BSI) in participants seeking outpatient treatment for alcoholism from a community center at the beginning of treatment and at 6-month follow-up. At the bivariate level scores on the anxiety subscale of the BSI were negatively associated with FS at all three time point comparisons (baseline forgiveness-baseline anxiety, follow-up forgiveness-follow-up anxiety, and baseline forgiveness-follow-up anxiety). Forgiveness of others at baseline and at follow-up was associated with follow-up levels of anxiety, but FO was not significantly associated with baseline levels of anxiety. Feeling forgiven by God was associated with anxiety at baseline and follow-up but not across time points. In regression analyses controlling for demographics and entering FS, FO, and FFG simultaneously, the models examining forgiveness and anxiety at baseline and at follow-up were both significant, an effect that was contributed to uniquely by FS in both models. Examining forgiveness and

anxiety outcomes from baseline to follow-up, the model was significant, and this result was uniquely affected by FO.

Anxiety has also been found to be associated with other measures of forgiveness. Ryan and Kumar (2005) found that willingness to forgive was negatively correlated with anxiety for male (but not female) outpatients treated for affective or anxiety disorders. Exline, Yali, and Lobel (1999) examined the relationship between forgiving God and negative emotion. Anxious mood was positively correlated with difficulty with forgiving God, self, and others. Hierarchical regressions also demonstrated that difficulty forgiving God predicted depressed and anxious mood over and above the effects of difficulty forgiving self and others.

The association between forgiveness and anxiety has also been found with more atypical measures of anxiety. In an investigation of the effect of the Behavioral Inhibition System (BIS) and the Behavioral Activation System (BAS) on forgiveness and vengefulness Johnson, Kim, Giovannelli, and Cagle (2010) found that the BIS-Anxiety subscale was predictive of one of two unforgiveness measures (tendency to seek revenge) but was not significantly associated with overall forgiveness. Having an anxious attachment style has been associated with being less likely to forgive. In a study of undergraduates in a committed relationship, trait forgivingness was found to be significantly correlated with both anxious attachment and rumination, and a path analysis revealed that anxious attachment resulted in greater levels of rumination, which then negatively influenced trait forgiveness (Burnette, Davis, Green, Worthington, & Bradfield, 2009). In another study of undergraduates, anxious attachment interacted with destiny beliefs (whether or not the relationship is believed to be “meant to be”) to impact the likelihood of forgiveness of a romantic partner. High destiny beliefs predicted a reduced tendency to forgive in individuals experiencing state attachment anxiety, but destiny beliefs and forgiveness

tendencies were not associated in individuals experiencing state attachment security (Finkel, Burnette, & Scissors, 2007). Anxiety, as expressed in a variety of forms, has been found to be negatively associated with the tendency to forgive.

Forgiveness and PTSD

There is some evidence that forgiveness is not only associated with anxiety symptoms but also with other anxiety disorders such as PTSD. Forgiveness was found to be lowest in male former prisoners of war (POWs) with PTSD compared to POWs without PTSD and control-group veterans, and forgiveness was also found to mediate the relationship between PTSD symptoms and marital adjustment in this sample (Solomon, Dekel, & Zerach, 2009). Witvliet, Phipps, Feldman, and Beckham (2004) investigated FS, FO, and religious coping in 213 help-seeking veterans with PTSD. Multivariate regression analyses found PTSD symptoms were positively associated with being unforgiving of one's self and of others. Being unforgiving of one's self was also significantly associated with state anxiety and with trait anxiety; however, being unforgiving of others was not significantly associated with either measure.

It is not clear if the association between anxiety and forgiveness is found cross-culturally. In three studies examining the personality correlates to forgiveness in respondents in the People's Republic of China Fu, Watkins, and Hui (2004) found that anxiety was positively correlated with forgiveness in a student but not a teacher sample, and anxiety also uniquely contributed to variation in forgiveness in a multiple regression analysis also including self-esteem and other culturally-relevant characteristics of face, harmony, and relationship orientation. In another article the authors did not find an association between forgiveness and anxiety in college students from the People's Republic of China (Fu, Watkins, & Hui, 2008). Although there appears to be growing evidence for the association between forgiveness and

anxiety in Western samples, there is not currently sufficient evidence to determine whether this is a universal relationship.

Anxiety as an Outcome in Forgiveness Interventions

The association between forgiveness and anxiety has also been supported through research on forgiveness interventions. Several studies have found forgiveness interventions based on Enright's model to significantly improve anxiety compared to no-treatment controls or alternative treatments. Compared to wait-list controls, incest survivors who participated in a forgiveness intervention experienced a significant reduction in overall, state, and trait anxiety (Freedman & Enright, 1996). Coyle and Enright (1997) conducted a forgiveness intervention with men who self-identified as being hurt by their partner's abortion decision that resulted in a significant reduction in state anxiety compared to wait-list controls (trait anxiety was not included in the study). Freedman and Knupp (2003) conducted a forgiveness intervention in a small (n=10) sample of adolescent children of divorced parents and found a reduction in trait, but not state, anxiety compared to no-treatment controls. In another study patients in a residential rehabilitation center for alcohol dependence were treated with either forgiveness therapy or an alternative individual treatment. Compared to those who received the alternative treatment, recipients of forgiveness therapy experienced significantly greater improvement in both total (composite) and trait, but not state, anxiety, a difference that was maintained at 4-month follow-up (Lin, Mack, Enright, Krahn, & Baskin, 2004). Finally, a study with women who had experienced emotional abuse found that those who received forgiveness therapy experienced significant improvement in both state and trait anxiety from pretest to posttest and follow-up an average of 8 months later. In addition, those who received forgiveness therapy had significantly

greater improvements in trait but not state anxiety compared to those receiving an alternative treatment, a gain that was maintained at follow-up (Reed & Enright, 2006).

Although these studies support the potential for forgiveness interventions to reduce anxiety symptoms, not all forgiveness intervention studies that measured anxiety as an outcome found a significant effect. Hebl and Enright (1993) conducted a forgiveness group intervention with elderly females and found that although there was an effect of time on trait anxiety in that anxiety was reduced in both experimental and active control groups, there were not significant differences in anxiety level for the participants in the forgiveness intervention compared to active controls. In another group forgiveness intervention with older adults no significant change was found in anxiety levels (Ingersoll-Dayton, Campbell, & Ha, 2009).

In sum, forgiveness interventions have been studied in numerous samples and have often been found to reduce anxiety. Specifically, forgiveness interventions have been shown to have an effect on trait, state, and overall anxiety compared to wait-list controls, and overall and trait anxiety compared to active alternative treatments. However, this effect may not be universal and in particular has not been found in older adults.

Forgiveness and Rumination

The association between forgiveness and anxiety disorders is also supported by evidence that a lack of forgiveness is associated with greater rumination. Ruminative thinking is characteristic of both GAD and OCD (Fergus & Wu, 2010); hence, rumination may be one pathway connecting forgiveness and anxiety symptoms. Rumination is theorized to be a key mediator in the relationship between forgiveness and psychological health (McCullough, 2000; Toussaint & Webb, 2005; Worthington et al., 2001; Worthington & Wade, 1999). There is also empirical support for a forgiveness-rumination link and its impact on mental health. In a recent

meta-analysis, rumination was found to have a negative medium-sized effect on forgiveness (Fehr et al., 2010). Trait forgivingness was found to be negatively correlated with rumination, which mediated the association between low forgivingness and anxious attachment style (Burnette et al., 2009). Forgiveness was found to be negatively correlated with ruminative depression and ruminative brooding, which in turn impacted depressive levels and overall psychological health (Ysseldyk, Matheson, & Anisman, 2007). In a daily diary study McCullough, Bono, and Root (2007) found that higher-than-normal levels of rumination resulted in increased unforgiveness (avoidance and revenge motivations) the following day. Rumination may mediate the effects of forgiveness on other areas of functioning as well, as anger rumination along with negative affect mediated the association between forgiveness and sleep quality (Stoia-Caraballo et al., 2008). Although more research is needed, rumination appears to be a critical pathway by which a lack of forgiveness indirectly impacts anxiety symptoms and other mental and physical health outcomes.

Forgiveness and OCD

While links between forgiveness and a variety of mental health variables have been identified and there have been several studies supporting the association between forgiveness and anxiety, the potential connection between forgiveness and Obsessive-Compulsive Disorder has been largely neglected. Enright and colleagues have theorized that targeting forgiveness in therapy may be useful for work with children and adolescents (Enright, 2000) and adults (Enright & Fitzgibbons, 2000) whose anger is manifested as OC symptoms. There are two known studies that have empirically investigated the association between forgiveness and obsessive-compulsiveness. Webb, Robinson, and Brower (2009) examined the association between forgiveness of self, forgiveness of others, and feeling forgiven by God and the BSI

subscales in participants seeking outpatient treatment for alcoholism at the beginning of treatment and at 6-month follow-up. In the bivariate correlation analysis the OC symptom subscale (OCS) of the BSI was negatively correlated with FS at all three time comparisons: baseline-baseline, follow-up-follow-up, and baseline-follow-up. Follow-up OCS levels were associated with follow-up levels of forgiveness of others, but these were not correlated at baseline or across time periods. Obsessive-compulsive symptoms were not correlated with feeling forgiven by God. In regression analyses controlling for demographics and entering FS, FO, and FFG simultaneously, the baseline OCS-baseline forgiveness model was significant, an effect that was uniquely contributed to by FS. In the regression model for follow-up forgiveness and follow-up OCS the model was again significant, an effect that was again contributed to uniquely by FS. In the analysis comparing baseline forgiveness to obsessive-compulsive scores at follow-up the model was significant but the contributing dimension of forgiveness was indistinguishable. Although this study has promising results, further investigation with a more thorough measure of OC symptoms than the six-item BSI subscale, with different population samples, should be conducted to further explore the potential for a forgiveness-OCD link.

The second study investigating forgiveness-related variables and obsessive-compulsive symptoms was conducted by Flannelly, Galek, Ellison, and Koenig (2010). In this study the authors examined the association between three views of God and a number of psychiatric symptoms including obsessive-compulsiveness in a nationally representative sample of US adults. Perceptions of God included: a) close and loving, b) approving and forgiving, and c) creating and judging. Only perceiving God as close and loving had a significant protective effect against obsessive-compulsive symptoms; perceiving God as approving and forgiving was not associated with OCS. However, the generalizability of this study to forgiveness and obsessive-

compulsiveness may be tenuous. Although perceiving God as being approving and forgiving is likely associated with feeling forgiven by God, the connection is not exact; one could perceive God as approving and forgiving *in general* while still not believing that God has forgiven *oneself*. Furthermore, even if this finding does reflect a lack of association between feeling forgiven by God and obsessive-compulsive symptoms, forgiveness variables are typically only moderately correlated with one another (e.g., Webb et al., 2009); therefore, this has limited applicability to the various other forms of forgiveness, including forgiveness of self, forgiveness of others, and so on. Finally, the 5-item *Obsessive-Compulsive* subscale of the Symptom Assessment-45 Questionnaire (Davison et al., 1997) used by Flannelly et al. includes questions that are somewhat indirect, as they inquire about difficulty with concentration or decision making, repetitive checking or slow task completion in order to “ensure correctness,” and difficulties “with one’s mind ‘going blank.’” Many of these items reflect general difficulties that are associated with but not unique to OCD. Therefore, although this study found no relationship between FFG and obsessive-compulsive symptoms, there is still sufficient rationale to explore the possibility of a forgiveness-OCD connection, particularly in light of the growing body of literature associating forgiveness with overall psychological functioning and with anxiety more specifically as well as the existence of only two published studies relevant to this relationship.

Forgiveness and OC Beliefs

Forgiveness may relate to OC beliefs in a number of ways. Cognitive conceptualizations suggest that individuals with OCD do not differ from others in terms of the frequency or content of intrusive thoughts; instead, it is their perseveration on these thoughts and the catastrophic interpretations assigned to them that are abnormal (Salkovskis, 1985). Given that forgiveness is associated with reduced rumination (McCullough et al., 2007; Ysseldyk et al., 2007), introducing

forgiveness as a target in therapy may result in a reduction of obsessiveness. Furthermore, self-forgiveness may be helpful in overcoming various forms of catastrophizing regarding obsessive thoughts. The ability to accept and forgive one's self for experiencing ego-dystonic thoughts of stabbing one's mother, for example, may de-escalate anxiety and reduce the need to perform compulsions. Finally, given that forgiveness is associated with better psychological functioning and lower levels of anxiety and that forgiveness interventions can effectively reduce anxiety, as well as given the connection between anxiety symptoms and OCD, it appears worthwhile to explore the potential association between forgiveness and OC symptoms.

Locus of Control

Rotter (1966) first developed the concept of internal versus external control of reinforcement, or locus of control (LOC). He defined *external* locus of control as the extent to which an individual attributes events to forces independent of oneself, whereas *internal* locus of control is when the individual perceives reinforcement as contingent upon his or her behaviors or stable characteristics. Rotter hypothesized that locus of control impacts learning processes by influencing the extent to which expectancies develop and are generalized. Although Rotter (1966) acknowledged that external attributions may be made to various sources such as luck, fate, chance, or powerful others, his measure was along a single dimension that gave a single score indicating a relatively greater orientation toward internal or external attributions of control. Levenson (1973a) distinguished between external control that attributes control to powerful others from external control that attributes events to chance or fate and developed a measure of locus of control that reflected this distinction. Her measure consists of three subscales (Internal, Powerful Others, and Chance) that allow these orientations to be measured independently. While Rotter's measure portrayed internal and external locus of control as opposite ends of a

single continuum, in Levenson's measure they are distinct, independent dimensions (Levenson, 1973a, 1973b; Skinner, Chapman, & Baltes, 1988).

Blau (1984) compared the factor stability and reliability of Rotter's and Levenson's measures of locus of control. While Levenson's measure was found to be more factorally stable, there were not notable differences in reliability between the two scales. There has been some controversy regarding the factor structure of Levenson's scale. Shechuk, Felker, and Niederehe (1990) found that neither the original three-factor structure involving internal, powerful others, and chance locus of control, nor a two-factor model distinguishing between internal and external orientations, fit their data adequately. Shewchuk, Foelker, Camp, and Blanchard-Fields (1992) proposed a 7-item revised scale involving a two-factor internal-powerful others model. Presson, Clark, and Benassi (1997) tested both Levenson's original three-factor structure and Shewchuck et al.'s (1992; 1990) revised model and found that both models adequately fit their data. In a study of young adults Wilkinson (2007) tested both two- and three-factor models of Levenson's measure and found that while the two-factor structure provided the best model fit, regression analyses found that the original three-factor structure was more predictive of both attitudes toward computers and depression. Therefore, although some have argued for a revised two-factor model revision of Levinson's LOC scale, the original three-factor structure has received support from factor analytic studies and has been found to be useful for predictive purposes.

Locus of Control and Mental Health

Although there is evidence that mental health outcomes are related to one's control attributions, the nature of this relationship has not always been clear. Generally, having a greater sense of control is associated with better psychological and physical functioning; however, this association is by no means straightforward (Shapiro, Schwartz, & Astin, 1996). Rotter first

hypothesized that there may be a curvilinear relationship, where individuals with a mix of both internal and external attributions have the greatest level of mental health; however this has not been supported empirically (Rotter, 1975). Instead, there is evidence for a linear relationship between mental health and locus of control, in that having an internal LOC may be associated with better functioning, while having an external locus of control may be associated with poorer psychological health; however, this relationship may interact with such factors as one's environment, desire for control, and culture (Shapiro et al., 1996). The perception that one's life is controlled by chance has been found to be positively associated with depression scores, an effect that was strongest in individuals with a high *desire* for control (Burger, 1984). In a study examining the association between anxiety, depression, and Levenson's subscales in a college student sample having an internal LOC was negatively correlated with both anxiety and depression in the overall sample, and for women but not men. Chance orientation was positively associated with anxiety and depression for the total sample and for both sexes, while believing that powerful others are in control was positively associated with anxiety and depression in the overall sample, and again for women but not men (Holder & Levi, 1988). In a review of the literature Archer (1979) concluded that greater external LOC is related to higher trait anxiety and trait test anxiety and suggested that the relationship between locus of control and state anxiety may be a function of the situational context in which state anxiety is assessed. In general, it appears that attributing control to internal factors leads to fewer symptoms of depression and anxiety.

Both overall scores on internal and external locus of control (e.g., Kirkcaldy et al., 2007; Medinnus, Ford, & Tack-Robinson, 1983; Santiago & Tarantino, 2002) and the implications of locus of control for mental health outcomes (e.g., O'Connor & Shimizu, 2002) are often found to

vary cross-culturally. Although there have been some mixed findings, there generally appears to be few differences between racial and ethnic groups within the United States regarding both overall control orientations and their implications for health (Fiori, Brown, Cortina, & Antonucci, 2006; Halpin, Halpin, & Whiddon, 1981; Palmer, Rysiew, & Koob, 2003). While high internal and low external LOC orientations appear to have implications for mental health and psychological wellbeing in Western societies, this relationship may not extend to other cultures.

Forgiveness and Control

Several authors have theorized that forgiveness is associated with one's sense of control; however, few have explored this relationship empirically. The effect of forgiveness on control has been characterized as a paradox, as forgiveness can serve as a mechanism for regaining personal control in social relationships (Benson, 1992; Hope, 1987). Coleman (1998) further explained this paradox in that victims may withhold forgiveness in a misguided attempt to maintain feelings of control over the offender; however, unforgiveness ultimately leads to less control due to its resultant emotions (i.e., anger and resentment). Forgiveness has also been conceptualized as an effort at gaining social control via provocation of feelings of gratitude or guilt in the offender (Ohbuchi & Takada, 2009). The hypothesized relationship between forgiveness and control has also been suggested to have implications for physical and mental health, as perceived control has been theorized to mediate the relationship between forgiveness and mental health outcomes (Toussaint & Webb, 2005). Control constructs may also be influential in the effect of forgiveness on physical health, as Worthington et al. (2001) proposed that research findings on the neurobiological pathways between loss of control and poor health outcomes may be relevant to research on the effects of chronic unforgiveness on physical health

functioning. Witvliet (2005) offered a theoretical explanation for the connection between forgiveness variables and physiological responses that may prove relevant for the mediating role of control. She conceptualized chronic unforgiveness as a deficit in self-regulation in which the individual has difficulty inhibiting unproductive emotional responses. In this model chronic unforgiveness is essentially a result of deficient emotional control.

The empirical explorations of the relationship between forgiveness and control, particularly locus of control, have been limited. Some of the most promising results come from an experimental study conducted by Witvliet, Ludwig, and Vander Laan (2001) using a within-subjects emotional imagery paradigm. Participants answered questions about a past offense in which they were the victim and then actively imagined eight types of unforgiving and forgiving responses while their physiology was continuously measured. Participants reported feeling less in control during unforgiving compared to forgiving imagery, providing empirical support for the association of forgiveness and perceived control. Other empirical work relating forgiveness to control has been in the realm of cognitive control and executive functioning. Greater executive functioning has been found to predict higher levels of dispositional forgiveness, forgiveness for specific past offenses, and the development of forgiveness particularly when the offense was severe (Pronk, Karremans, & Overbeek, 2010). Hostility-primed cognitive control was found to predict forgiveness of everyday provocations and resultant reductions in anger levels (Wilkowski, Robinson, & Troop-Gordon, 2010). These results suggest that one's ability to engage in cognitive control may improve one's ability to forgive and may provide indirect support for Witvliet's (2005) model of unforgiveness as an emotional regulation deficiency.

Although several authors have suggested that forgiveness and perceived control are associated and a handful of studies have supported this link, it is evident that more research is

needed before this association can be considered established. Currently, there are no published studies that examine the association between forgiveness and locus of control; therefore, this hypothesized relationship should be explored.

OCD and Control

There are myriad control constructs including many with significant overlap (Skinner, 1996). The association between OC symptoms and locus of control is described first, followed by a description of research linking OCD with related control constructs.

OCD and Locus of Control

A limited number of studies have examined the impact of locus of control on OC symptoms. Only one published study has used Levenson's (1973a, 1974) measure to examine locus of control in patients with OCD; Kennedy, Lynch, and Schwab (1998) found that individuals with OCD did not differ significantly from normal controls on any of the three subscales. However, the OCD group had the lowest scores of all six patient groups on external LOC-powerful others and external LOC-chance scores. The authors interpret this finding as potentially due to the use of obsessions and rituals by participants with OCD to address their need for internal control, a hypothesis that was also supported by the moderate-to-large negative correlation found between internal and powerful-other LOC scales. Altin and Karanci (2008) examined the effect of locus of control and responsibility attitudes on obsessive-compulsive symptoms in Turkish adolescents. The authors found that higher external locus of control scores were correlated with higher scores on the obsessive thinking and compulsive checking subscales but not with overall levels of OC symptoms. In a regression analysis that controlled for depression, trait anxiety, and responsibility attitudes LOC was found to have a main effect on the obsessive thinking subscale but not on the checking or cleaning subscales or on overall levels of

OC symptoms. Locus of control may have moderated the effect of high responsibility on obsessive-compulsive symptoms, as among individuals with high levels of personal responsibility, those who also had an external (rather than internal) LOC were more likely to experience OC symptoms.

Locus of control as related to health outcomes may be associated with obsessive-compulsive symptoms, as Crisson and Keefe (1988) examined health locus of control and psychological symptoms in chronic pain patients and found that chance locus of control explained a significant amount of the variance in OC symptoms. The effect of locus of control on obsessive-compulsive symptoms may be limited to adult populations, as LOC was not correlated with OC symptoms in children with Tourette's Syndrome in Israel (E. Cohen, Sade, Benarroch, Pollak, & Gross-Tsur, 2008).

Interrelationship of Control Constructs.

Researchers have developed a multiplicity of terms related to control many with significant overlap (Skinner, 1996). Although the relationship between OCD and locus of control has been only minimally studied, there is a growing interest in the role of both *sense* of control and *desire* for control in OCD. Sense of control is a synonym of perceived control and has been conceptualized as a related theoretical construct to internal locus of control (Moulding & Kyrios, 2006), though some distinctions exist between the two constructs (Skinner). Skinner categorized locus of control as a construct related to means-ends relations or relating to the connection between different potential causes and desired and undesired outcomes and sense of control and perceived control as related to agent-ends relations, or the connection between people and outcomes. Still, some (e.g., Moulding & Kyrios) have characterized locus of control and sense of control to be nearly synonymous. Because both constructs generally refer to an

individual's belief regarding the amount of control available in a particular context, there is likely to be significant theoretical and empirical overlap between sense of control and internal locus of control. Therefore, evidence supporting the association between sense of control and OC symptoms can also be seen as supporting the investigation of the effect of a similar construct, locus of control, on this disorder.

OCD and Perceived Control

Although only limited attention has been given to the effects of locus of control on obsessive-compulsive symptoms, a growing number of studies have examined the relationship between OCD and more broadly defined control constructs. Obsessive-compulsive symptoms have been associated both theoretically and empirically with issues of control surrounding thoughts, emotions, and the environment.

Control constructs in cognitive conceptualizations of OCD. The impact of perceived control in OCD was an integral part of early cognitive-behavioral formulations of this disorder. Both Carr (1974) and McFall and Wollersheim (1979) purported that a subjective sense of loss of control characterizes Obsessive-Compulsive Disorder, and that patients with OCD engage in compulsions and obsessive and ritualistic thinking in order to regain a sense of control. According to current cognitive conceptualizations, the need to control thoughts is a characteristic dysfunctional belief in OCD (Clark, 2005; OCCWG, 1997). Clark (2004) asserted that a faulty appraisal of mental control and unrealistic expectations regarding ability to control thoughts is critical to the persistence of obsessive thoughts. Inaccurate perception and over-emphasis on control can have implications for other dysfunctional beliefs commonly found in OCD, including overestimation of threat (Clark, 2004) and inflated sense of personal responsibility (Salkovskis, 1998). Individuals with OCD may also have an inflated need to control their emotions, as

several cognitive theorists have observed the effect of perceived control on anxiety disorders including on Obsessive-Compulsive Disorder. Barlow, Corpita, and Turovsky (1996) proposed that a lack of perceived control is a fundamental component to the origin and maintenance of anxiety and hence contributes to anxiety disorders, including OCD. In his theory of self-efficacy Bandura (1997) also discussed that anxiety arises in the face of low sense of control and the resultant inability to cope with potential threat. Intolerance of anxiety or distress is a core dysfunctional belief of OCD (Clark, 2005; OCCWG, 1997), and when interpreted through these conceptualizations of anxiety, this inability to tolerate distress may be the result of an inability to tolerate a lack of control.

Although in the last few decades work concerning control in OCD has been limited to control over thoughts (e.g., OCCWG, 1997), recently there has been a renewed interest in examining the role of perceived control in obsessive-compulsive symptoms more broadly. The resultant findings suggest that further exploration of the effect of perceived control on obsessive-compulsive symptoms may be promising. An improved understanding of the effect of control for OCD symptoms is critical, as this has implications for the treatment and theoretical conceptualization of OCD (Moulding & Kyrios, 2006).

Sense of control, desire for control, and OCD. There is growing evidence that OCD symptoms are associated with a lack of sense of control paired with a higher need for control. In an examination of vulnerability schemas in Obsessive-Compulsive Disorder, patients with OCD were found to experience a stronger need for control compared to both outpatients receiving services for other psychological disorders and community controls, suggesting that attempts to over-control emotions is a characteristic specific to OCD (Sookman et al., 2001). Zebb and Moore (2003) found that superstitiousness was associated with OC symptoms, with a particularly

strong association with obsessive checking in a nonclinical sample. However, superstitiousness was also associated with other anxiety symptoms not specific to OCD. The authors suggest that their results can be best understood when framed in relation to subjective control, as both superstitious individuals and individuals experiencing psychological distress may experience a low sense of personal control. In both student and clinical samples recently experiencing an uncontrollable stressful life event is associated with greater OC symptoms as compared to experiencing a controllable stressful life event (McLaren & Crowe, 2003). This finding suggests a means by which perceived lack of control may exacerbate OC symptoms in a diathesis-stress fashion.

Recent work conducted by Moulding, Kyrios, and colleagues (Moulding et al., 2008; Moulding & Kyrios, 2006, 2007; Moulding et al., 2007; Moulding et al., 2009) has built a case that desire for control (DC) and sense of control (SC) and their interaction contribute significantly to the experience of obsessive-compulsive symptoms. Moulding and Kyrios (2006) reviewed the literature on control and OCD and proposed that control may be a central concern and an as-of-yet unidentified cognitive distortion prevalent in OCD symptoms. The authors proceeded to test this hypothesis in a series of studies.

In their first study Moulding and Kyrios (2007) found that after controlling for depression and anxiety, higher desire for control paired with a low sense of control predicted OCD symptoms in a student sample. Furthermore, they found that SC had a stronger effect on OC symptoms relative to DC, as desire for control was only associated with OC symptoms when considered simultaneously with sense of control. Moulding, Kyrios, and Doron (2007) examined undergraduates' responses to hypothetical OC-relevant vignettes. Four vignettes about a water tap left dripping were presented in a randomized repeat-measures design, in which personal

responsibility (high or low) and threat (high or low) were manipulated. Desire for control was greatest in high-responsibility and/or high-threat scenarios. Sense of control was not affected by threat but was lower in the high responsibility conditions, meaning that when personal responsibility was high participants experienced a lower sense of control. Higher desire for control and lower sense of control were associated with use of action in all conditions and greater distress and urge to act in all but the high responsibility/high threat scenario.

Moulding, Doron, Kyrios, and Nedeljkovic (2008) again used the vignette paradigm but with a sample of clinical OCD participants and control samples of community members and individuals with other anxiety disorders. Participants with OCD were found to experience a lower sense of control and higher desire for control in low-threat conditions compared to community controls and did not differ significantly from individuals with other anxiety disorders. However, in high-threat conditions participants with OCD experienced lower SC and higher DC than both control groups. Most recently Moulding and Kyrios (2009) used a path analysis to examine the effects of DC and SC on OC symptoms in a nonclinical sample both directly and as mediated by other OC-related beliefs as measured by the Obsessive Beliefs Questionnaire (OBQ) (OCCWG, 2005). This measure assesses cognitions believed to be characteristic to OCD, as described previously. After controlling for depression lower sense of control was associated with greater OC symptoms both directly and as mediated by obsessive-compulsive beliefs, and a higher desire for control impacted obsessive-compulsive symptoms indirectly as mediated by OC beliefs. The authors suggest that their findings may indicate that control cognitions serve as a general motivator that is expressed through other OC beliefs, and the direct impact of sense of control may indicate that other unexplored pathways exist for the effect of SC on obsessive-compulsive symptoms. Together, the body of research produced by

Moulding, Kyrios, and colleagues supports the role of low sense of control coupled with a high desire for control in the presentation of obsessive-compulsive symptoms in both clinical and student populations. As sense of control has been characterized as a related construct to locus of control, further examination of the relationship between OC symptoms and locus of control appears warranted.

Purpose and Hypotheses

The current study is guided by two general research questions: 1) Is forgiveness associated with OC symptoms? and 2) If so, is this relationship mediated by perceived control? Therefore, the purpose of this study is to explore the association between multiple dimensions of forgiveness (forgiveness of self, forgiveness of others, and feeling forgiven by God) and obsessive-compulsiveness (both overall and in terms of specific symptoms) in a sample of college students. The mediating role of internal locus of control and external locus of control attributed to powerful others and to chance on each of these relationships is also explored. There are four hypotheses in this study.

Hypothesis 1: After controlling for demographic characteristics and religious background and behavior, increased levels of forgiveness will be directly associated with decreased levels of obsessive-compulsive symptoms.

There are several reasons why forgiveness may lead to fewer OC symptoms. As described previously, forgiveness has been demonstrated to be associated with better overall psychological functioning and with reduced anxiety (see Toussaint & Webb, 2005; Webb et al., 2011). As OCD is characterized as an anxiety disorder, the association of forgiveness with better mental health in general and with reduced anxiety in particular may extend to an effect on OCD. Because religion has been theorized to lead to both greater levels of forgiveness (e.g.,

Worthington et al., 2001) and psychological health (e.g., Koenig, 2010) and is not central to the current study, religious background and behavior were statistically controlled.

Hypothesis 2: High internal locus of control scores will be positively associated with forgiveness and negatively associated with OC symptoms, whereas the two external locus of control scales (attributing events to chance or to powerful others) will be negatively associated with forgiveness and positively associated with obsessive-compulsive scores.

Although available research on the association between locus of control and both forgiveness and OCD is not definitive, there is theoretical and empirical support for these relationships. Research on locus of control and related control constructs suggest that internal locus of control may be associated with greater forgiveness and mental health, whereas external locus of control may lead to poorer forgiveness and mental health outcomes.

Hypothesis 3: Locus of control will mediate the effect of forgiveness on obsessive-compulsive symptoms.

There are both theorized and empirical associations between both forgiveness and control and control and OCD, but the mediation relationship has not been tested. For example, it is possible that if forgiveness leads to an increase in internal attributions of control, this will indirectly result in a reduction in OC symptoms. It is also possible that greater forgiveness will result in reduced attributions to external control factors (including both powerful others and chance), and this also may result in decreased obsessive-compulsive symptoms.

Hypothesis 4: The association between forgiveness and OC symptoms and the indirect impact of locus of control will vary according to the dimensions of forgiveness and LOC assessed and the obsessive-compulsive symptoms examined.

Forgiveness is a multidimensional construct and forgiveness dimensions often are only moderately correlated with one another and vary in their relative impact on outcome variables (e.g., Toussaint, Williams, Musick, & Everson-Rose, 2008; Webb et al., 2009). Forgiveness of self often (e.g., Maltby et al., 2001; Toussaint et al., 2008; Webb & Brewer, 2010b; Webb, Robinson, Brower, & Zucker, 2006), but not always (e.g., Webb & Brewer, 2010a), has been found to have the greatest number of associations with mental health outcomes, including in the only existing empirical study of forgiveness and OC symptoms (Webb et al., 2009). There is also notable variation in the presentation and clustering of obsessive-compulsive symptoms that may have diverse causal mechanisms (e.g., McKay et al., 2004). Therefore, the relative association between specific forgiveness, control, and OC symptom variables may vary.

CHAPTER 2

METHOD

Participants

Participants for this study were drawn from a larger cross-sectional study (N=721) described previously by Webb and Brewer (2010a, 2010b). Participants were recruited from two colleges in Eastern Tennessee and were undergraduate students largely enrolled in introductory psychology courses. Respondents received extra credit for their voluntary participation. Participants completed these self-report measures either online or through paper-and-pencil administration. This study received approval from the Institutional Review Board prior to data collection.

For the purposes of this study, 241 participants filled out the relevant information, as some of the measures used were only given to some of the respondents in the larger study. Table 1 describes demographic characteristics for this sample. Participants were most likely to be in their first (37.9%) or second (30.0%) year of college. A majority of participants were female (66.7%) and Caucasian (94.5%). Most of the sample was single and never married (75.7%) with no children (78.2%). Nearly two thirds of the sample was between 18 and 21 years old, inclusive.

Using nonclinical samples in OCD research is common practice (e.g., Clark & Purdon, 2009; Moulding et al., 2009; Tolin, Woods, & Abramowitz, 2006). Nonclinical individuals appear to experience similar intrusive thoughts to individuals with OCD, albeit with reduced frequency, intensity, and resultant distress (Belloch, Morillo, Lucero, Cabedo, & Carrió, 2004; Purdon & Clark, 1993; Rachman & de Silva, 1978). The use of nonclinical individuals for OCD research was also supported by the results of a taxonomic study examining the latent structure of OCD symptoms in a nonclinical population, which supported the dimensional, rather than

categorical nature of both OCD symptoms and OC-related cognitions, with the possible exception of hoarding (Olatunji, Williams, Haslam, Abramowitz, & Tolin, 2008).

Table 1

Sample Demographic Information

Characteristic	Sample (N=241)
Gender: N(%)	
Male	79 (32.5)
Female	162 (66.7)
Age:	
<i>M</i>	22.65
<i>(SD)</i>	(6.467)
Years in College:	
<i>M</i>	2.17
<i>(SD)</i>	(1.244)
Ethnicity: N(%)	
Caucasian	212 (87.2)
Other	19 (7.8)
Marital Status: N(%)	
Single	184 (75.7)
Other	56 (23.0)
RBB-Lifetime	
<i>M</i>	14.60
<i>(SD)</i>	(2.67)
Basic belief status: N(%)	
Atheist, Agnostic, & Unsure	41 (16.3)
Spiritual	68 (27.1)
Religious	133 (53.0)

Measures

For each measure used the Cronbach's coefficient alpha (α) and Mean Inter-item correlation coefficients (Mr) are provided for the current study as applicable. While as a general guideline, α values $\geq .80$ are considered excellent and values $> .70$ are typically acceptable (Hulley et al., 2001), α values are also dependent on the number of items in a scale, particularly when fewer than 10 (Pallant, 2001). Therefore, the Mean Inter-item correlation coefficients (Mr) are also reported for each measure as applicable. Briggs and Cheek (1986) proposed an optimal range of .2 to .4 for Mr s in order to avoid excessive complexity ($< .1$), redundancy, or specificity ($> .5$).

Forgiveness

Participants were administered the short form measure of forgiveness from the Brief Multidimensional Measure of Religiousness/Spirituality collaboratively developed by the Fetzer Institute (1999) and the National Institute on Aging. This measure assesses three single-item trait characteristics of forgiveness: forgiveness of self ("I have forgiven myself for things that I have done wrong"), forgiveness of others ("I have forgiven those who hurt me"), and feeling forgiven by God ("I know that God forgives me"). Responses are given on a 4-point scale ranging from 1 "Never" to 4 "Almost Always." These single-item measures have been used previously in research examining the association between forgiveness and mental health variables in college students (Webb & Brewer, 2010a, 2010b).

Obsessive-Compulsive Symptoms

The Obsessive Compulsive Inventory – Short Form (OCI-R) is an 18-item self-report measure designed to assess obsessive-compulsive symptoms. It results in a total score as well as six symptom-based subscales including: washing, checking, ordering, obsessing, hoarding, and

neutralizing. The OCI-R was found to have good-to-excellent levels of internal consistency, test-retest reliability, as well as convergent validity and was found to successfully differentiate between persons with and without OCD (Foa et al., 2002). This measure has been further validated through confirmatory factor analysis in clinical samples (Huppert et al., 2007) and has been successfully adapted for use with Spanish, Portuguese, French, German, and Icelandic populations (de Souza et al., 2008; Gönner, Leonhart, & Ecker, 2007; Malpica, Ruiz, Godoy, & Gavino, 2009; Smári, Ólason, Eythórsdóttir, & Frölunde, 2007; Zermatten, Van der Linden, Jermann, & Ceschi, 2006). In a study of the psychometric qualities of the OCI-R with college students, the factor structure was confirmed, and it was found to have excellent internal consistency in the form of Cronbach's alpha overall (.88), as well as for the *washing* (.76), *checking* (.76), *ordering* (.84), and *obsessing* (.77) subscales, and moderate-to-good internal consistency for *hoarding* (.68) and *neutralizing* (.61) subscales (Hajcak, Huppert, Simons, & Foa, 2004). Said study also found good-to-excellent test-retest reliability for the OCI-R with college students as well as moderate convergent validity with the Maudsley Obsessive-Compulsive Inventory (Hodgson & Rachman, 1977) but excellent convergent validity with the Padua Inventory-Washington State University Revision (Burns, Keortge, Formea, & Sternberger, 1996). Furthermore, the OCI-R was demonstrated to assess a construct distinct from both depression and pathological worry and hence to have divergent validity (Hajcak et al., 2004). In the current study reliability estimates were in the excellent range for *washing* ($\alpha = .82$; $Mr = .60$) and *ordering* ($\alpha = .86$; $Mr = .66$) and in the adequate range for *obsessing* ($\alpha = .78$; $Mr = .55$), *hoarding* ($\alpha = .75$; $Mr = .50$), *checking* ($\alpha = .75$; $Mr = .50$), and *neutralizing* ($\alpha = .75$; $Mr = .50$).

Locus of Control

Levenson's (1973a, 1974) measure of locus of control was administered. This measure modified Rotter's (1966) original I-E measure in order to better address the multidimensionality of locus of control by having separate scales for *internal* locus of control and control attributed to the external factors of *chance* and *powerful others*. It has 24 items with 8 items per subscale. Although there has been some question regarding the structural validity of Levenson's measure, the three-factor model has received support from multiple confirmatory factor analytic studies (Presson et al., 1997; Wilkinson, 2007). In the present sample reliability estimates for internal ($\alpha = .73$; $Mr = .27$), powerful others ($\alpha = .75$; $Mr = .27$), and chance ($\alpha = .75$; $Mr = .27$) locus of control were all in the acceptable range.

Religiousness

The six-item Lifetime subscale of the Religious Background and Behaviors questionnaire [RBBL] developed by Connors, Tonigan, and Miller (1996) was given to assess life history of religious beliefs and practices. Participants responded to each item using a 3-point scale: 1, "Never," 2, "Yes, in the past but not now," and 3, "Yes, and I still do." Religiousness has been theorized to lead to both greater levels of forgiveness (e.g., Worthington et al., 2001) and psychological health (e.g., Koenig, 2010; Levin, 2010). Therefore, given its basic and consistent empirical association with forgiveness (Fehr et al., 2010), it was therefore statistically controlled for in this study. Previous studies using the RBBL in a college student population have found adequate internal consistency for this subscale (Webb & Brewer, 2010b). In the current study reliability estimates for lifetime religiousness were as follows: $\alpha = .68$ and $Mr = .31$.

Statistical Analysis

In order to examine whether forgiveness is associated with obsessive-compulsive symptom severity and whether this relationship is mediated by locus of control, a series of bivariate and multivariable analyses were conducted. Zero-order associations between demographic characteristics (including religious background and behavior), forgiveness, and obsessive-compulsive symptoms were identified using Pearson correlation coefficients (r). In order to conserve statistical power only demographic variables with significant or near-significant ($p < .10$) associations with locus of control and/or obsessive-compulsive symptoms were retained as covariates in the multivariable analyses. All continuous independent and mediator variables were centered prior to conducting the multivariable analyses (J. Cohen, Cohen, West, & Aiken, 2003).

Specific hypotheses were examined using the Preacher and Hayes (2008a) model of multiple mediation analysis. The Preacher and Hayes method allows for only one independent variable (IV) and one dependent variable (DV) per model; therefore, the effect of each of the three forgiveness dimensions was examined on the seven obsessive-compulsive scales for a total of 21 models, with the three locus of control measures included as mediator variables (MVs) for all analyses. In addition, the two forgiveness variables not being tested in a given analysis, along with demographic variables significant at the bivariate level, were statistically controlled in all analyses. The conceptual and visual interpretation of the multiple mediation analyses allow for the 21 models to be collapsed into 7 models based on the 7 DVs and representing the 3 IVs in context of one another (see Preacher & Hayes, 2008a).

Preacher and Hayes's (2008a) method for testing mediation hypotheses has a number of advantages over other common methodological approaches, including those of Baron and Kenny

(1986) and of Sobel (1982, 1986). Unique advantages of Preacher and Hayes's method include that it clearly tests for an indirect effect, does not require data to be normally distributed, has reduced risk of Type I and Type II errors, and maintains power with smaller samples through bootstrapping (Hayes, 2009; Preacher & Hayes, 2008a, 2008b). The technique developed by Preacher and Hayes also has the added benefit of allowing for multiple mediators to be added to the same model, thus allowing for comparisons to be made between mediators (Preacher & Hayes, 2008a).

Figure 1 illustrates the overall nature of the relationships tested (see Preacher & Hayes, 2008a). Paths a_1 , a_2 , and a_3 represent the effect of the IVs, or forgiveness variables, on the MVs, or locus of control variables, while paths b_1 , b_2 , and b_3 represent the effect of the MVs on the DVs, or OC symptoms. Therefore, the *indirect effect* of forgiveness on OC symptoms is the sum of a_1 , a_2 , a_3 , and b_1 , b_2 , and b_3 , cumulatively represented as ab . Path c is the *total effect* of the IV on the DV and represents both the direct and indirect effect (via the mediating variables) of forgiveness on OC symptoms. The *direct effect* of forgiveness on OC symptoms is represented by path c' , which represents the effect of the IV on the DV minus the effect of the MV, or, $c' = c - ab$.

Several types of possible relationships can be found through multiple mediation testing (see Preacher & Hayes, 2008a). In addition to the total effect (c) and direct effect (c') of the IV on the DV described previously, the relationship between the IV and the DV may be found to be fully mediated, in which case c is significant but c' is not, or partially mediated, where c is reduced but c' remains significant after the inclusion of ab , or there may be an indirect only effect, in which case ab is significant, but not c or c' .

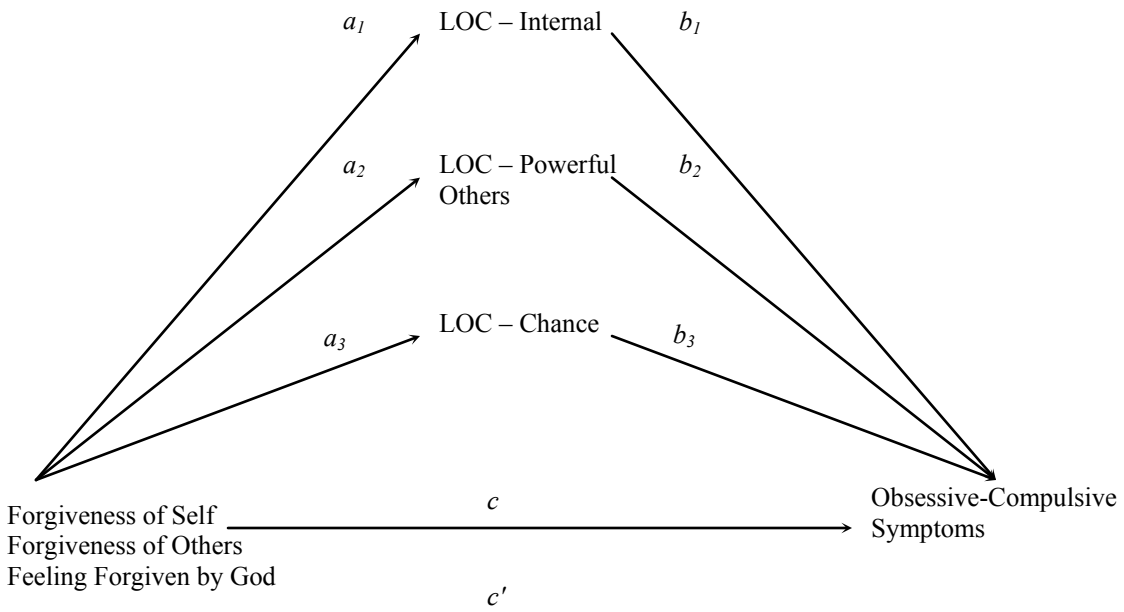


Figure 1. Indirect Effects: General Mediation Model

† $p < .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$; **** $p \leq .0001$

Hypothesis Testing

The *first hypothesis*, that forgiveness will be directly associated with decreased levels of OC symptoms after controlling for significant demographic characteristics, was tested through examining the *direct effect*, or path *c'*, of each forgiveness variable on both overall and specific OC symptoms. The effect of forgiveness of self, forgiveness of others, and feeling forgiven by God on overall OC symptom severity was computed. These relationships were further explored by examining the direct effect of each of the three forgiveness dimensions on each of the six symptom-based subscales.

The *second hypothesis* states that greater internal locus of control will be associated with greater forgiveness and lower OC symptoms, while attributing control to powerful others or to chance will be associated with both lower forgiveness levels and greater obsessive-compulsiveness. The association between forgiveness and LOC was determined through examining the significance of the *a* paths in each analysis that test the association between the measure of forgiveness being analyzed and each of the three locus of control variables. The association between locus of control and OC symptoms was measured through the *b* paths that reflect the direct effect of internal, powerful others, and chance locus of control on the obsessive-compulsive scale examined in a given model. The effect of each control orientation on obsessive-compulsive total scores was examined as was their effect on each of the six symptom subscales.

The *third hypothesis*, that locus of control will mediate the effect of forgiveness on obsessive-compulsive symptoms, was examined through two pathways for each analysis. For each analysis and in the context of assuming the total (*ab*) or at least one specific (e.g., *a₁b₁*) indirect effect to be significant, the direct effect of the IV on the DV, or path *c'*, was compared to

the total effect of the IV on the DV, or path c . If the total effect is significant but the direct effect is not (and $|c'| < |c|$) there is a significant indirect effect as indicated by the bias corrected and accelerated confidence intervals (CIs), this indicates that locus of control has fully mediated the effect of forgiveness on the obsessive-compulsive symptom under investigation. If c and c' are both significant (and $|c'| < |c|$), locus of control may have still partially mediated the effect, and if neither c nor c' is significant, forgiveness may still have had an indirect effect on the OC variable being studied through locus of control, without having a direct effect. Both of these scenarios can be explored through the results of the CIs. If the total indirect effect (ab) of locus of control and/or any of the three specific indirect effect (e.g., a_1b_1) locus of control subscale CIs do not cross zero, one can infer that locus of control partially mediated the forgiveness-OC relationship if paths c and c' are both significant, or can infer that forgiveness had an indirect effect only on the OC variable if neither pathway (c nor c') is significant.

The *fourth hypothesis* states that the significance and strength of relationships will vary according to the dimensions of forgiveness, locus of control, and OC symptoms under investigation. This hypothesis was examined by contrasting the relative number of relevant significant associations between variable subscales or dimensions. For example, forgiveness of self, of others, and feeling forgiven by God were compared to each other based on the number of significant direct (path c') effects on the OC symptom subscales to determine which, if any, forgiveness dimension is most consistently associated with OC symptoms. Likewise, internal, powerful others, and chance locus of control scales were compared to see which orientation has the greatest number of associations with both forgiveness and obsessive-compulsive outcomes. Furthermore, Preacher and Hayes's techniques allow for statistical contrasts to be run that compare the specific indirect effects of each mediator in an analysis, but only to the extent to

which: 1) the specific indirect effects differ in relative size and 2) the mediator variables are not correlated with one another.

CHAPTER 3

RESULTS

Bivariate Associations

In order to examine zero-order associations between study variables a bivariate correlation matrix was constructed (see Table 2). Notable significant associations are described below ($p < .05$, unless indicated otherwise).

Forgiveness and Obsessive-Compulsiveness Variables

There were 21 potential associations between the three forgiveness dimensions and the six OC subscales and the OC total scale. Of these, 17 were significant ($r_s = -.15 - -.33$). *Forgiveness of self* (FS) was negatively correlated with all seven measures of obsessive-compulsiveness, *forgiveness of others* (FO) was negatively correlated with all OC measures except *ordering*, and *feeling forgiven by God* (FFG) was negatively correlated with *washing*, *obsessing*, *neutralizing*, and the *OC total* score but not with *hoarding*, *ordering*, or *checking*.

Locus of Control.

Locus of control was found to have a number of significant bivariate associations with both forgiveness ($r_s = |.16| - |.25|$) and obsessive-compulsive ($r_s = |.18| - |.31|$) variables. *LOC-Internal* was positively correlated with FS and FO but not FFG. *LOC-Powerful others* was significantly negatively associated with *forgiveness of self* and was trending toward significance in regards to *forgiveness of others* ($p < .10$) but was not associated with *feeling forgiven by God*. However, *LOC-Chance* was significantly negatively correlated with all three dimensions of forgiveness. Lastly, both external locus of control as attributed to powerful others and to chance were positively correlated with all OC measures except for *ordering*, and internal locus of

control was found to have significant, positive bivariate associations with all OC scales except for *hoarding* and *ordering*.

Demographic Variables

Demographic variables included in the bivariate analysis include gender (0 = male, 1 = female), years of education, ethnicity (dichotomized; 1 = Caucasian, 2 = other), age, marital status (dichotomized; 1 = single, 2 = other), and lifetime religious beliefs and behaviors. Of these, gender, ethnicity, and religious background had no significant associations with any of the dependent or mediator variables; therefore, they were not included in the multivariable analysis. Age, years of education, and marital status were significantly positively correlated with *LOC-Internal*. Education was trending towards a significant negative correlation ($p < .10$) with *LOC-Chance*, and marital status was also trending toward significance with *OC checking* and *neutralizing* subscales. Years of education, age, and marital status were therefore included as covariates in the multivariable analyses.

Table 2

Bivariate Associations^a and Descriptive Statistics for Dependent Variables

	OCI-R Total	OCI-R Washing	OCI-R Obsessing	OCI-R Hoarding	OCI-R Ordering	OCI-R Checking	OCI-R Neutralizing	LOC- Internal	LOC- Powerful Others	LOC- Chance
Gender	-.03	-.05	-.04	.03	.06	-.03	-.04	.04	.09	-.00
Age	-.10	-.00	-.04	-.02	-.08	-.08	-.07	.21**	-.03	.04
Education	-.04	-.06	-.04	-.01	-.05	-.01	-.07	.16**	.02	-.12 [†]
Ethnicity	-.08	.01	-.06	-.07	-.04	.00	-.03	-.02	-.10	-.08
Marital Status	-.07	-.03	-.01	-.01	-.04	-.11 [†]	-.11 [†]	.19**	.02	.07
RBB –Lifetime ^b	.01	.06	-.06	.01	-.03	.03	-.03	-.01	.08	.03
Forgiveness of Self	-.31***	-.24***	-.33***	-.26***	-.18**	-.23***	-.22**	.19**	-.22**	-.25***
Forgiveness of Others	-.26***	-.25***	-.25***	-.17*	-.07	-.23***	-.26***	.16*	-.11 [†]	-.19**
Feeling Forgiven by God	-.16*	-.15*	-.18**	-.03	-.06	-.10	-.18**	.09	-.03	-.16*
LOC-Internal	-.22**	-.22**	-.24***	-.10	-.07	-.20**	-.21**	--	-.06	-.07
LOC-Powerful Others	.24***	.23**	.18**	.27**	.05	.18**	.20**	-.06	--	.64***
LOC-Chance	.29***	.30***	.30***	.29***	.06	.19**	.23**	-.07	.64***	--
<i>M</i>	19.00	2.67	3.01	3.89	4.17	3.07	2.30	31.21	20.25	19.27
<i>(SD)</i>	(13.35)	(2.81)	(2.87)	(2.68)	(3.12)	(2.73)	(2.70)	(7.92)	(8.43)	(8.16)

^a n = 213–241^b RBB – Lifetime = Religious Background and Behaviors – Lifetime

Gender: 0 = male, 1 = female; Education = year in college; Ethnicity: 1 = Caucasian, 2 = Other; Marital Status: 1 = Single, 2 = Other

Effect size (strength of association) of r: .10=small, .30=medium, .50=large (Cohen, 1988)

Multivariable Associations

Each of the models presented (Figures 2 through 7) represents the consolidated results of three analyses combining the forgiveness dimensions (Preacher & Hayes, 2008a). Each figure presents the unstandardized regression coefficients and the p values for each segment of the significant models. None of the three forgiveness-based mediation models with the *ordering* subscale were significant ($R^2 = .05$, $p = .3932$ for each of the three models); therefore, those results were not summarized in figure form. Additionally, Table 3 lists 95% Bias Corrected and Accelerated Confidence Intervals (CI) for each indirect pathway, including the total indirect effect and specific indirect effects of the mediators in each of the 21 mediation analyses, and Table 4 provides a narrative summary of the mediation analyses. Although the overall models including FFG were all statistically significant with the exception of *ordering, feeling forgiven by God* was not found to be associated with any of the measures of OC symptoms, nor with the total OCIR score or with any of the mediating variables. Therefore, analyses including *feeling forgiven by God* as the independent variable are not discussed in the narrative presentation to follow. Lastly, none of the specific indirect effects were observed to be significantly different from one another (vs.₁, vs.₂, or vs.₃).

Table 3

Indirect Effects between Forgiveness and Obsessive-Compulsive Symptoms

	Forgiveness of Self			Forgiveness of Others			Feeling Forgiven by God		
	Point Estimate	BCa 95% CI Lower	BCa 95% CI Upper	Point Estimate	BCa 95% CI Lower	BCa 95% CI Upper	Point Estimate	BCa 95% CI Lower	BCa 95% CI Upper
Forgiveness and OCIR – Total Score (n=179) ^a									
<i>ab</i>	-.82	-2.08	.01	-.49	-1.46	.12	-.25	-1.21	.55
<i>a₁b₁</i>	-.22	-.97	.06	-.25	-1.04	.06	.01	-.34	.40
<i>a₂b₂</i>	-.14	-1.01	.56	-.03	-.48	.16	.02	-.20	.49
<i>a₃b₃</i>	-.47*	-1.57	-.02	-.21	-1.01	.15	-.28	-1.20	.15
vs. ₁	-.08	-.95	.78	-.23	-1.03	.21	-.02	-.54	.40
vs. ₂	.25	-.45	1.26	-.04	-.86	.68	.28	-.21	1.28
vs. ₃	.33	-.67	1.90	.19	-.25	1.05	.30	-.24	1.13
Forgiveness and OCIR – Washing Symptoms (n=182) ^b									
<i>ab</i>	-.20*	-.52	-.01	-.12	-.36	.02	-.07	-.32	.11
<i>a₁b₁</i>	-.06	-.24	.01	-.06	-.25	.01	.00	-.09	.10
<i>a₂b₂</i>	-.02	-.26	.13	-.00	-.11	.04	.00	-.05	.08
<i>a₃b₃</i>	-.12*	-.38	-.01	-.06	-.23	.03	-.07	-.33	.02
vs. ₁	-.04	-.22	.21	-.06	-.24	.04	-.00	-.13	.10
vs. ₂	.06	-.11	.33	-.01	-.19	.16	.08	-.05	.33
vs. ₃	.10	-.13	.45	.05	-.05	.26	.08	-.04	.32
Forgiveness and OCIR – Obsessing Symptoms (n=183) ^c									
<i>ab</i>	-.17	-.44	.04	-.13	-.37	.01	-.10	-.33	.10
<i>a₁b₁</i>	-.07	-.23	.00	-.07	-.25	.00	.01	-.09	.10
<i>a₂b₂</i>	.06	-.08	.33	.01	-.03	.15	-.01	-.14	.03
<i>a₃b₃</i>	-.16*	-.43	-.02	-.07	-.28	.05	-.10	-.32	.05
vs. ₁	-.12	-.39	.03	-.08	-.25	.02	.01	-.10	.14
vs. ₂	.09	-.09	.38	.00	-.21	.20	.10	-.06	.33
vs. ₃	.22	-.02	.66	.08	-.06	.37	.09	-.09	.34
Forgiveness and OCIR – Hoarding Symptoms (n=182) ^d									
<i>ab</i>	-.21*	-.43	-.03	-.08	-.29	.07	-.05	-.28	.13
<i>a₁b₁</i>	-.01	-.12	.04	-.01	-.13	.03	.00	-.03	.05
<i>a₂b₂</i>	-.09	-.30	.06	-.01	-.15	.04	.01	-.04	.15
<i>a₃b₃</i>	-.11*	-.37	-.00	-.05	-.24	.03	-.07	-.28	.03
vs. ₁	.08	-.09	.29	.00	-.11	.11	-.01	-.14	.06
vs. ₂	.10	-.02	.36	.04	-.08	.22	.07	-.04	.28
vs. ₃	.03	-.23	.38	.04	-.06	.25	.08	-.06	.24

^a Full DV Model (FDVM) $R^2 = .21^{****}$; ^b FDVM $R^2 = .17^{***}$; ^c FDVM $R^2 = .24^{****}$; ^d FDVM $R^2 = .16^{***}$; ^e FDVM $R^2 = .13^{**}$; ^f FDVM $R^2 = .16^{***}$

BCa 95% CI = Bias Corrected and Accelerated 95% Confidence Interval

ab = Total Indirect Effect

a₁b₁ = Specific Indirect Effect through Internal Locus of Control

a₂b₂ = Specific Indirect Effect through Powerful Others Locus of Control

a₃b₃ = Specific Indirect Effect through Chance Locus of Control

vs.₁ = *a₁b₁* versus *a₂b₂*

vs.₂ = *a₁b₁* versus *a₃b₃*

vs.₃ = *a₂b₂* versus *a₃b₃*

[†] $p < .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$; **** $p \leq .0001$

5,000 bootstrap samples

Table 3, continued

Indirect Effects between Forgiveness and Obsessive-Compulsive Symptoms

	Forgiveness of Self			Forgiveness of Others			Feeling Forgiven by God		
	Point Estimate	BCa 95% CI Lower	BCa 95% CI Upper	Point Estimate	BCa 95% CI Lower	BCa 95% CI Upper	Point Estimate	BCa 95% CI Lower	BCa 95% CI Upper
Forgiveness and OCIR – Checking Symptoms (n=183) ^e									
<i>ab</i>	-.11	-.33	.09	-.07	-.27	.04	-.01	-.18	.14
<i>a₁b₁</i>	-.05	-.23	.01	-.05	-.23	.01	.00	-.06	.10
<i>a₂b₂</i>	-.03	-.22	.16	-.00	-.12	.04	.00	-.05	.11
<i>a₃b₃</i>	-.03	-.22	.07	-.02	-.19	.03	-.02	-.20	.05
vs. ₁	-.03	-.24	.18	-.05	-.23	.03	-.00	-.11	.10
vs. ₂	-.02	-.20	.16	-.04	-.21	.08	.02	-.08	.20
vs. ₃	.01	-.27	.33	.01	-.10	.19	.02	-.09	.17
Forgiveness and OCIR – Neutralizing Symptoms (n=182) ^f									
<i>ab</i>	-.14	-.36	.01	-.09	-.30	.03	-.04	-.27	.12
<i>a₁b₁</i>	-.04	-.19	.02	-.04	-.23	.02	-.00	-.05	.10
<i>a₂b₂</i>	-.02	-.20	.15	-.00	-.12	.04	.00	-.05	.10
<i>a₃b₃</i>	-.08	-.32	.04	-.04	-.24	.04	-.05	-.28	.05
vs. ₁	-.02	-.24	.18	-.04	-.23	.06	.00	-.10	.10
vs. ₂	.04	-.11	.28	-.00	-.17	.16	.05	-.06	.31
vs. ₃	.06	-.20	.44	.04	-.07	.30	.05	-.09	.25

^a Full DV Model (FDVM) $R^2 = .21^{****}$; ^b FDVM $R^2 = .17^{***}$; ^c FDVM $R^2 = .24^{****}$; ^d FDVM $R^2 = .16^{****}$; ^e FDVM $R^2 = .13^{**}$; ^f FDVM $R^2 = .16^{***}$
 BCa 95% CI = Bias Corrected and Accelerated 95% Confidence Interval

ab = Total Indirect Effect

a₁b₁ = Specific Indirect Effect through Internal Locus of Control

a₂b₂ = Specific Indirect Effect through Powerful Others Locus of Control

a₃b₃ = Specific Indirect Effect through Chance Locus of Control

vs.₁ = *a₁b₁* versus *a₂b₂*

vs.₂ = *a₁b₁* versus *a₃b₃*

vs.₃ = *a₂b₂* versus *a₃b₃*

[†] $p < .10$; ^{*} $p \leq .05$; ^{**} $p \leq .01$; ^{***} $p \leq .001$; ^{****} $p \leq .0001$

5,000 bootstrap samples

Table 4

Summary of Mediation Analyses

	OCIR-Total			OCIR-Washing			OCIR-Obsessing			OCIR-Hoarding			OCIR-Ordering			OCIR - Checking			OCIR - Neutralizing			
	I	PO	C	I	PO	C	I	PO	C	I	PO	C	I	PO	C	I	PO	C	I	PO	C	
Forgiveness of Self	-	--	Sig.	Combined effect			-	--	Sig.	Combined effect			-	--	Sig.	Model nonsignificant	-	--	-	-	--	-
	Partial mediation			Full mediation			Partial mediation			Partial mediation						Direct effect only			Total effect only			
Forgiveness of Others	-	--	-	-	--	-	-	--	-	-	-	-	--	-	-	Model nonsignificant	-	--	-	-	--	-
	Direct effect only			Direct effect only			Total effect only									Direct effect only			Direct effect only			
Feeling Forgiven by God	-	--	-	-	--	-	-	--	-	-	-	-	--	-	-	Model nonsignificant	-	--	-	-	--	-

I = Locus of Control - Internal
 PO = Locus of Control – Powerful Others
 C = Locus of Control - Chance

Results for Model Including OCIR-Total Score.

Table 3 and Figure 2 include the results of analyses conducted with the OCIR-total score as the outcome variable. *Forgiveness of self* and *forgiveness of others* each exerted a significant total effect (*c*) and a significant direct effect (*c'*) on overall obsessive-compulsive symptoms (see Figure 2). In regards to FS, while the total indirect effect (*ab*) was nonsignificant, *LOC-Chance* was found to exert a specific indirect effect (a_3b_3), as the CI for the point estimate did not cross zero (see Table 3). Therefore, the effect of forgiveness of self on overall obsessive-compulsive symptoms was partially mediated by *LOC-Chance*. While FO had a total and direct effect on the *OCIR total* score, this effect was not mediated by the locus of control measures either combined or individually (see Table 3). In sum, forgiveness of others had a direct only effect on the OCIR total score.

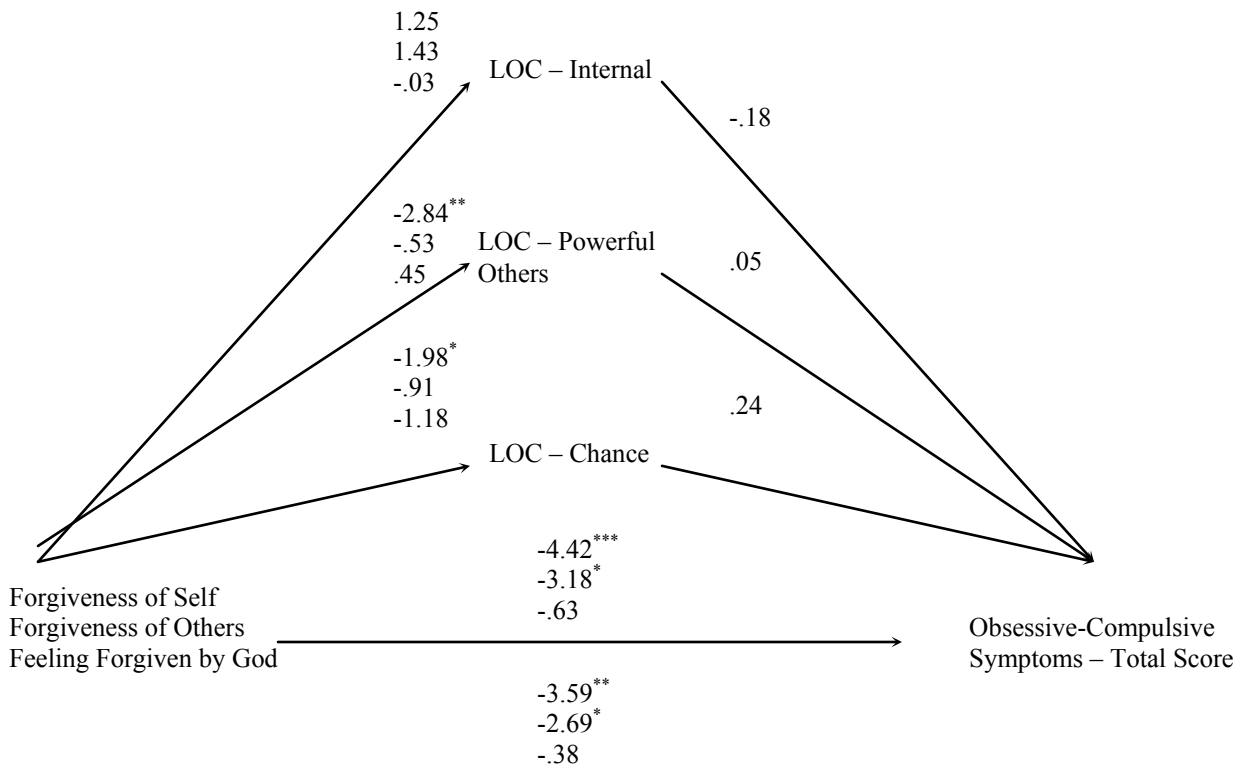


Figure 2. Indirect Effects Model: Forgiveness and OCIR – Total Score

† $p < .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$; **** $p \leq .0001$

Results for Models with OCIR Subscales

Table 3 and Figures 3 through 7 include the results of analyses run with OCIR subscales as outcome variables with the exception of the ordering subscale for which the overall model was nonsignificant. *Forgiveness of self* had a total (c) and/or direct effect (c') on *washing*, *obsessing*, *hoarding*, *checking*, and *neutralizing* subscales but not on *ordering*, while *forgiveness of others* had a total (c) and/or direct effect (c') on *washing*, *obsessing*, *checking*, and *neutralizing* subscales but not on *hoarding* or *ordering* (see Table 4 for summary). The effect of FS on specific symptom subscales was either fully or partially mediated by the combined locus of control scales (ab) for *washing* and *hoarding* subscales and was specifically mediated (either fully or partially) by *LOC-Chance* (a_3b_3) for *washing*, *obsessing*, and *hoarding* subscales. The effects of FO on the OC subscales were not mediated by locus of control (i.e., the total indirect and/or specific indirect effects were nonsignificant).

Washing. *Forgiveness of self* and *forgiveness of others* were both found to have a significant total effect (c) on washing symptoms (see Figure 3). However, for FS this effect was no longer significant (c') after the inclusion of the locus of control scales as potential mediators. There was a total indirect effect of the combined LOC scales (ab) that was statistically different from zero (i.e., $c - c' \neq 0$, or $ab \neq 0$; see Table 3). In regards to the mediating effects of specific LOC scales, *LOC-Chance* was the only potential mediator found to have a specific indirect effect on washing symptoms. Therefore, the effect of forgiveness of self on washing symptoms was fully mediated by the combined indirect effect of locus of control and specifically through control attributed to chance. For FO, although the direct effect remained significant (c'), the total indirect effect (ab) and the specific indirect effects (a_1b_1 , a_2b_2 , and a_3b_3) were nonsignificant.

Therefore, forgiveness of others maintained a direct effect (*c'*) on *washing* that was not mediated by locus of control.

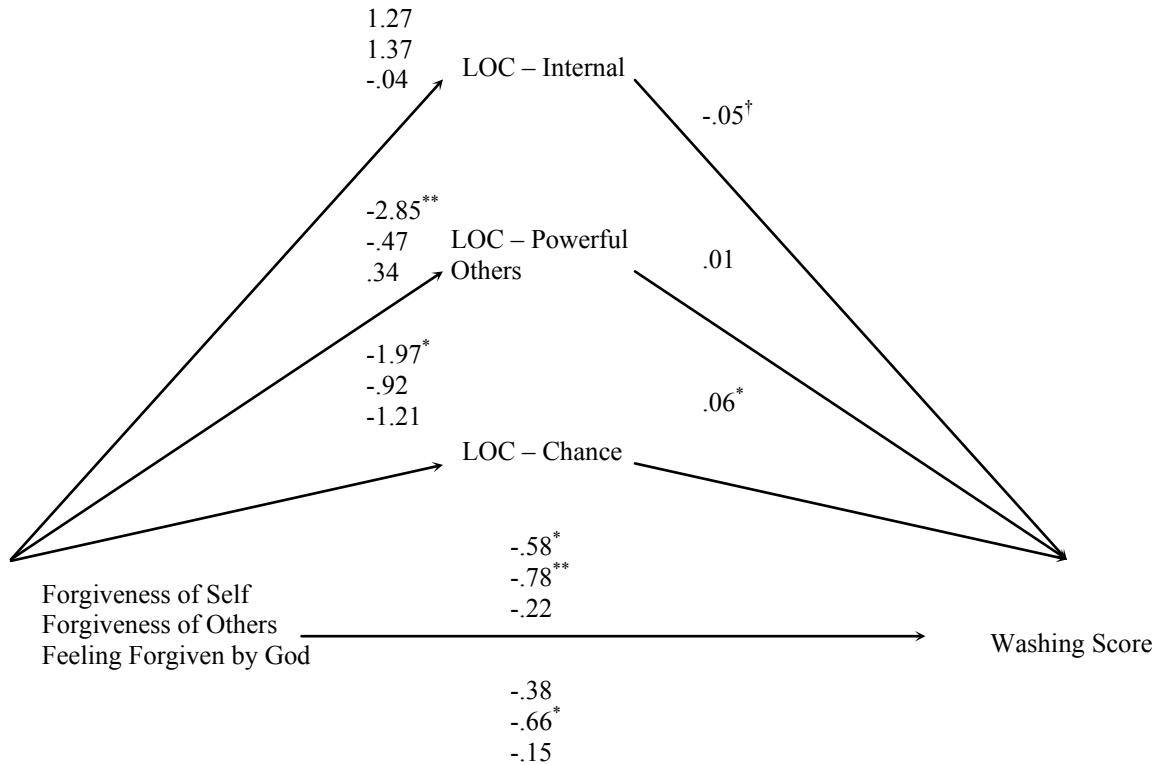


Figure 3. Indirect Effects Model: Forgiveness and OCIR – Washing Score

[†] $p < .10$; ^{*} $p \leq .05$; ^{**} $p \leq .01$; ^{***} $p \leq .001$; ^{****} $p \leq .0001$

Obsessing. In regards to obsessing symptoms both FS and FO again exerted a total effect (*c*; see Figure 4). Although there was not a combined indirect effect (*ab*) of locus of control on obsessing symptoms in any of the analyses, FS had a specific indirect effect on *obsessing* through *LOC-Chance* (see Table 3). Additionally, FS retained its significant association with obsessing after the inclusion of the mediators (*c'*). Therefore, the effect of forgiveness of self on obsessing symptoms was partially mediated by *LOC-Chance*. Although the direct effect (*c'*) of FO was marginally significant ($p = .08$), the total indirect effect (*ab*) and the specific indirect

effects (a_1b_1 , a_2b_2 , and a_3b_3) were nonsignificant. Hence, forgiveness of others maintained a marginally significant direct effect (c') on obsessing that was not mediated by locus of control.

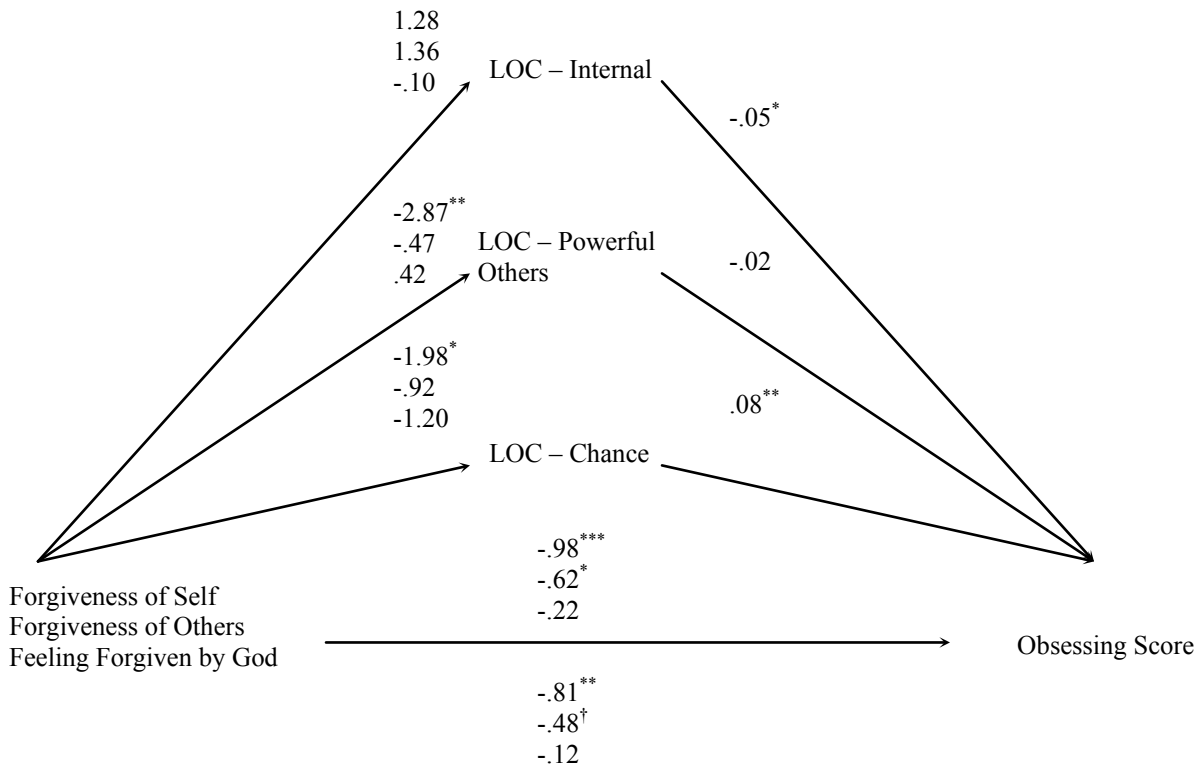


Figure 4. Indirect Effects Model: Forgiveness and OCIR – Obsessing Score

† $p < .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$; **** $p \leq .0001$

Hoarding. *Forgiveness of self* retained significant total (c) and direct (c') effects on hoarding symptoms (see Figure 5). Additionally, FS had a significant indirect (ab) effect on hoarding through combined locus of control scores, and again, *LOC-Chance* was the only locus of control dimension found to have a specific indirect effect on hoarding (see Table 3). Forgiveness of others was not significantly associated with hoarding scores directly or indirectly.

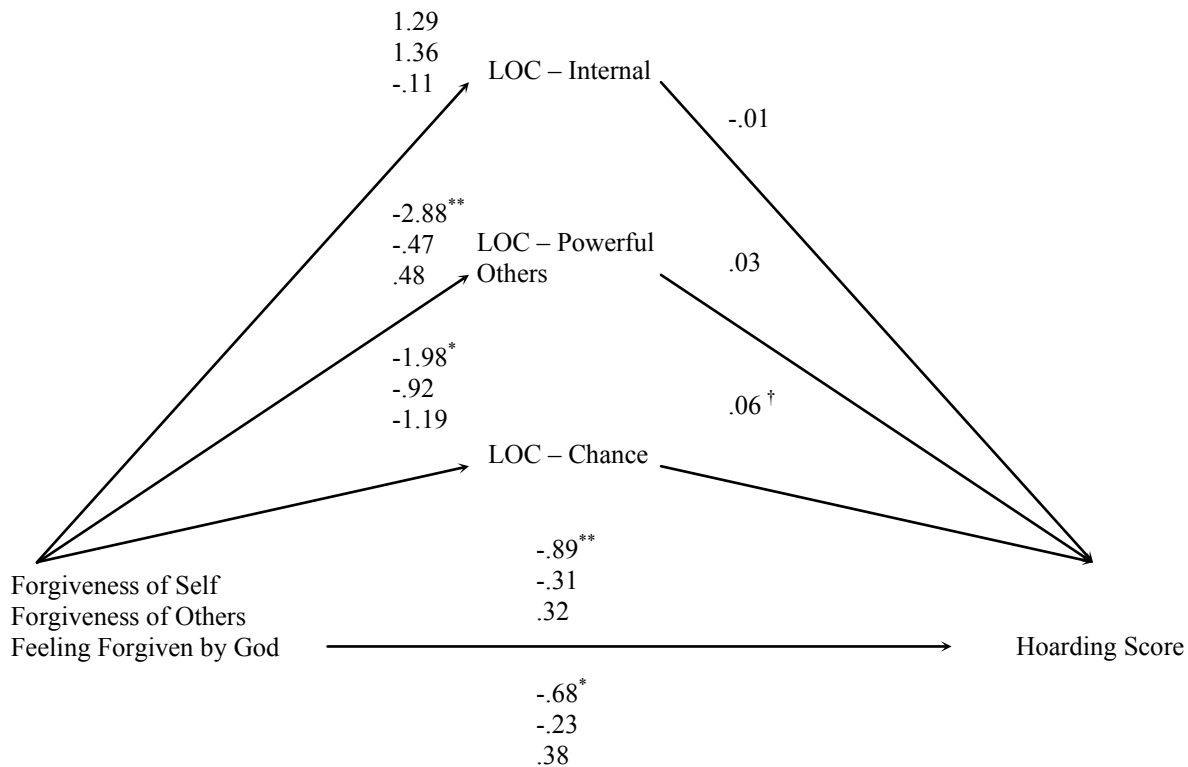


Figure 5. Indirect Effects Model: Forgiveness and OCIR – Hoarding Score

† $p < .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$; **** $p \leq .0001$

Ordering, Checking, and Neutralizing. All models with the *ordering* subscale as an outcome were nonsignificant. None of the associations between forgiveness and checking or neutralizing symptoms were mediated by any of the locus of control scores. *Forgiveness of self* and *forgiveness of others* both had significant total and direct effects on checking symptoms (see Figure 6). FS had a significant total effect (c) on neutralizing symptoms; however, this effect was no longer significant after the inclusion of the mediators (c' ; see Figure 7). Forgiveness of others maintained a direct effect on neutralizing scores.

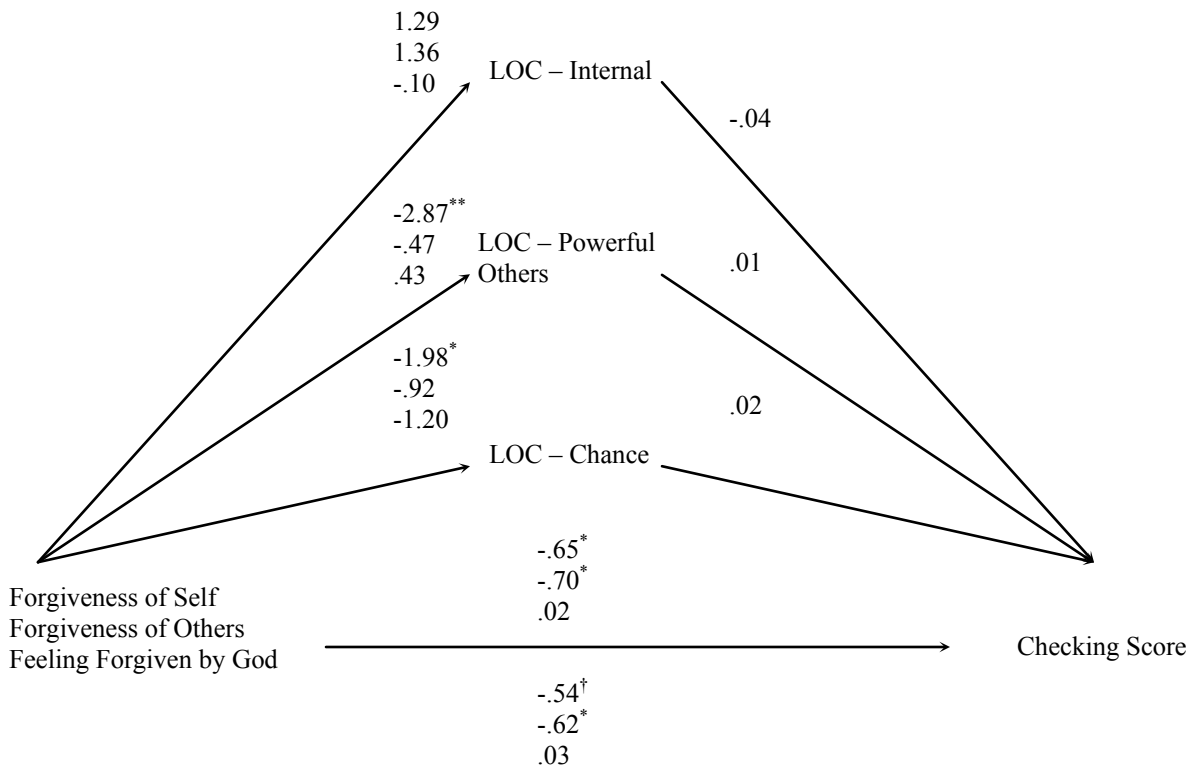


Figure 6. Indirect Effects Model: Forgiveness and OCIR – Checking Score

† $p < .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$; **** $p \leq .0001$

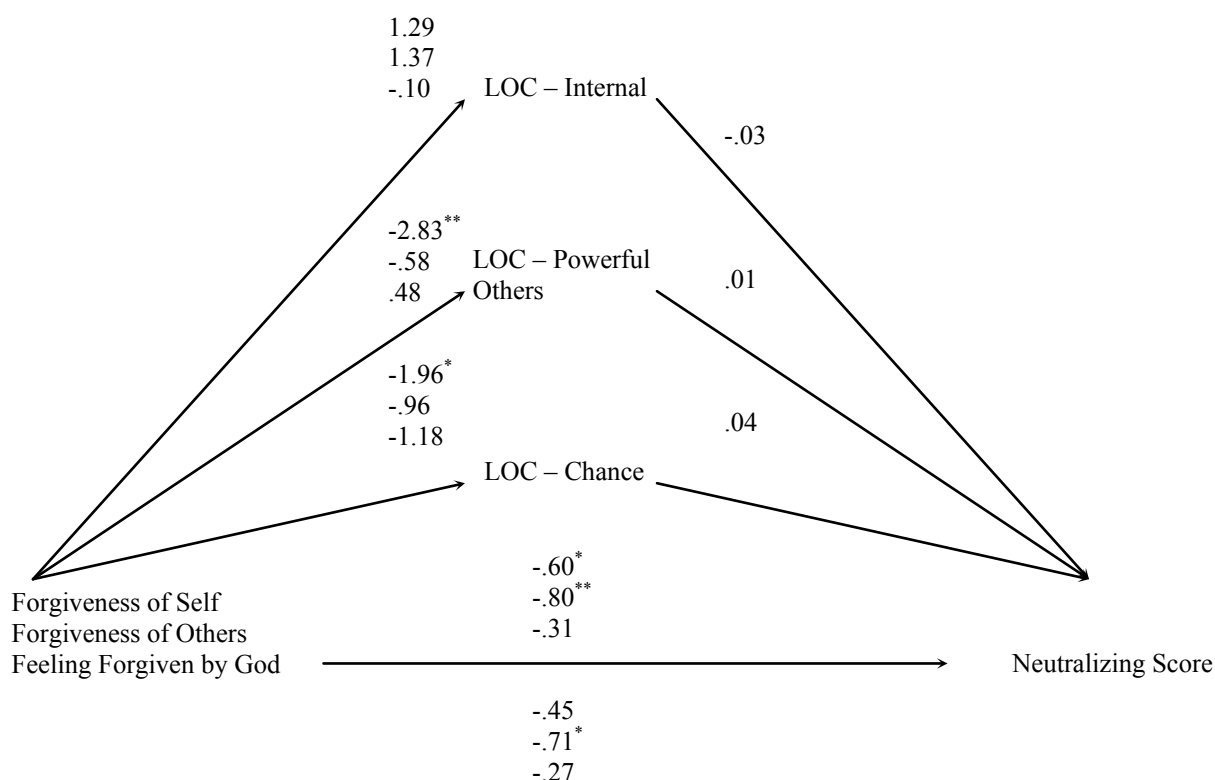


Figure 7. Indirect Effects Model: Forgiveness and OCIR – Neutralizing Score

† $p < .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$; **** $p \leq .0001$

Summary of Mediation Results

As indicated in Table 4, forgiveness of self was found to be significantly, directly associated with overall obsessive-compulsive symptoms and with five of the six OC subscales. For both overall OCIR scores and for three of the six subscales (specifically *washing*, *obsessing*, and *hoarding*), this effect was partially (or, as the case for *washing*, fully) mediated by *LOC-Chance*. For the *washing* and *hoarding* subscales there was a mediated effect of the three locus of control scales combined. *Forgiveness of others* was found to be directly associated with overall OC symptoms, as well as directly associated with *washing*, *checking*, and *neutralizing*, and had a total effect only on *obsessing*. The effect of *forgiveness of others* on OC symptoms was not mediated by any of the three LOC scales collectively or individually. Finally, although

all of the overall models except ordering that included FFG were significant, *feeling forgiven by God* does not appear to have a direct or an indirect impact on obsessive-compulsive symptoms in this sample.

CHAPTER 4

DISCUSSION

Generally, it was found that forgiveness of self and forgiveness of others, but not feeling forgiven by God was associated with overall obsessive-compulsive symptoms and with many of the symptom subscales. Locus of control played a very limited role as a mediator and was confined to associations with forgiveness of self. This section begins by evaluating the four hypotheses in light of the results, next discusses how the results relate to previous findings, and finally reviews limitations of this study, as well as applications of the findings and areas for future research.

Evaluation of Hypotheses

Hypothesis 1

The first hypothesis stated that forgiveness will be associated with lower levels of obsessive-compulsive symptoms. At the bivariate level (see Table 2), FS, FO, and FFG were significantly negatively associated with the OC total score and most of the OC subscales. However, a more accurate indication of relationships can be obtained through examination of the direct effect results of the mediation analyses (see Figures 2 through 7). As described earlier, the c and c' scores for each analysis represent unstandardized regression coefficients that control for relevant demographic characteristics and the two other forgiveness dimensions; c' (direct effect) also removes the effect of the mediators. In these regression analyses FS had a direct effect that was either significant or trending towards significant on the *total*, *obsessing*, *hoarding*, and *checking* scales. Similarly, FO had a direct effect on the *total*, *washing*, *obsessing*, *checking*, and *neutralizing* scales. In sum, my first hypothesis appears to be partially supported. Forgiveness

of self and forgiveness of others generally appear to be negatively associated with obsessive-compulsive symptoms, whereas feeling forgiven by God does not.

Hypothesis 2

The second hypothesis is in regard to the relationship between locus of control and the independent and dependent variables. Specifically, I predicted that internal locus of control would be positively associated with forgiveness and negatively associated with OC symptoms, while external locus of control attributed to powerful others and to chance would have associations in the opposite direction. Generally, examination of the multivariable, individual pathways (i.e., unstandardized regression coefficients, e.g., of a_1 and b_1 , controlling for the other two forgiveness variables and/or demographic variables) of the mediation analyses (see Figures 2 through 7) indicated that the significant associations between LOC and forgiveness seem to be limited to between forgiveness of self and the two measures of external LOC. The connection between LOC and OC symptoms is even more tenuous, as none of the three LOC dimensions were significantly associated with overall obsessive-compulsiveness in the regression analyses. However, LOC did have some associations with specific OC subscales. Specifically, LOC-Internal may have an association with *obsessing* and possibly with *washing*, and LOC-Chance may impact *washing*, *obsessing*, and possibly *hoarding*.

Hypothesis 3

The third hypothesis states that locus of control will mediate the relationship between forgiveness and obsessive-compulsive symptoms. This hypothesis was supported to a limited degree in the context of forgiveness of self but was not supported in the context of forgiveness of others or feeling forgiven by God (see Table 3 for analysis and Table 4 for narrative summary). LOC-Chance partially mediated the associations found between FS and total obsessive-

compulsive scores, as well as *obsessing* and *hoarding* symptoms, and fully mediated the association with *washing* symptoms. Furthermore, LOC-Chance was the only individual LOC scale that was found to be a significant mediator; while a significant total indirect effect, or the three LOC scales combined together as a whole, was observed for both the *washing* and *hoarding* subscales, LOC-Internal and LOC-Powerful others were never observed to be significant mediators individually.

Hypothesis 4

The fourth and final hypothesis stated that the relative number and strength of associations between independent, dependent, and mediator variables will vary. That is, for example, not all IVs were expected to be associated with all DVs. Although the significance of these differences were not statistically tested in this study, it does appear that the effect of different forgiveness dimensions on obsessive compulsive symptoms, the specific symptoms impacted by forgiveness, as well as the role of locus of control as a mediator of these associations varies according to the dimensions or subscales examined. In regards to forgiveness, while FS and FO were consistently associated with obsessive-compulsive symptoms, FFG did not appear to be relevant to obsessive-compulsiveness in this sample. While FS was associated with one more subscale compared to FO, this difference is not sufficient to conclude that forgiveness of self has a stronger impact on OC symptoms compared to FO without additional statistical analyses. The dimensions of forgiveness also differed in their associations with LOC. FS was the only forgiveness dimension related to LOC and was associated with external LOC (i.e., Chance and Powerful others) in the regression analyses of specific pathways. The LOC dimensions also differed in terms of their relation to both forgiveness and OC symptoms. LOC-Chance had the most associations with OC symptoms compared to the other LOC dimensions

measured and was the only LOC subscale to mediate the forgiveness-OC symptom association, and only did so in the context of FS. In regards to OC symptoms while the overall total score was not associated with LOC and the ordering subscale appeared not to play a role in *any* of the relationships examined in this study, the obsessing subscale appeared to be most consistently associated with LOC. Further, it appears that while the associations involving FO appear to be direct in nature those involving FS appear to operate at least partially via an association with LOC-Chance.

Summary of Hypotheses Evaluation

For all of the hypotheses the degree of support found was dependent on the dimension of each variable examined. The first hypothesis, that greater forgiveness would be associated with lower OC symptoms, was generally supported in the context of forgiveness of self and forgiveness of others but not feeling forgiven by God. Regarding my second hypothesis while broad associations were observed at the bivariate level of analysis, in the multivariable regression analyses of specific pathways the only associations found were between: 1) FS and both LOC-Powerful others and LOC-Chance, 2) LOC-Internal and *obsessing* (and possibly *washing*), and 3) LOC-Chance and *washing* and *obsessing* (and possibly *hoarding*). Similarly, results supporting the third hypothesis were limited to particular subscales, as LOC-Chance was the only LOC dimension found to have a specific mediating effect and only in the context of forgiveness of self. Finally, the fourth hypothesis seemed to be supported, in that the pattern of associations among study variables reflected relative differences based on the dimensions of forgiveness, LOC, and obsessive-compulsiveness under examination.

Implications of Findings

Forgiveness and OCD

The current finding that forgiveness of self and forgiveness of others (but not feeling forgiven by God) were generally negatively associated with OC symptoms is in line with the previous results of the few studies that have included forgiveness and obsessive-compulsive variables. Additionally, this result is congruent with the more extensive literature linking forgiveness with lower levels of anxiety symptoms in general.

Previous research on forgiveness and OC symptoms. As discussed previously, there have been only two published empirical articles that examined the association between forgiveness and OC-related variables. Webb et al. (2009) examined the longitudinal connections between forgiveness and a number of mental health symptoms in participants seeking outpatient treatment for alcoholism. In the context of OC symptoms they found that while FS had the greatest number of associations with OC symptoms, associations involving FO were very limited and, as in the current study, associations involving feeling forgiven by God were nonexistent. Such results are generally congruent with the current findings and suggest that the associations found between forgiveness and OC symptoms may extend beyond college students to clinical samples. However, the findings of Webb et al. did differ somewhat in that their effect seemed to be more consistent for FS, while in our sample FS and FO appeared to have a relatively equal impact on OC symptoms. There are a number of possible reasons for this discrepancy in results. It is possible that the relative strength of the impact of forgiveness of self and of others on OC symptoms was stable in both samples, but the current study may have been more sensitive to finding an effect, and so detected the weaker association between FO and OC symptoms. While Webb et al. used the same measure of forgiveness as the current study, they measured OC

symptoms through a subscale of the BSI, which is not as thorough and possibly not as sensitive as the OCI-R. Therefore, it is possible that their study only detected the stronger associations with FS, while the present study found associations of OC symptoms with both FS and FO. Alternatively, it is possible that forgiveness of others is more closely associated with OC symptoms in a college sample compared to those seeking treatment for alcoholism. Forgiveness of self has been argued and supported empirically to be particularly relevant for recovery from substance abuse or dependence (e.g., Webb, Hirsch, & Toussaint, 2010), so it may have greater weight for those in the recovery process compared to its importance for otherwise healthy college students.

The second study to examine forgiveness and OC-related variables was conducted by Flannelly et al. (2010). These authors examined the associations between psychiatric symptoms, including obsessive-compulsiveness, and several perceptions of God, including as “approving and forgiving” in a community sample. Although their findings are only relevant to this study to the extent that “perceiving God as approving and forgiving” is analogous to “feeling forgiven by God”, the findings were congruent in that no associations were found between either perceiving God as approving and forgiving (Flannelly et al.) or feeling forgiven by God (the current study) and obsessive-compulsive symptoms.

The present study was the first to begin with the stated goal of specifically examining the association between forgiveness and OC symptoms (as compared to examining this association as one of many dimensions of psychological health), and one of very few to examine the connections between forgiveness and OC-related variables. However, the current finding that forgiveness of self and of others were consistently related to obsessive-compulsiveness can also be understood in the context of the literature associating forgiveness with anxiety-related

outcomes. While there is a body of evidence associating forgiveness of self and of others with anxiety (e.g., Maltby et al., 2001; Orcutt, 2006; Seybold et al., 2001), the only study to examine the associations between feeling forgiven by God and anxiety found no significant associations between the two constructs (Webb et al., 2009). While previous research on FFG and mental health is somewhat limited, it appears that our general finding of a significant effect of forgiveness of self and others but not feeling forgiven by God extends beyond obsessive-compulsiveness to anxiety symptoms in general.

Previous research on the effect of forgiveness dimensions on mental health. While forgiveness of self and forgiveness of others were *both* reliably associated with a variety of OC variables in the present study, this was not the case for feeling forgiven by God. As discussed previously, this is generally in line with other research on forgiveness's impact on both OC and anxiety symptoms. However, in terms of the effect of forgiveness on psychological health outcomes in general, forgiveness of self has often (e.g., Maltby et al., 2001; Toussaint et al., 2008; Webb & Brewer, 2010b; Webb, Robinson, Brower, & Zucker, 2006) but *not always* (e.g., Webb & Brewer, 2010a) been found to be the most salient. Hence, the relative importance of forgiveness dimensions to mental health is unclear.

One example of this that is particularly relevant to the findings reported herein is a study conducted by Webb, Hirsch, Conway-Williams, and Brewer (2010). These authors used a subset of the same sample used in the current study to assess the effect of forgiveness on mental health outcomes and found somewhat different results. Specifically, Webb et al. narrowed down the sample to those who were likely to be hazardous or harmful drinkers ($n= 126$) and examined the effects of forgiveness of self, of others, and feeling forgiven by God on alcohol-related variables as mediated by mental health status and social support. Generally, they found that forgiveness of

self was associated with several alcohol-related outcomes indirectly via mental health status, while feeling forgiven by God maintained several direct relationships with alcohol-related outcomes that were not mediated by either mental health status or social support, and finally, forgiveness of others was not directly or indirectly associated with alcohol problems.

Considering Webb et al. and the current study together, both of which used the same measures of forgiveness, while FS was relevant in both samples, the associations involving FO and FFG were reversed. That is, in the current study FO was associated and FFG was not, whereas in Webb et al. FFG was associated and FO was not.

There are a number of possible reasons that different aspects of forgiveness may have been found to be influential between these two studies. One is that the different outcome variables used, namely, alcohol problems and obsessive-compulsive symptoms, are impacted differently by forgiveness. That is, while forgiveness of self appears to be relevant both for the experience of alcohol problems and OC symptoms, the tendency to develop prosocial responses to others after an offense may impact the tendency to obsess and have compulsions, while feeling that God has forgiven oneself for past offenses may be especially important for not abusing alcohol. Alternatively, it may be that the subsample used in Webb et al.'s study, a group of students likely to be hazardous or harmful drinkers, places particular importance on feeling forgiven by God that is not experienced to the same degree by the overall college student population. While, ultimately, the nature of these relationships is still unknown, future research may aim to explore patterns in how different forgiveness dimensions are related to specific symptom groups and/or to different populations.

Relative differences in OC symptom relationships with forgiveness. Just as the relative impact of forgiveness dimensions differed, there were also some relative differences

found between OC symptoms in terms of their relationships with forgiveness, although generally these associations were quite consistent. FS was associated with overall OC symptoms and all subscales except *ordering*, FO was associated with overall and specific OC symptoms except *ordering* and *hoarding*, and FFG was not associated with any measure of obsessive-compulsiveness. Hoarding has been increasingly recognized to be somewhat distinct from other dimensions of obsessive-compulsiveness and has been recommended to be its own disorder, distinct from OCD, in the upcoming DSM-V (Mataix-Cols et al., 2010). Therefore, it is possible that hoarding is maintained by different processes and has different relations with other health-related variables including forgiveness of others as compared to other OC symptoms.

Ordering was the only subscale for which the overall mediation models were not significant. There are a number of reasons this may be the case. First, it is plausible that forgiveness and locus of control are simply not related to the degree to which one needs order. Alternatively, it is possible that high scores on the ordering subscale are not reflective of pathology per se. The subscale's questions reflect the extent to which the respondent prefers things to be arranged in a particular order and may not fully reflect one's distress due to a lack of order. Therefore, high scores on this subscale may not reflect a clinically significant problem. This is supported by the results of the original testing done in the development process of the OCI-R, as ordering was one of only two subscales (hoarding was the second) that did not differ significantly between patients with OCD and nonanxious controls (Foa et al., 2002). Therefore, while desiring order may be a component of obsessive-compulsiveness by itself, a need for order may not be reflective of one's psychological health and thus may not be related to forgiveness or locus of control.

Possible mechanisms. As described previously, there are a number of reasons that greater levels of forgiveness may be associated with lower levels of OC symptoms. One proposed mechanism that was tested in the current study is subjective control, whereby greater forgiveness is associated with a greater sense of personal control, which in turn leads to lower obsessive-compulsiveness. Although this model received only limited support in the current study (as discussed elsewhere), there are numerous other pathways by which forgiveness and OC symptoms may be associated, including via rumination, decreased catastrophization, and other beliefs that contribute to obsessive-compulsiveness, as well as through concomitant anxiety symptoms.

Rumination may be a key mediator between forgiveness and OC symptoms. Unforgiveness has been repeatedly demonstrated to be associated with greater levels of ruminative thought, and rumination has also been found to mediate the association between forgiveness and physical and mental health outcomes (e.g., Berry, Worthington, O'Connor, Parrott, & Wade, 2005; Burnette et al., 2009; Gustavson, 2009; McCullough et al., 2007; Stoia-Carballo et al., 2008; Ysseldyk et al., 2007). Previous research on cognition in OCD has focused primarily on the content of thoughts, whereas the processes and style of thought characteristic of OCD have been relatively unexplored (Wahl, Ertle, Bohne, Zurovski, & Kordon, 2011). However, recent research has found evidence that rumination may be a critical feature of obsessive-compulsiveness, as having a ruminative response style was found to predict OC symptom severity and was particularly related to obsessive rumination in two non-clinical samples (Wahl, et al.). Furthermore, the authors suggested that their results support the notion that rumination and obsessional thinking may share common processes. Therefore, rumination may be a key link that connects forgiveness with obsessive-compulsive symptoms.

Forgiveness of self may be particularly relevant for the catastrophization of intrusive thoughts that is characteristic of OCD. Individuals with OCD are thought not to differ from nonclinical populations in frequency or content of intrusive thoughts; instead, it is their perseveration on these thoughts and the catastrophic interpretations assigned to them that are atypical (Salkovskis, 1985). The experience of intrusive thoughts in normal samples is common; in one study 99.4% of healthy respondents reported experiencing intrusive thoughts at least occasionally, and the content of intrusions were most frequently regarding aggression, sexually and socially inappropriate behaviors, and doubts, checking, and cleanliness (Belloch et al., 2004). Therefore, it is not the experience of intrusive thoughts but instead the meaning and implications assigned to them that is atypical in patients with OCD. The ability to forgive oneself for having unwanted thoughts may hence be particularly relevant for overcoming these catastrophic interpretations.

Finally, greater levels of forgiveness may impact OC symptom severity because of its association with lower levels of comorbid anxiety in general. OCD is characterized as an anxiety disorder in the DSM, and the experience of anxiety is a maintaining factor in the disorder. A growing body of research has found through both correlational and intervention methodologies that greater levels of forgiveness are associated with lower anxiety levels (e.g., Coyle & Enright, 1997; Lee & Chen, 2009; McCullough et al., 2007; Ryan & Kumar, 2005). Therefore, although additional research is needed to tease apart these relationships, it is possible that forgiveness is negatively associated with OC symptoms because greater levels of forgiveness lead to lower levels of anxiety, which in turn leads to reduced expression of obsessions and compulsions. Hence, anxiety may mediate the association between forgiveness and obsessive-compulsiveness.

Locus of Control as a Mediator

Overall, locus of control was found to play only a limited role as a mediator between forgiveness and OC symptoms. Specifically, locus of control seemed only to be related to forgiveness of self. The three combined LOC dimensions mediated associations between forgiveness of self and both washing and hoarding symptoms, nevertheless LOC-Chance was the only *specific* dimension of locus of control that was a significant mediator, as it mediated the effect of forgiveness of self on overall OC symptoms and in particular washing, obsessing, and hoarding symptoms. Although the role of locus of control as a mediator between forgiveness and OC symptoms has not been previously tested, our findings can be understood in the context of the limited research that has examined the associations between locus of control or, more broadly defined, control variables, and both forgiveness and obsessive-compulsive characteristics.

Previous research on forgiveness and control. A number of authors (e.g., Benson, 1992; Coleman, 1998; Hope, 1987; Ohbuchi & Takada, 2009; Toussaint & Webb, 2005) have theorized that forgiveness is related to subjective control such that greater levels of forgiveness are associated with greater levels of perceived control. However, as described previously, empirical work on this relationship has been limited to only a handful of studies. Perhaps the most relevant of these to the current study was conducted by Witvliet, Ludwig, and Vander Laan (2001), who found that participants reported a greater sense of control during forgiving versus unforgiving conditions in an emotional imagery paradigm. This finding supports the theorized relationship in which greater forgiveness is associated with a greater sense of personal control as well as the current findings that forgiveness of self was negatively associated with attributing control to external sources (both chance and powerful others) in the regression analyses of specific pathways. However, this is inconsistent with the broader finding that forgiveness of

others and feeling forgiven by God were not associated with any dimension of locus of control and the lack of association between forgiveness of self and internal locus of control.

This discrepancy may be due to the nature of the control-related variables themselves. Numerous control-related constructs have been described in the research literature, and although these constructs may frequently overlap, they also retain distinctive characteristics (Skinner, 1996). While Skinner characterized locus of control as describing *means-ends* relations, she characterized subjective control, sense of control, and perceived control variables all as describing *agent-ends* relations. Therefore, it is possible that forgiveness is associated with the amount of control attributed to oneself but has a lesser impact on the perceived causes of events and their outcomes. However, additional research is needed to better understand the implications of forgiveness for perceived control.

Previous research on OC symptoms and LOC. Only two previously published studies have examined the association between obsessive-compulsiveness and locus of control in an adult or adolescent sample. Kennedy et al. (1998) employed Levensen's locus of control measure to compare LOC scores of patient groups in six diagnostic categories, including OCD, as well as a community sample (control group). They found that participants with OCD did not differ significantly from the control group on any LOC dimension and had the lowest external control (as attributed to chance and to powerful others) of any of the patient groups. Kennedy et al. suggested that this may be due to the use of obsessions and compulsions by these patients to maladaptively increase their sense of internal control, which may in part explain their finding regarding the negative correlation between the internal and powerful-other scales.

Kennedy et al.'s (1998) results are generally in line with the current findings. The methodology of Kennedy et al. differed from that of the current study in that I measured the

correlational relationships between OC symptom levels and locus of control within a student population, while Kennedy et al. compared LOC in community and patient samples. Therefore, a direct comparison of the two studies' findings is not possible. However, just as Kennedy et al. found that patients with OCD did not differ significantly from healthy controls in terms of their LOC scores, the present investigation found that none of the LOC dimensions were significantly associated with overall obsessive-compulsive symptoms in the pathway analyses in a student sample.

The second study to examine the association between locus of control and OC symptoms was conducted by Altin and Karanci (2008) with Turkish high school students. The authors found that responsibility attitudes interacted with locus of control orientation to predict obsessive-compulsiveness such that the greatest level of OC symptoms was produced by having both an external control orientation as well as a heightened sense of personal responsibility. Similarly to the current results, after depression, trait anxiety, and responsibility attitudes were controlled for, locus of control was not found to significantly predict overall obsessive-compulsiveness nor checking or cleaning subscales, but LOC did have a main effect on the obsessive thinking subscale.

Although different measures of both locus of control and OC symptoms, with different subscales, were used by Altin and Karanci (2008) compared to the present study, their results correspond closely to current findings. Just as Altin and Karanci found that obsessive thinking was directly associated with locus of control, in the current study the obsessiveness subscale appeared to be possibly the most strongly linked with locus of control, as it was the only subscale to have significant ties to two of the three LOC dimensions (attributed internally and to chance). Hence, based on both the findings of Altin and Karanci and the current study, it appears that

locus of control is particularly relevant for symptoms of obsessive thinking. An additional similarity was that neither study found a significant effect of locus of control on overall OC symptoms or on checking specifically. One difference in the findings of the two studies is that while Altin and Karanci did not find an effect of LOC on cleaning symptoms, the current study found that washing was associated with both LOC-Chance and -Internal (trending), and that the LOC combined dimensions, and specifically LOC-Chance, fully mediated the effect of FS on washing. However, it is possible that the washing subscale of the OCI-R and cleaning subscale of the MOCI (Hodgson & Rachman, 1977) used by Altin and Karanci are not entirely equivalent. Although responsibility attitudes were not assessed in the current study, future research on control and OCD should consider responsibility attitudes, as it seems to have an amplifying effect on the impact of control on obsessive-compulsiveness.

Previous research on OC symptoms and control. As described previously, although only limited work has been done regarding OC symptoms and locus of control, considerably more research has examined the effect of subjective control more generally on obsessive-compulsiveness. A heightened emphasis and expectation for personal control can be observed in many dysfunctional OC beliefs, including the expectation that one should be able to control his or her thoughts (Clark, 2004) and emotions (Barlow et al., 1996), as well as overestimation of threat (Clark, 2004) and inflated sense of responsibility (Salkovskis, 1998).

Additionally, a growing body of research has found that a high desire for control paired with a low sense of control is associated with OC symptoms in both community and clinical samples (Moulding et al., 2008; Moulding & Kyrios, 2007; Moulding et al., 2007; Moulding et al., 2009). In their 2006 review Moulding and Kyrios suggested that internal locus of control and sense of control (SC) are synonymous and used the terms interchangeably in their review.

However, the present finding that internal locus of control largely was not associated with obsessive-compulsiveness, as well as previous literature that has failed to find definitive evidence linking locus of control with obsessive-compulsiveness (Altin & Karanci, 2008; Kennedy et al., 1998) suggests that sense of control and internal locus of control are perhaps sufficiently distinct concepts, further evidenced by the apparent relatedness of SC to obsessive-compulsiveness and the lack of associations found for LOC. This distinction is further supported by Skinner's (1996) categorization of locus of control as a *means-ends* relations construct, and sense of control as an *agent-ends* relations construct. Future research exploring the impact of control-related variables on obsessive-compulsiveness should not lump all control constructs together but instead should distinguish between types of control-related variables to develop a more nuanced understanding of how issues related to control may contribute to obsessive-compulsive symptoms.

Relative differences in LOC dimensions as mediators. Although the role of locus of control as a mediator between forgiveness and OC symptoms was limited, it must not be overlooked that external control as related to chance *did* play a significant role as a partial mediator in the relationship between forgiveness of self and overall obsessive-compulsive scores, as well as obsessing and hoarding symptoms, and fully mediated the association between FS and washing symptoms. That is, LOC-Chance played a role in the relationship between forgiveness and OC symptoms such that FS was associated with less LOC-Chance, which in turn was associated with less obsessive-compulsiveness. The nature of this relationship is somewhat unclear. It is possible that forgiveness of one's self leads to a greater sense of self-efficacy, which then leads to decreased attribution of events to external sources. While LOC-Powerful others was not a significant mediator, forgiveness of self was individually associated with

external control attributed to both chance and powerful others. However, a greater sense of self-efficacy does not fully explain these findings, as internal locus of control was not associated with forgiveness. Therefore, while forgiveness of self may lead to a decreased propensity to attribute events to external sources, it does not necessarily lead to an increase in attributions to oneself.

The relative importance of attributing events to chance in these relationships may reflect one's general sense of the world's controllability. While the Powerful Others domain suggests that the world is controllable, but that this control is in the hands of others rather than the individual's, more than any of the other domains, LOC-Chance seems to reflect the sentiment that the world is not under anyone's control. In this way LOC-Chance may be the dimension of LOC that is most closely related conceptually to sense of control, albeit its reciprocal opposite. And as already described, sense of control has been shown to be related to OC symptoms (Moulding et al., 2008; Moulding & Kyrios, 2007; Moulding et al., 2007; Moulding et al., 2009). Furthermore, high LOC-Chance scores may reflect an insecurity and dissatisfaction with the amount of control one has, and therefore may be an indirect measure of having a high desire for control, which has been empirically connected to obsessive-compulsiveness in these same studies. As described earlier, forgiving oneself seems to be related to decreased attributions of events to external sources; therefore, as LOC-Chance was related to OC symptoms and both LOC-Chance and Powerful others were related to forgiveness of self, LOC-Chance was hence the only significant specific mediator of forgiveness and OC symptoms.

Relative differences in LOC dimensions in association with forgiveness dimensions.

In this study locus of control (external) was related only to forgiveness of self, and not to forgiveness of others or feeling forgiven by God. This suggests that while forgiving oneself may lead to decreased attributions of events to external sources, forgiveness of others and feeling

forgiven by God may not be related to attributions of control. As described earlier, it is possible that forgiveness is associated with one's sense of perceived control (and other control constructs regarding *agent-ends* relationships) but not with locus of control, which describes *means-ends* relationships (Skinner, 1996). Therefore, future research on forgiveness and control should begin by testing the association between forgiveness and perceived control proper and should further discriminate between related but distinct control constructs.

Relative differences in LOC dimensions in association with OC symptoms. While the associations of LOC with forgiveness were relatively consistent, there was more variety in the associations found between LOC and obsessive-compulsiveness. *Washing* and *hoarding* symptoms were the only subscales in which there was a combined mediated effect of locus of control, albeit only in the context of FS, suggesting that attributions of control are particularly relevant for these symptoms. Further, LOC-Chance individually was a significant mediator of the effect of FS on overall OC scores as well as *washing*, *obsessing*, and *hoarding* scales but not *checking*, *neutralizing*, or *ordering*. Additionally, as previously described, the association between obsessiveness and external LOC was also found by Altin and Karanci (2008), suggesting that locus of control is particularly related to obsessive thought processes. It is not fully understood why LOC-Chance would be particularly relevant for some symptoms compared to others, and future research should investigate possible mediators of these relationships.

Study Limitations

There are a number of limitations to the current study. Perhaps one of the most notable limitations is that due to the statistical methods employed for the mediation analyses it was not possible to conduct a Bonferonni or similar statistical correction for the number of analyses run, and therefore, it is possible that some of our significant findings may be due to Type I error.

However, the general consistency of our results regarding the role of LOC in the relationship between forgiveness and OC symptoms disputes the notion that these were found only due to Type I error. That is, it was consistently observed that: 1) forgiveness of self was associated with OC symptoms, and this relationship was often at least partially mediated by LOC-Chance, 2) forgiveness of others was associated with OC symptoms but largely only in a direct fashion, and 3) feeling forgiven by God was not associated with OC symptoms neither directly nor indirectly through LOC. Further, this research was exploratory in nature, and now that direct and indirect associations have been identified between forgiveness and obsessive-compulsive symptoms future research may use more conservative methods to ensure that the probability of a Type I error is low.

An additional limitation may be related to the nature of the measures used. In particular, the three dimensions of forgiveness were assessed using single-item measures that each used a variant of the word “forgive” within the question, and while they have been previously used in published research (e.g., Webb & Brewer, 2010a; 2010b; Webb et al., 2009), these items may not assess forgiveness as thoroughly as other measures. Additionally, there has been some debate surrounding the factor structure of the Levenson measure of locus of control (e.g., Shewchuk et al., 1992), and although psychometric properties beyond internal consistency (e.g., factor structure) were not assessed in this paper, this may have been an applicable issue to the current study. Therefore, it may be useful for future research to examine the relationships explored in the present study with more robust measures of similar constructs in order to provide additional support for the validity of the relationships found here.

This study was also limited in its evaluation of the fourth hypothesis that stated that the relationships found between forgiveness, locus of control, and obsessive-compulsive variables

would differ based on the dimensions of each construct examined. Although relative differences were observed in the current study and discussed in the narrative, no statistical procedures were conducted to directly empirically test the difference in effects across IV and DV-related subscales, and therefore any conclusions made about relative differences are conjectural in nature. The present study was primarily exploratory in nature, and its main purpose was to add to the limited extant literature regarding the existence of associations between the study's variables. As associations were found, particularly between forgiveness of self and forgiveness of others and OC symptoms, future studies may deepen our understanding of these relationships by explicitly empirically testing whether some aspects of forgiveness or obsessive-compulsiveness are more salient for these connections than others.

The characteristics of our sample may limit the applicability of our findings to different populations. Our sample was relatively homogenous in nature in that it consisted largely of Caucasian college students from southern Appalachia. The sample's characteristics may have influenced our findings in a number of ways. The southern region of the United States is the most religious region (Newport, 2006) and the people in this region are also known to practice their religion in a unique fashion (Hill, 1999; Pew Forum on Religion and Public Life, 2008) such that there may be differences in religious culture. Although religiousness was not found to be associated with the other variables at the bivariate level of analysis, it is possible that religious experiences in which forgiveness was emphasized led to a greater importance of forgiveness for this sample compared to nonreligious populations. Additionally, it is possible that the associations found between forgiveness of self and others and obsessive-compulsive symptoms with college students may not extend to other populations. For example, it may not be found in other age groups, or perhaps it is found in healthy individuals but not in clinical populations.

However, results from studies examining similar variables in both student and clinical samples have found somewhat similar results (e.g., Altin & Karanci, 2008; Kennedy et al., 1998; Webb et al., 2009), and the dimensional nature of OCD has received empirical support (Olatunji et al., 2008), suggesting that the same processes and symptoms occur in nonclinical samples but with lesser severity. Nevertheless, future studies should examine the relationship between forgiveness and obsessive-compulsiveness in samples that vary in age, culture, and ethnicity as well as with clinical samples.

Because this was a correlational study, assumptions cannot be made regarding the causal order of the variables examined. The variables chosen and the ordering and direction of the variables entered in the mediation model were based in theoretical models described by Worthington, Berry, and Parrott (2001) and Toussaint and Webb (2005). However, more research, particularly that which is experimental, quasi-experimental, longitudinal, and/or intervention-based, is needed to further support the causal directions of these relationships.

Areas for Future Research

Thus far in this discussion, a number of areas for future research have already been identified. These include further establishing and exploring the relationship between forgiveness and OC symptoms through a number of avenues including through testing this association using different samples from more diverse populations (including individuals who differ in age, location, ethnicity, and clinical status), using different measures (of forgiveness and control, in particular), using other or additional statistical techniques to account for possible Type I error, and statistically examining for differences in the relationships among the variables of interest rather than speculating regarding relative importance.

In addition to further establishing the association between forgiveness and OC symptoms, future research should also explore other potential mediators of this relationship. Although locus of control seems to play only a limited role in mediating the connection between forgiveness and obsessive-compulsive symptoms, it is possible that other control-related constructs may play a greater role in this relationship. Sense of control and desire for control have been found to be associated with OC symptoms (e.g., Moulding et al., 2008; Moulding & Kyrios, 2007; Moulding et al., 2009); therefore, it may be worthwhile to conduct a similar study using different measures to assess subjective control, particularly those that have been relatively established to be associated with OC symptoms (including desire and sense of control). Future research on the association of control with obsessive-compulsiveness should also consider the role of responsibility attitudes, as they may interact with control to impact OC symptoms (Altin & Karanci, 2008).

There are likely to be other, non-control-related mediators that may provide additional insight into the forgiveness-OC symptom relationship. As described previously, ruminative thought may be central to OC symptoms, particularly those related to obsessiveness (Wahl et al., 2011). As rumination has been shown to be negatively associated with forgiveness (e.g., McCullough et al., 2007), rumination may be a key mediator associating forgiveness and obsessive-compulsive symptoms. Additionally, as the experience of anxiety has been shown to be negatively associated with forgiveness (e.g., Orcutt, 2006) and is a central experience of obsessive-compulsiveness, it is plausible that forgiveness may lead to fewer OC symptoms via reduced anxiety. Therefore, potential mediators of the forgiveness-OC symptom relationship should be explored in future research, including not only variables related to perceived control (including desire for control and sense of control) but also rumination and anxiety symptoms.

Future research should also examine the value of introducing forgiveness of self and forgiveness of others as a therapeutic goal in the psychological treatment of OCD. As previously described, forgiveness may be relevant for a number of OC-related issues including rumination, interpretation and implications of intrusive thoughts, and OC-related beliefs such as perfectionism. Therefore, encouraging the concept and practice of forgiving oneself and others may prove valuable in the intervention and treatment for OCD. Therapists working with individuals with OCD may adapt the forgiveness intervention processes described by Worthington (Wade & Worthington, 2005; Worthington, 2006) or Enright (Enright et al., 1998) in order to encourage clients with OCD to forgive themselves and others. For example, a given client with OCD struggles with catastrophizing about the meaning of negative thoughts, as he occasionally has violent intrusive thoughts, and therefore worries that he is essentially a murderer. In this case the therapist may use Enright's model to help the client first acknowledge the experience of the intrusive, negative thought and *uncover* the problems it's causing for him, to encourage him to make the *decision* to forgive himself for having this thought, to *work* toward developing compassion toward himself and reframing the negative event, and finally, to *deepen* his sense of compassion for himself and his insight regarding the nature of intrusive thoughts. Similarly, forgiveness of self may be useful in targeting perfectionistic beliefs often found to underlie OC processes, as encouraging self-compassion for mistakes and imperfections may help reduce rigidity and the need to be correct. Combining forgiveness interventions with treatments that have been already established as effective for OCD (including cognitive therapy and exposure and response prevention) may lead to greater therapeutic gains or may lead to greater therapeutic outcomes in other ways such as reduced drop-out rates.

Summary and Conclusions

Research on the salutary effects of forgiveness for both mental and physical functioning has grown rapidly in recent years. While a growing body of research has identified that forgiveness is negatively associated with anxiety, virtually no studies prior to the current one have set out to examine the association between forgiveness and obsessive-compulsive symptoms. Furthermore, perceived control has been identified as a potential mediator whereby forgiveness impacts health, and is also a salient construct for OCD. Therefore, the current study examined the association of forgiveness of self, of others, and feeling forgiven by God with obsessive-compulsive symptoms as mediated by locus of control attributed internally, to powerful others, or to chance in a sample of college students from Eastern Tennessee. Forgiveness of self and of others were associated with overall OC symptoms and with many of the subscales, but feeling forgiven by God was not associated with any of the measures of obsessive-compulsiveness. Locus of control played a very limited role as a mediator, and the only significant specific dimension to act as a mediator was external control attributed to chance and only in the context of forgiveness of self. These findings suggest that the association between forgiveness and obsessive-compulsiveness should be further explored as it may have implications for the treatment of obsessions and compulsions.

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