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Anger Rumination is not Uniquely Characteristic of Obsessive-Compulsive Disorder

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Abstract

Although anger has been observed in obsessive-compulsive disorder (OCD), it remains unclear if rumination about anger is characteristic and/or unique to OCD. The present study examines whether types of anger rumination are endorsed more strongly by OCD patients compared to clinical and nonclinical controls. Patients with OCD ($n = 30$), generalized anxiety disorder (GAD; $n = 29$), and non-clinical controls (NCC; $n = 30$) completed measures of OCD symptoms, anger rumination, and trait anxiety. Patients with OCD and GAD significantly differed from NCC's (all $ps < .001$), but not each other (all $ps > .10$), in anger afterthoughts, thoughts of revenge, angry memories, and understanding causes of anger. However, the group differences were no longer significant when controlling for trait anxiety. A dimensional approach revealed that OCD symptoms were correlated with anger rumination domains overall. However, these associations were also no longer significant after controlling for trait anxiety. These findings suggest that anger rumination may emerge in OCD largely as an artifact of trait anxiety/negative affect that is associated with but not unique to the disorder. The implications of these findings for conceptualizing emotion and its regulation in OCD are discussed.

Obsessive-compulsive disorder (OCD) is characterized by the presence of recurrent, unwanted, and intrusive thoughts, images, or impulses (obsessions) and/or persistent, repetitive behaviors that serve as attempts to suppress, neutralize or cope with these thoughts or urges (compulsions; American Psychiatric Association, 2013). Compulsions can take the form of external behaviors or internal mental acts that function to provide short-term anxiety relief. The cognitive model of OCD suggests that the cyclic nature of anxiety is attributed to a catastrophic misinterpretation of unwanted thoughts (Rachman, 1997). An pathological obsession is formed when an individual misinterprets a normal, intrusive thoughts as threatening, morally objectionable, or predictive of future outcomes, provoking a wide range of negative emotions that are often regulated by engaging in compulsive rituals (Calkins, Berman, & Wilhelm, 2013). Compulsive rituals in OCD may be conceptualized as a form of maladaptive emotion regulation, in which individuals attempt to alter negative emotional experiences (Fergus & Bardeen, 2014). OCD also appears to be characterized by a poorer understanding and a greater fear of emotions (Stern, Nota, Heimberg, Holaway, & Coles, 2014). Given that adaptive emotion regulation strategies (e.g., decreasing thought suppression, increasing acceptance of thoughts and feelings) reduce OCD symptoms (Allen

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& Barlow, 2009), there has been increased emphasis on better understanding specific negative emotions in OCD, as this may inform the effective use of emotion regulation strategies.

Informed by the emotional processing model of anxiety-related disorders (Foa & Kozak, 1986), fear has been the negative emotion that has traditionally been the focus of most models of OCD (Foa & McLean, 2016). This fear focus is also reflected in the emphasis on more recent fear conditioning approaches to understanding the development of OCD (Geller et al., 2017). Researchers have also examined disgust as another negative emotion that may be ineffectively regulated in OCD (Olatunji, Ebesutani, David, Fan, & McGrath, 2011). Disgust proneness has been found to be associated with both contamination- and non-contamination- based obsessive-compulsive symptoms, even after controlling for anxiety sensitivity and negative affect (Olatunji, Ebesutani, & Kim, 2016). The experience of disgust in OCD may lead to threat overestimation (Calkins et al., 2013; Taylor et al., 2010) and subsequent behavioral avoidance (Deacon & Olatunji, 2007). Excessive guilt is also experienced among those with OCD (Shafran, Watkins, & Charman, 1996), due partially to the inflated sense of responsibility that characterizes the disorder (Rachman, 1993). Such guilt may reinforce certain obsessions, including concerns of making mistakes or causing harm (Gangemi, Mancini, & van den Hout, 2007). Similar to disgust propensity, trait guilt has been found to predict contamination-related OCD symptoms independent of anxiety and depression (Melli, Gremigni, Elwood, Stopani, Bulli, & Carraresi, 2015).

Unlike other specific negative emotions, much less is known about the nature and function of anger in OCD. Rachman (1993) suggests that OCD patients experience difficulty coping with anger because of their inflated sense of responsibility, and a tendency to blame themselves instead of outside environmental factors. Consistent with this view, Rubenstein, Altemus, Pigott, Hess, and Murphy (1995) found that women with OCD scored higher on anger measures than healthy controls. However, women with OCD scored similar to women with bulimia on the same measures, suggesting that problems with anger may not be exclusive to OCD. Additionally, Whiteside and Abramowitz (2004) found that college students with subclinical OCD symptoms reported experiencing more anger, the tendency to suppress anger inwardly, and more difficulty controlling anger than controls. However, these group differences were largely accounted for by group differences in depressive symptoms. In a subsequent study, Whiteside and Abramowitz (2005) found increased anger levels in OCD patients compared to healthy controls and a significant correlation between overall OCD symptom severity and anger expression. However, the group differences in anger scores were found to be accounted for by group differences in general distress. In a more comprehensive study, patients with panic disorder, OCD, and social phobia experienced more anger than healthy controls (Moscovitch et al., 2008). However, anger levels among those with OCD were less than those observed among those with panic disorder. Furthermore, group differences in anger largely disappeared when controlling for depression.

The available research suggests that heightened anger experiences in OCD, relative to controls, may be an artifact of negative affect. However, this failure to observe a unique effect for anger may be due to the type of anger that has been examined in previous studies.

Studies examining anger processes in OCD have typically examined anger in (anger suppression), anger out (anger expressed towards others), and anger control (the effort made to control one's anger; Spielberger, Krasner, & Solomon, 1988). However, OCD is characterized by maladaptive intrusive repetitive thought. In addition to repetitive obsessional thinking, rumination has also been found to contribute to pathological processes in OCD (Koch & Exner, 2005). Rumination is one way in which individuals respond to stress and is usually characterized by a repetitive, passive focus on the potential causes and consequences of their distress (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Although rumination and obsessive thinking may differ in temporal orientation, positive perceived function, degree of intrusiveness, and discordance with one's self-concept, they do share core characteristics. For example, they are repetitive, difficult to disengage from, and capture mental capacity. Rather than the outward expression of anger, OCD may then be uniquely characterized by rumination about anger given the maladaptive repetitive thinking that is observed in the disorder.

Anger rumination has been defined as the tendency to repetitively think about the causes, situational factors, and consequences of anger (Sukhodolsky, Golub, & Cromwell, 2001; Nolen-Hoeksema, 1991). Compared to those low in anger rumination, individuals high in anger rumination are more likely to perceive situations as frustrating and to suppress anger (Takebe, Takahashi, & Sato, 2016). This finding is in line with research showing that expressive suppression, often conceptualized as an emotion regulation avoidance strategy, is uniquely associated with symptoms of OCD (Fergus & Bardeen, 2014). Thus, an alternative hypothesis is that unlike anger expression and anger control, anger rumination may be uniquely associated with OCD. An alternative view, however, may be that rumination about anger manifests in OCD only as an artifact of the maladaptive repetitive thinking that is associated with the disorder. For example, research has revealed that elevated levels of multiple dimensions of anger characterize individuals who meet diagnostic criteria for generalized anxiety disorder (GAD; Deschenes, Dugas, Fracalanza, & Koemer, 2012), a disorder that is also characterized by maladaptive repetitive thinking. Accordingly, comparing those with OCD to those with GAD may clarify the extent to which anger rumination is specific to OCD or an artifact of maladaptive repetitive thinking.

To our knowledge, no study to date has examined anger rumination in OCD. To fill this gap in the literature, the present study compares self-reported anger rumination in individuals with OCD to those with generalized anxiety disorder (GAD) and healthy controls. Consistent with previous anger research in OCD (Whiteside & Abramowitz, 2005) and the anxiety disorders (Moscovitch et al., 2008), it was predicted that individuals with OCD and GAD will endorse higher levels of anger rumination than healthy controls. We then examined if individuals with OCD report higher ratings of anger rumination compared to individuals with GAD. These group differences are predicted to be small in magnitude when controlling for trait anxiety. Previous research suggests that relative to other OCD symptoms, compulsive checking—characterized by doubts and repetitive attempts to verify whether an action has been completed properly— and ordering—characterized by arranging objects in a symmetrical or orderly way—may be associated with greater anger (Radomsky, Ashbaugh & Gelfand, 2007; Whiteside & Abramowitz, 2005; Rachman & Hodgson, 1980).

Accordingly, exploratory analyses were conducted examining the association between anger rumination domains and different OCD symptoms.

Method

Participants and Procedures

A total of 89 adults participated in the study: 30 patients with a primary diagnosis of OCD, 29 patients with a primary diagnosis of GAD, and 30 non-clinical controls (NCC) without a history of any anxiety disorder. Primary diagnoses refer to the condition that most significantly interferes with the participant's everyday life. NCC participants were recruited through flyers and advertisements placed in the community. GAD participants were also recruited through community advertisements, as well as referrals from an Adult Psychiatry Outpatient Clinic. To determine eligibility for GAD respondents, an initial phone screen was conducted using the Generalized Anxiety Disorders Questionnaire 4th Edition (GADQ-IV; Newman et al., 2002). OCD participants were primarily recruited through the obsessive-compulsive disorder/Tourette Syndrome Program at the University. Given that some OCD participants were receiving treatment, the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman et al., 1989) was administered to determine symptom severity. Only individuals with moderate to high symptom levels (≥ 16) were eligible to participate.

The Structured Clinical Interview for the DSM-IV (SCID-I; First, Spitzer, Gibbon, & Williams, 2002) was administered to determine diagnoses for all participants. Individuals in all groups were considered ineligible if they were diagnosed with any of the following: bipolar disorder, substance abuse, attention-deficit/hyperactivity disorder, pervasive developmental disorders, intellectual disability, and/or current or past central nervous system diseases. There was no overlap between clinical groups (i.e., OCD participants did not have a past or current GAD diagnosis or vice versa). SCIDs were conducted by a graduate-level clinician and phone screens were conducted by a research assistant. All study personnel were trained and supervised by a licensed clinical psychologist. The study was approved by the University Institutional Review Board and all participants provided informed consent. After completing the clinician-administered measures, participants were seated at a testing computer where they completed the self-report questionnaires. Following completion of the study, participants were debriefed regarding the nature of the research and financially compensated for their time.

Measures

The *Obsessive-Compulsive Inventory-Revised* (OCI-R; Foa et al., 2002).—The OCI-R is an 18-item self-report questionnaire used to determine OCD symptoms. Participants were asked to rate their experiences on a 5-point Likert-type scale from 0 (not at all) to 4 (very much). The OCI-R contains six subscales: washing, checking, obsessing, neutralizing ordering, and hoarding. The OCI-R was also found to have excellent internal consistency in the present total sample ($\alpha = .92$).

The *Anger Rumination Scale* (ARS; Sukhodolsky et al., 2001).—The ARS is designed to measure the tendency to think about current anger-provoking situations and to

recall past anger episodes. The 19-item questionnaire includes four factors: Angry Afterthoughts, Thoughts of Revenge, Angry Memories, and Understanding of Causes. Participants were asked to rate each item on a 5-point Likert-type scale from 0 (never) to 4 (almost always); higher scores correspond to greater levels of anger rumination. The ARS demonstrated excellent internal consistency in the present total sample ($\alpha = .96$).

The State Trait Anxiety Inventory-Trait Version, Form Y (STAI-T; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).—The STAI-T is a face valid 20-item scale that measures the enduring or chronic experience of anxiety. The STAI-T asks individuals to report on how they generally feel on a scale from 1 (almost never) to 4 (almost always; e.g., “I feel nervous and restless). The STAI-T was found to have excellent internal consistency in the present total sample ($\alpha = .94$).

Results

Participant Characteristics

The groups did not differ in age, gender, ethnicity, level of education, and occupation ($ps > .05$). As expected, patients with OCD and GAD reported significantly higher trait anxiety than NCC's $F(2, 86) = 28.62, p < .001$. However, these two disorder groups did not differ from each other ($p = .90$).

Group Differences in Anger Rumination

Anger rumination subscale group means are displayed in Table 1. A one-way ANOVA yielded significant group differences for total anger rumination scores as well as all anger rumination subscales, $F(2, 86) > 12.38, p < .001$ for each analysis. Post hoc analyses revealed that patients with OCD and with GAD reported significantly greater total anger rumination scores than controls, $p < .001$. However, there was no difference in total anger rumination between patients with OCD and GAD, $p = .25$. Additionally, patients with OCD and GAD scored higher on all anger rumination domains than controls, $p < .001$. Patients with OCD and GAD were not different from each other across anger rumination domains, all $ps > .10$. To determine if the group differences in anger rumination scores differed for reasons other than principle diagnosis, an analysis of covariance (ANCOVA) was conducted using trait anxiety as the covariate. After controlling for trait anxiety, group differences in total anger rumination scores were no longer significant, $p = .15$. Similarly, the significant group differences disappeared when controlling for trait anxiety across all domains of anger rumination, all $ps > .08$ (see Table 1).

Pearson's correlations between OCD symptoms and anger rumination domains are shown in Table 2. Examination of the full sample revealed that OCD symptoms were significantly positively correlated with all anger rumination domains (rs range from .41 – .54, all $ps < .001$). After controlling for trait anxiety, total anger rumination scores and three out of four anger rumination domains (Angry Afterthoughts, Angry Memories, and Understanding of Causes) were no longer significant (rs range from .02 – .19, all $ps > .05$). The relationships between specific OCD symptom clusters and anger rumination were also explored. These results are presented in Table 2. After controlling for trait anxiety, the relationship between

ordering OCD symptoms and total anger rumination remained significant ($p = .02$). Further, ordering symptoms had a significant relationship with Thoughts of Revenge ($p = .04$) and Angry Memories ($p = .01$). Lastly, there was a significant relationship between hoarding OCD symptoms and Thoughts of Revenge ($p = .04$).

Discussion

Consistent with previous research (Whiteside & Abramowitz, 2005), the present study found that participants with OCD and GAD endorsed greater anger rumination than controls. However, those with OCD and GAD did not significantly differ in levels of anger rumination endorsed. This finding suggests that anger rumination may not be unique to OCD as it is also observed in elevated levels among those with GAD. Indeed, individuals with anxiety disorders often experience such repetitive thought patterns (Olatunji, Naragon-Gainey, & Wolitzky-Taylor, 2013). Repetitive negative thinking is now studied as a transdiagnostic process; indeed, more similarities than differences have been found in the levels of worry and rumination across anxiety-related disorders and OCD (Ehring & Watkins, 2008). It is reasonable to predict that this maladaptive cognitive style may extend to an individual's processing of negative emotions such as anger. Importantly, however, the finding that participants with OCD and GAD endorsed greater anger rumination than controls was no longer significant when controlling for trait anxiety. This finding is also consistent with previous research that has examined group differences in anger expression and control (e.g., Moscovitch et al., 2008).

The present study suggests that anger rumination may not uniquely characterize OCD (or GAD). Rather, the greater endorsement of anger rumination may be an artifact of the elevated trait anxiety that is associated with OCD (and GAD). However, while results from this study do not support our original hypothesis, they also cannot be taken as proof that elevated trait anxiety exclusively predicts the relationship between anger rumination and OCD. Trait anxiety refers to the stable tendency to attend to, experience, and report negative emotions such as fears, worries, and anxiety across many situations (Spielberger et al., 1983). Those high in trait anxiety may also have a greater tendency to attend to, experience, and report anger. Indeed, the STAI total score and the ARS total score were highly correlated in the present study ($r = .71, p < .001$). Research has also shown that internalized anger can be characteristic of those with GAD (Deschênes et al., 2012). Furthermore, research has shown that anxiety and related disorders are characterized by the pervasive disposition to experience a range of negative emotions (Watson, Clark, & Carey, 1988). This suggests that those experiencing more anxiety in general may respond to perceive threats by ruminating about them, which may also increase feelings of anger. However, it appears that it is the pervasive disposition to experience negative emotions in general that explains the endorsement of anger rumination in OCD and perhaps other anxiety-related disorders.

Previous research suggests that relative to other OCD symptoms, compulsive checking and ordering may have more robust associations with anger (Radomsky et al., 2007; Whiteside & Abramowitz, 2004, 2005; Rachman & Hodgson, 1980). Accordingly, the present study examined the association between anger rumination domains and different OCD symptoms in the full sample. Although OCD symptoms were significantly positively correlated with all

anger rumination domains, these correlations were no longer significant when controlling for trait anxiety. When examining the specific domains of the OCI-R, neither checking nor ordering symptoms emerged as more robustly associated with anger rumination. These findings are fully consistent with the analysis comparing group differences and suggest that the association between different OCD symptoms and anger rumination is explained by trait anxiety. Although these findings clearly show that trait anxiety accounts for the link between OCD (and perhaps GAD) and anger rumination, it is important to note that other processes may explain the manifestation of anger in other anxiety-related disorders. For example, Trew and Alden (2009) found that brooding fully mediated the relationship between trait anger and social anxiety and partially mediated the relationship between outward anger expression and social anxiety. Similarly, Orth, Cahill, Foa, and Maercker (2008) found that rumination mediates the effect of posttraumatic stress disorder symptoms on anger in crime victims. Future research is needed to further examine the mechanisms of anger experiences and how such mechanisms may differ across anxiety-related disorders.

Limitations and Future Directions

Although the present findings are the first to show that anger rumination in OCD is an artifact of trait anxiety that is associated with but not unique to the disorder, this study is not without limitations. Because this study is cross-sectional in nature, conclusions about causality cannot be drawn. Future studies should examine the symptoms of anger and anxiety prospectively to determine if anger is a cause or consequence of OCD. Additionally, a more ecologically valid approach, such as asking participants to report their ruminative experiences as they occur in their daily lives (i.e., ecological momentary assessment) would further contribute to our understanding of the patterns and processes underlying anger rumination. Greater detail could be collected regarding specific anger rumination experiences, such as the targets of an individual's anger and the concurrent experience of other negative emotions.

The present study is also limited by the exclusive use of self-report measures. Future studies that include behavioral and physiological measurements will bolster confidence in the present findings. Additionally, the present study did not systematically assess the broad constructs of both anger and rumination. Future studies would benefit from examining non-ruminative aspects of anger and non-anger ruminations. The use of transdiagnostic measures of repetitive negative thinking could provide evidence for a more general relationship between this cognitive style and how negative emotions such as anger are processed by the individual.

As the present study only examined differences between OCD, GAD, and a non-clinical control group, broader claims cannot be made about other anxiety-related diagnoses or mood disorder diagnoses. Individuals with a broader range of disorders (i.e., mood and other anxiety disorders) will need to be included in future studies in order to increase the generalizability of the present findings. More specifically, future research should examine the influence of trait anxiety and/or trait negative affect on anger rumination using a dimensional approach that assesses these traits and symptom severity across a broad range of anxious and depressive symptomatology. Given the lack of support for our initial

hypothesis, treatment recommendations cannot be made on the basis of our findings. However, it is clear that ruminative processes are common to both OCD and GAD, and that these individuals are especially sensitive to the experience of negative emotions. Therefore, clinicians should consider assessing anger rumination in the context of their clients' broader tendency toward repetitive negative thought.

Although anger rumination is significantly associated with OCD symptoms, it appears that this relationship is not unique to OCD. In the present study, trait anxiety fully accounted for the relationship between anger rumination and OCD symptoms. Thus, further explanation of the interaction between repetitive negative thinking and maladaptive emotional processes in the context of multiple anxiety-related disorders is necessary.

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Table 1.

Group differences in anger rumination.

	OCD <i>n</i> = 30	GAD <i>n</i> = 29	NCC <i>n</i> = 30	<i>F</i>	partial η^2	<i>F</i> (controlling for trait anxiety)
ARS Total	35.13 (13.52)	38.72 (12.77)	20.60 (9.30)	15.01**	.31	1.92
Angry Afterthoughts	10.33 (4.12)	12.07 (4.40)	6.47 (3.53)	12.38**	.26	2.44
Thoughts of Revenge	5.93 (3.63)	6.28 (3.00)	2.87 (1.81)	18.19**	.22	0.29
Angry Memories	9.47 (3.78)	10.07 (3.69)	5.00 (3.13)	15.80**	.30	1.54
Understanding of Causes	9.40 (2.95)	10.31 (3.06)	6.27 (2.70)	19.03**	.27	1.96

Note. OCD = Obsessive-Compulsive Disorder; GAD = Generalized Anxiety Disorder, NCC = Non-Clinical Control, ARS = Anger Rumination Scale. For all *F* tests, between-subjects degrees of freedom is 2 and within-subjects degrees of freedom is 86.

**
p < .01

Table 2.

Association between OCD symptoms and anger rumination domains for the total sample.

	ARS Total	Angry Afterthoughts	Thoughts of Revenge	Angry Memories	Understanding of Causes
OCL-R Total	.53*	.41*	.54*	.53*	.50*
OCL-R Total	.16	.02	.21*	.19	.17
Washing	-.01	-.03	-.08	.03	.02
Checking	.05	.21	.02	.04	.07
Obsessing	.04	-.06	.01	.17	.10
Controlling for trait anxiety	.09	-.02	.17	.08	.15
Ordering	.26*	.20	.22*	.27*	.10
Hoarding	.17	.12	.22*	.12	.12

Note. ARS = Anger Rumination Scale; OCL-R = Obsessive-Compulsive Inventory-Revised.

* $p < .05$