Interpersonal hostility and suspicious thinking in obsessive-compulsive disorder

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ARTICLE INFO

Article history:
Received 4 December 2015
Received in revised form 8 June 2016
Accepted 23 June 2016
Available online 29 June 2016

Keywords:
Obsessive-compulsive disorder
Paranoia
Hostility
Anxiety
Depression

ABSTRACT

Individuals with obsessive-compulsive disorder (OCD) may struggle with hostility and suspicious thinking, but this has not been the subject of much research. The purpose of this study is to examine the relationship between hostility, suspicious thinking, and OCD severity. Participants included 66 outpatients in treatment for OCD, 27 in treatment for other disorders, and 68 students (n = 161). All completed the Inventory of Hostility and Suspicious Thinking (IHS), a measure of psychotic thinking/paranoia, the Obsessive Compulsive Inventory-Revised (OCI-R), the Beck Depression Inventory (BDI-II), and the Beck Anxiety Inventory (BAI). As expected, the IHS was significantly positively correlated with the BAI and BDI-II. Additionally, regression analyses revealed that individuals with OCD have higher levels of hostility than students. Hostility was also significantly positively associated with increased OCD severity. Hostility and suspicious thoughts are prominent in anxiety disorders in general, and thus necessitate continued research.

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1. Introduction

1.1. Background

Obsessive-compulsive disorder (OCD) is a burdensome condition with lifetime and 12-month prevalence rates of about 2.3% and 1.2%, respectively (Ruscio et al., 2010). OCD is typified by the presence of obsessions and compulsions that cause marked distress in those experiencing the disorder. Obsessions are persistent, intrusive, upsetting thoughts, and compulsions are repetitive behaviors and mental rituals performed to provide temporary relief from the psychological discomfort caused by obsessions (APA, 2013). Compulsions may disrupt an individual’s daily living, causing additional distress. OCD symptoms are time-consuming and very often so disruptive that they threaten the occupational, social, and emotional well-being of people living with OCD. The mean age of onset for OCD is 19.5 years with very few new onsets after the age of 30 (Ruscio et al., 2010). OCD is known to occur comorbidly with other psychological disorders. Ruscio et al. (2010) found that 90% of respondents with OCD also met criteria for another DSM-IV (2000) disorder, the most common conditions being anxiety disorders (75.8%) and mood disorders (63.3%).

The presentation of OCD may vary greatly between individuals, as obsessions and compulsions may fall into a number of symptom dimensions, with common examples including contamination, doubt/checking, symmetry/arranging, and unacceptable/taboo thoughts (Williams et al., 2013). While some individuals may only present with symptoms in one dimension, one study found that 81% of respondents report symptoms across multiple areas (Ruscio et al., 2010).

1.2. Hostility, paranoia, and disordered thinking in OCD

Roughly 10–15% of the general population regularly experience paranoid delusions (Freeman, 2007). For example, an individual who had a fight with a neighbor may then think that the entire neighborhood is out to get him (Freeman, 2007). Individuals diagnosed with OCD may also struggle with hostility, suspicion, and disordered thinking about others. For example, many people with OCD experience an inflated sense of responsibility (Wilson and Chambless, 1999) that leads them to take excessive precautions to ensure the safety of others (e.g., repeated checking of locks). As a result, such individuals may feel angry and resentful about the need to be constantly vigilant for the safety of others (Rachman, 1993). Furthermore, individuals with OCD may feel as though other individuals are not as responsible in protecting against harm (Ashbaugh et al., 2006), contributing to increased anger...
severity (Turksoy et al., 2002). Due to concern about how others will react to a display of aggression, which may keep them from expressing their anger (Radomsky et al., 2007). However, people diagnosed with OCD tend to also experience an irrational fear. These fears can range from a general sense of terror to very specific scenarios, for instance, the conviction that one’s spouse will be hurt (obsession) if rituals (compulsions) are not performed consistently and without error. Additionally, individuals with OCD and those with paranoia believe that their safety behaviors, or compulsions, will prevent imminent threat from occurring (Morrison, 2001). One difference is that paranoid individuals may believe there is a persecutor that intends to harm them, while perceived threat in OCD is typically attributed to more broad, generalized stimuli (Freeman et al., 2001).

1.2.1. Paranoia

Obsessive thoughts are typically distinguishable from paranoid thoughts based on the content of the individual’s obsessions, which in OCD follow the previously mentioned symptom dimensions, and the OCD thoughts are recognized by the individual as unwarranted and excessive (Poyurovsky, 2013). However, this may not always be the case, as up to one third of individuals with OCD are thought to have poor insight (Matsunaga et al., 2002).

Fear is also a major emotional component of both OCD and paranoia (Rawlings and Freeman, 1996). In both cases, individuals experience an irrational fear. These fears can range from a general sense of terror to very specific scenarios, for instance, the conviction that one’s spouse will be hurt (obsession) if rituals (compulsions) are not performed consistently and without error. Additionally, individuals with OCD and those with paranoia believe that their safety behaviors, or compulsions, will prevent imminent threat from occurring (Morrison, 2001). One difference is that paranoid individuals may believe there is a persecutor that intends to harm them, while perceived threat in OCD is typically attributed to more broad, generalized stimuli (Freeman et al., 2001).

2. Methods

2.1. Sample

Participants included 161 adults, and of these 93 were in outpatient treatment, either for OCD (n=66) or other disorders (n=27). The remaining participants (n=68) were students at a large public university who completed the survey online. Demographic information for each of the three groups is presented in Table 1.

Primary diagnoses for outpatients without OCD included major depressive disorder (31.8%), adjustment disorder (13.6%), posttraumatic stress disorder (13.6%), generalized anxiety disorder (9.1%), social phobia (9.1%), hoarding disorder (9.1%), illness anxiety disorder (4.5%), bipolar disorder (4.5%), and perfectionism (4.5%). Hoarding was determined through the use of hoarding specific self-report questionnaires, clinical interview, and a home visit. Students with probable OCD based on the Wetterneck Hart OCD Screener (WHOS; Hong et al., 2013), a four-item measure used to screen for the presence of OCD, were excluded.
psychometric properties (anxiety and depression, and has been shown to demonstrate good internal consistency (α = 0.89; Storch et al., 2002), a widely used 21-item self-report measure of depressive symptoms. It has also been found to have good psychometric properties (α = 0.90 in students, Creamer et al., 1995).

### Beck Depression Inventory

Participants also completed the Beck Depression Inventory (BDI-II; Beck et al., 1996a), a widely used 21-item self-report measure of depressive symptoms. It has also been found to have good psychometric properties (α = 0.91 in students, Creamer et al., 1995).

### Inventory of Suspicious Thinking and Hostility

All participants completed the Inventory of Hostility and Suspiciousness (IHS; Huppert et al., 2002), a 19-item measure of hostility, paranoia, and psychotic thinking. Items are based on the paranoia/suspiciousness questionnaire (PSQ; Rawlings and Freeman, 1996) and items derived from several measures including the Minnesota Multiphasic Personality Inventory, 2nd Edition (MMPI-2; Butcher et al., 1989), with additional items to further assess psychotic phenomena. Item ratings are converted into a Likert-scale (0 = “Not at all characteristic of me” to 4 = “Extremely characteristic of me.”), with higher numbers indicating greater psychopathology, and the items are summed for a total score. The overall internal consistency of the measure has been found to be good (α = 0.98 for anxious outpatients, and α = 0.85 for patients with schizophrenia; Huppert et al., 2002). In the research literature, psychometric properties of the IHS have never been evaluated in participants with OCD. Therefore, the current study carried out preliminary analyses to support validity and reliability in this clinical population.

### Obsessive-Compulsive Inventory Revised

Outpatient participants also completed the Obsessive-Compulsive Inventory (OCI-R; Foa et al., 2002), a self-report measure that assesses for OCD symptoms and severity. The OCI-R is an 18-item measure which provides a profile of the participant’s distress over the past month for OCD symptoms in six areas: washing, checking, ordering, obsessing, hoarding, and neutralizing. The OCI-R has demonstrated good internal consistency in OCD patients (α = 0.81) and non-anxious controls (α = 0.89).

### Statistical procedures

All analyses were conducted using Statistical Package for the Social Sciences (SPSS) version 21. A principal component analysis (PCA) was conducted to examine the component structure of the IHS, and follow up reliability analyses were done to determine Cronbach’s alpha of each component. Bivariate Pearson correlation analyses were used to examine the relationships between the measures and the components in the three groups. Multiple regression analyses were conducted to evaluate differences across groups on total hostility, as well as the degree to which hostility predicted OCD severity while controlling for age, gender, group status (i.e., OCD vs. other), anxiety, and depression.

### Results

#### Principal components analysis

A principal components analysis (PCA) was employed with a Varimax rotation on the whole sample (n = 161) to explore subscales and preliminarily examine the reliability and validity of the IHS in individuals with OCD. Four components had an eigenvalue over one. The PCA with four components explained 71.8% variance of the overall model with individual components accounting for 48.8%, 9.09%, 7.9%, and 6.4%, respectively. Items were included on individual components if they demonstrated a loading of 0.45 or
higher and were greater than loadings on all other components. Item 8 exhibited cross loading on components 1 and 4. Component 4 had a reliability of .818, which would have decreased to .769 if item #8 had been removed, and reliability analyses indicated that including item #8 on component 1 would only increase internal consistency by 0.02, so the item was retained on component 4.

Table 2 shows the item loadings for each component, with the highest loading over 0.45 in boldface. The main themes of the components centered on thinking others are talking about me (Component 1 – IHS-Talking; 5 items), experiences of distrust and suspicion of others (Component 2 – IHS-Suspicion; 5 items), jealousy and related feelings (Component 3 – IHS-Bitterness; 5 items), and experiences related to psychosis or disordered thinking (Component 4 – IHS-Psychosis; 4 items). Cronbach’s alphas in the sample ranged from excellent to acceptable (0.93, 0.89, 0.87, and 0.79, respectively). The total IHS demonstrated excellent reliability in this sample (α = 0.94).

3.2. Correlational analysis

Correlational analyses were conducted on the entire sample (n = 159) to examine the relationship between the IHS, its components, the BAI, and BDI-II. These findings are shown in Table 3a. The IHS was moderately correlated with both the BDI-II and BAI. Among the components, the BDI-II and BAI were most strongly correlated with IHS-Bitterness.

To examine the relationships between the components and OCD severity, a correlational analysis was conducted with participants presenting for treatment of OCD (n = 63). These results are shown in Table 3b. Scores on the OCI-R were most strongly correlated with the IHS-Talking component. When examining the OCI-R subscales, ordering and hoarding were most highly correlated with IHS scores.

3.3. Multiple regression

To evaluate relations beyond bivariate correlations, multiple regression was employed to determine differences in hostility between the OCD, clinical comparison, and student groups while controlling for age, gender, depression (BDI-II), and anxiety (BAI). One way ANOVA analyses were conducted to investigate group differences and were found to be significant for age [F(2, 156) = 12.00, p < 0.0001], BDI-II score [F(2, 156) = 21.53, p < 0.0001], and BAI score [F(2, 153) = 11.89, p < 0.0001]. These variables were therefore controlled in subsequent statistical analyses. The omnibus test was statistically significant, F(6,144) = 17.77, p < 0.0001, R² = 0.43. Table 4 provides descriptive data and the results of the main effects, which demonstrated significant associations between age, BAI, and BDI-II, as well as a dummy coded group comparison between OCD and students (Cohen’s d = 0.26). This indicates that individuals with OCD demonstrate higher scores on the IHS than the student group. Effects for gender and a dummy coded group contrast between OCD and the clinical comparison group (Cohen’s d = 0.41) were not significant.

Table 3a
Correlations between BDI-II, BAI, IHS, and IHS Components in Entire Sample.

<table>
<thead>
<tr>
<th>Scale</th>
<th>BAI</th>
<th>IHS Total</th>
<th>IHS-Paranoia</th>
<th>IHS-Suspicion</th>
<th>IHS-Bitterness</th>
<th>IHS-Talking</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI-II</td>
<td>0.689*</td>
<td>0.592*</td>
<td>0.435*</td>
<td>0.496**</td>
<td>0.562**</td>
<td>0.479*</td>
</tr>
<tr>
<td>BAI</td>
<td>0.501</td>
<td>0.421</td>
<td>0.865**</td>
<td>0.847**</td>
<td>0.877**</td>
<td>0.777**</td>
</tr>
<tr>
<td>IHS Total</td>
<td>0.729</td>
<td>0.513*</td>
<td>0.531*</td>
<td>0.554*</td>
<td>0.565*</td>
<td>0.787*</td>
</tr>
<tr>
<td>IHS-Paranoia</td>
<td>0.637*</td>
<td></td>
<td></td>
<td>0.642*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IHS-Suspicion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IHS-Bitterness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: N = 159
BDI-II = Beck Depression Inventory-II
BAI = Beck Anxiety Inventory
IHS = Inventory of Suspicious Thinking and Hostility
* Correlation is significant at the 0.01 level
A second multiple regression was conducted with participants from the two clinical groups to examine if scores on the IHS significantly predicted scores on the OCI-R while controlling for age, gender, BDI-II, and BAI. The omnibus test was statistically significant, $F(5,79)=11.90$, $p < 0.0001$, $R^2=0.43$. Findings for the main effects can be found in Table 4 and demonstrate that hostility is positively associated with obsessive-compulsive severity. Clinically significant covariates included BAI and BDI-II.

Based on the aforementioned regression model demonstrating an association between hostility and OCD severity after controlling for age, gender, BAI, and BDI-II, additional exploratory analyses were conducted to determine which component(s) of the IHS may be driving this relationship. An exploratory regression model was carried out with all clinical participants in which OCI-R total score was regressed on BDI-II and each of the four components of the IHS. Gender, age, and the BAI were omitted because they were not statistically related to OCD severity in the previous regression model. The omnibus test was statistically significant, $F(5,82)=11.84$, $p < 0.0001$, $R^2=0.42$, and the Talking component of the IHS was the only statistically significant main effect (other than BDI-II), $t(87)=2.73$, $p < 0.01$, $\beta=0.38$.

### 4. Discussion

The primary aim of this study was to evaluate the relationship between anxiety, depression, and hostility. Correlation and regression analyses indicated that as symptoms of depression and anxiety increased, hostility scores also increased, which was consistent with our hypotheses. These findings are also consistent with past research demonstrating the relationship between anxiety, depression, and hostility (e.g., Bridewell and Chang, 1997). In the combined sample, the Bitterness component was most highly correlated with depressive and anxious symptoms.

With respect to OCD, our regression analyses demonstrated significant differences in hostility between individuals with OCD and the student sample, above and beyond the effects of age, gender, anxiety, and depression. This suggests that individuals with OCD experience more feelings of hostility and suspicious thinking compared to those without OCD. This is important when considering potential difficulties with establishing rapport with a client who may be more distrustful of the therapist compared to a client who does not have OCD. Despite differences in the aforementioned samples, we did not find significant differences between the OCD and the other outpatient sample. The lack of significant differences between both outpatient groups indicates that psychopathology in general may be associated with higher levels of hostility, which is consistent with past research linking hostility with anxiety disorders (Hertsgaard and Light, 1984) and depression (Schless et al., 1974). Additionally, the lack of difference in hostility and paranoia scores between individuals with OCD and those with other disorders may be due to similarities in level of negative affect, which is associated with emotional disorders including OCD, major depression, and anxiety disorders (Watson et al., 2011).

In participants with OCD, increased OCD severity was correlated with higher levels of hostility and overall suspicious thinking, which is consistent with past research (Rubenstein et al., 1995). The Talking component of the IHS demonstrated the strongest relationship with OCD severity, and this finding was particularly robust, as a follow-up regression analysis determined that in clinical participants, the Talking component was the only IHS component to significantly predict OCD severity after controlling for anxiety, depression, age, and gender. This finding may be associated with the stigma, shame, and social isolation that are often experienced by individuals with OCD (Newth and Rachman,
Fearing that others are talking negatively about the individual may result in increased shame, which may then affect OCD severity. For example, individuals with OCD and other anxiety disorders may expect individuals to respond negatively to their diagnoses (Stengler-Wenzke et al., 2004; Alonso et al., 2008). Heightened paranoia and hostility may lead to social isolation, which is associated with poorer outcomes in individuals with OCD (Steketee, 1993). Thus, these feelings should be examined in order to avoid such negative responses.

Additionally, the hoarding subscale of the OCI-R was highly correlated with the IHS, and this is consistent with past research which has found that hoarding symptoms are linked to greater aggression (Storch et al., 2007). Furthermore, the OCI-R ordering subscale was significantly correlated with the IHS. Both ordering and hoarding have been associated with obsessive-compulsive personality disorder (OCPD; Coles et al., 2008) and are included in the diagnostic criteria for OCPD (APA, 2013). As ordering and hoarding are linked to OCPD, individuals who score higher on both subscales may have features of OCPD, in addition to OCD. Thus, future research would benefit from including measures of OCPD to disentangle the relationships between hostility, OCD, and OCPD.

The findings of this study raise important questions about the association between hostility and OCD. Past research has indicated that increased anger in participants with OCD symptoms was attributable to general distress related to psychological issues or to depression (Whiteside and Abramowitz, 2004, 2005). However, our findings indicated that differences were present in our sample despite controlling for depression. While this past research suggests that hostility is a secondary feature of OCD, our findings suggest that it may be directly associated with OCD severity. The paucity of research studies on this topic leaves the relationship between these constructs unclear.

Previous studies have shown that anxiety is a consequence of anger, so individuals with OCD and other disorders may benefit from therapeutic techniques that can reduce anger, which may in turn reduce symptoms of anxiety (Hazalez and Deffenbacher, 1986). It may be helpful to do this through examining the individual's internalization of their feelings of hostility, which may be a result of threat appraisal in OCD and other anxiety disorders, as well as internalized stigma associated with psychopathology. Additionally, as noted by Radomsky et al. (2007), it is important when treating individuals with OCD using cognitive-behavioral techniques (CBT) that anger be measured and addressed during treatment. CBT has been shown to be effective in reducing feelings of anger through the use of various techniques, such as cognitive restructuring, relaxation, imagery, and role plays (Beck and Fernandez, 1998). Identifying triggers is also key in recognizing events or situations that elicit anger.

Despite the importance of these findings, this study had a number of limitations. For one, there was a limited sample of outpatients with other disorders, resulting in low power for our comparison to the OCD sample. Our OCD sample also consisted of only treatment seeking individuals, whose results may not generalize to all individuals with OCD. There may be concerns about including OC related disorders (e.g., hoarding and skin picking) in the comparison group due to their phenomenological proximity to OCD. However, these concerns are mitigated by (1) any similarities between OC related conditions and OCD would make the groups more similar instead of different, suggesting that this decision is conservative when evaluating group differences, and (2) these OC related disorders are associated with distinct cognitive processes (Abramowitz and Jacoby, 2015).

To our knowledge, the IHS has never been used with individuals with OCD in the research literature. As a result, psychometric properties of the instrument in this clinical population were examined as part of the investigation. Although future research for supporting the psychometric properties of the IHS in this group is warranted, preliminary evidence for reliability and validity in the current study is encouraging. The IHS included four components related to themes of thoughts that others are talking about the individual, jealousy and related feelings of bitterness, experiences of distrust and suspicion of others, and experiences related to paranoid thoughts and psychosis. The IHS demonstrated excellent reliability in our sample, and its components ranged from acceptable to excellent reliability.

Additionally, data from a fourth group of individuals diagnosed with depression may have provided for important comparisons. Furthermore, the nature of our study was cross-sectional, limiting our ability to infer causality in our findings, and to determine whether hostility arises prior to symptoms of OCD or if they are a consequence of these symptoms. Finally, our study utilized only self-report data to determine interpersonal hostility. The study may have been strengthened through the use of other data collection methods, such as clinician reports and observations.

Overall, findings indicate that depressive and anxious symptoms, as well as OCD severity, are associated with increased

### Table 4

<table>
<thead>
<tr>
<th>Group</th>
<th>Total N</th>
<th>OCD</th>
<th>Other outpatient</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Gender</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Age</td>
<td>29.41(11.88)</td>
<td>31.71(12.71)</td>
<td>35.88(13.17)</td>
<td>24.63(8.23)</td>
</tr>
<tr>
<td>BAI</td>
<td>20.71(13.95)</td>
<td>26.63(13.85)</td>
<td>18.00(12.95)</td>
<td>15.88(12.49)</td>
</tr>
<tr>
<td>BDI-II</td>
<td>20.02(14.29)</td>
<td>28.21(13.75)</td>
<td>19.52(14.54)</td>
<td>12.55(10.86)</td>
</tr>
<tr>
<td>IHS</td>
<td>23.27(16.82)</td>
<td>26.31(19.44)</td>
<td>19.52(13.38)</td>
<td>21.91(14.40)</td>
</tr>
<tr>
<td>OCD vs Other</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1.91 0.577 0.041</td>
</tr>
<tr>
<td>OCD vs Student</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>6.06 2.13 0.84</td>
</tr>
</tbody>
</table>

**Note.** BAI = Beck Anxiety Inventory; BDI-II = Beck Depression Inventory; IHS = Inventory of Hostility and Suspiciousness; OCD = obsessive-compulsive disorder; OCI-R = Obsessive-Compulsive Inventory-Revised.

* Total n = 161.
* OCD n = 66.
* Other n = 27.
* Student n = 68.
* p < 0.05.
* p < 0.01.
hostility, and that those with OCD experience increased levels of hostility and suspicious thinking when compared to a student sample. With such little research on these relationships, future research is necessary in order to expand on current knowledge related to the constructs of depression, anxiety, hostility, and OCD severity. This will be important in determining the role that hostility plays in treatment, and how increased levels of hostility may affect treatment outcomes. Additionally, hostility may particularly be an issue for participants with aggressive obsessions, as their thoughts are already perceived as threatening (Whiteside and Abramowitz, 2005). Future research may also examine the interaction between shame and hostility in individuals with OCD, as internalized stigma and shame related to having a diagnosis may result in hostility and withdrawal from others, decreasing an individual’s social support. It may also be interesting to examine whether hostility manifests differently in individuals with OCD depending on their relationship status. Furthermore, future research should continue to validate the IHS and establish concurrent validity with measures of hostility, paranoia, and psychosocial.

Acknowledgements

The authors would like to thank Claire Lewis for her assistance with literature search and input into earlier drafts of the manuscript, and Jessica Dowell for her assistance with data entry. The authors would also like to acknowledge Simone Leavell Bruce and Darlene Davis.

References
