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Short communication

Stigma and recognition of different types of symptoms in OCD

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ABSTRACT

Since stigma and poor illness recognition are two major barriers in seeking treatment for Obsessive-Compulsive Disorder (OCD), it is necessary to investigate the public's knowledge and perception of OCD in its many forms. The goal of the present study was to identify how stigma and recognition rates differed across four distinct symptom dimensions of OCD: contamination, symmetry, harm, and taboo content. In an online survey, 738 adults from the United States were randomly assigned to one of five vignettes describing an individual with obsessive-compulsive symptoms, followed by questionnaires assessing their reactions. The symmetry/incompleteness and contamination dimensions were significantly more likely to be labeled as OCD (84.5% and 76.1% recognition rates, respectively) than the responsibility for harm or taboo dimensions (36.9% and 30.9%, respectively). Participants in the taboo condition endorsed significantly higher levels of stigma for their character described in the vignette. Participants who labeled their vignette as OCD desired significantly less social distance and reported lower levels of fear than those who did not, regardless of condition. Our findings suggest that symptom content is a salient component of the social perception of OCD, and we discuss the relationship between mental illness recognition and stigma for this disorder.

1. Introduction

While obsessive-compulsive disorder (OCD) is often presented to the public *broadly* as a combination of function-impairing obsessions and compulsions (American Psychiatric Association, 2013), the content of these distressing thoughts can vary drastically. Often, researchers find that this variance clusters into four key dimensions: concerns about (a) contamination, (b) symmetry/incompleteness, (c) responsibility for harm, and (d) intrusive taboo thoughts (Abramowitz et al., 2010). Although these all fall under the domain of OCD, the social experience of people with a dominant symptom manifestation may differ in important ways. For instance, several studies have found that perceived public stigmatization and feelings of shame are higher among people with taboo thought content than among people with other dominant symptom presentations (Glazier, Wetterneck, Singh, & Williams, 2015; Weingarden & Renshaw, 2015). Indeed, studies have shown that members of the general public tend to view harm and taboo content-related thoughts as more socially unacceptable and threatening, and people suffering from these symptoms may be met with lower suggested disclosure (Beşiroğlu et al., 2010; Cathey & Wetterneck, 2013; Corcoran & Woody, 2008; Simonds & Thorpe, 2003). Given that stigma is likely one of the largest barriers to seeking treatment for OCD (García-Soriano, Rufer, Delsignore, & Weidt, 2014; Rüsch, Angermeyer, & Corrigan, 2005), these public perception differences may have important trickle-down implications for the significant percentage of OCD sufferers who choose not to avail themselves of professional psychological help (García-Soriano et al., 2014; Schwartz, Schlegl, Kuelz, & Voderholzer, 2013).

Mental illness recognition is an additional concern—the inability of individuals to recognize what they *or others* are experiencing very likely adds to OCD-treatment-seeking reluctance (Coles & Coleman, 2010; Rüsch, Evans-Lacko, Henderson, Flach, & Thornicroft, 2011). While it seems that most people recognize the symptoms of OCD as problematic (Coles & Coleman, 2010; Coles, Heimberg, & Weiss, 2013), there is a large amount of variability in the general public correctly recognizing OCD *as* OCD—recognition rates of OCD in survey and experimental studies range from 26–86.4% (Chong et al., 2016; Coles & Coleman, 2010; Coles et al., 2013; Koutoufa & Furnham, 2014; Warman, Phalen, & Martin, 2015). It is very important to note that in the aforementioned studies, each design described OCD using varying symptom content—in other words, the wide *range* of recognition rates between studies may reflect systematic differences in the

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sorts of symptoms that researchers have used to describe OCD to their participants. While violent thought OCD appears to be under-recognized, there has been mixed evidence on how often individuals recognize contamination and checking symptoms as OCD.[1] In addition, only one study to date has investigated *differences* in recognition rates between different symptom presentations directly; Glazier, Calixte, Rothschild, and Pinto (2013) found that taboo content obsessions—particularly sexual obsessions—were significantly less likely to be diagnosed as OCD compared to contamination obsessions in a sample of mental health professionals. To our knowledge, no study has compared recognition rates directly among members of the lay public.

In sum, the available evidence suggests that some varieties of OCD presentation are met with more public stigmatization and perhaps worse illness recognition—each of which conceivably may reduce OCD sufferers' likelihood of seeking professional psychological or psychiatric help—than others. We designed and conducted the present study in order to (a) provide a well-controlled experimental test of this new domain-specific framework for understanding public attitudes toward OCD and (b) investigate a novel hypothesis in attempting to characterize the manner in which recognition and stigma may interact with each other.

In our attempt to (a) replicate previous work, we used vignettes that were identical in every way but symptom specific content (i.e. general grammatical structure of the vignettes, illness severity, time taken by symptoms, and the demographics of the fictional character were held constant) in order to remove the impact of extraneous variables that may have impacted previous findings. In addition, we employed psychometrically validated measures of social distance and perceived fear/dangerousness to operationalize mental illness stigma (Corrigan, Markowtiz, Watson, Rowan, & Kubiak, 2003; Link, Phelan, Bresnahan, Stueve, & Pescosolido, 1999). On the basis of prior findings, we predicted that people would desire greater social distance from and report higher fear and more perceived dangerousness in reaction to a fictional character with taboo[2] and harm-related symptoms. In addition, we proposed to investigate differences in recognition rates between the contamination, symmetry/incompleteness, responsibility for harm, and taboo content symptom dimensions of OCD in a non-expert sample. The varying language, structure, and demographic profiles of prior studies' vignettes may very likely have influenced findings to date, and thus it is essential to use carefully crafted vignettes and compare them in a single design to uncover valid differences between symptom subtypes. Furthermore, important symptom dimensions such as symmetry/incompleteness have yet to be thoroughly investigated. We hypothesized that the responsibility for harm and taboo symptom dimensions would be less frequently recognized, or labeled, as OCD.

Our second aim was to (b) attempt to tease apart the complex relationship between OCD stigma, symptom (dimension) presentation, and illness recognition. Since education and accurate knowledge of mental disorders are associated with lower levels of stigma (Jorm & Oh, 2009; Rüsch et al., 2005), we reasoned that recognition of OCD (operationalized as labeling) might be associated with less OCD-stigmatizing attitudes. Warman et al. (2015) offered preliminary evidence for this notion; providing individuals with DSM-5 criteria for OCD resulted in lower levels of stigma for a hypothetical individual with violent intrusive thoughts, as well as an increased likelihood of agreeing with an OCD diagnosis. More so, Fox (2016) found a negative association between *believed* knowledge of OCD and endorsed levels of stigma, though did not investigate a form of actual knowledge. Discovering a simple association between recognition and stigma would bolster this emerging model of public attitudes toward OCD. Again, based on our interpretation of prior findings, we hypothesized participants who label OCD symptom presentations as OCD would report lower levels of stigma. Lastly, given that stigma and recognition seem to differ between presenting symptoms, it is also possible that the association between stigma and recognition itself varies between dimensions. We hypothesized there would be a significant interaction between labeling and stigma across the symptom dimensions. We believe the association between recognition and stigma will be stronger in the taboo and harm symptom conditions, such that those who recognize OCD will endorse lower levels of stigma in these conditions, while the relationship will be weaker in the symmetry and contamination conditions. Since we are considering recognition (via labeling) to be representative of having knowledge of OCD, it is plausible that its effect would be stronger for the symptom dimensions believed to be less understood by the public.

2. Method

2.1. Participants

Participants (N=738) were adults (ranging from ages 18 to 79) from the United States of America.[3] Table 1 provides demographic information for our sample.

2.2. Procedure

Participants were recruited and compensated $.20 to complete a survey through the online platform Amazon's Mechanical Turk (MTurk). MTurk has demonstrated the ability to provide reliable data from a fairly diverse sample (Buhrmester, Kwang, & Gosling, 2011), and has become a popular platform for clinical psychology research, particularly when studying stigma (Chandler & Shapiro, 2016). Participants were instructed to read one of five randomly assigned vignettes depicting an individual with various intrusive thoughts and related compulsions (see below). After reading the vignette, participants completed measures that assessed their perception and reaction to the vignette in the order presented below. Questions for multi-item scales were counterbalanced through randomization. Demographic items were presented at the end of the survey.

2.3. Materials/measures

2.3.1. Vignettes

Five vignettes were created for this study (see Appendix). Each vignette (M =96 words) depicted a 28-year-old man ("Taylor") with obsessional thoughts and accompanying compulsions. The vignette length was influenced by recommendations of prior research on vignette usage (Veloski, Tai, Evans, & Nash, 2005). Four of the five vignettes described clinical levels of OCD symptoms, which differed only in the symptom dimension of obsessions and compulsions; symmetry/incompleteness (n =148), contamination (n =142), responsibility for harm (n =160), and taboo content (n =149). The four vignettes were crafted to depict equally severe cases of OCD symptoms;

[1] Contamination symptoms have been recognized as OCD by as few as 28% (Chong et al., 2016) and by as many as 86% (Coles & Coleman, 2010) of participants. Roughly one out of every three participants recognized OCD when it was described with both contamination and checking symptoms (Coles et al., 2013). Another study averaged the recognition rate of two different OCD vignettes—one involved checking and the other contained both contamination and symmetry/incompleteness content—and found a recognition rate of 64%, though the individual rates for each vignette are not known (Koutoufa & Furnham, 2014). Only 26% of participants agreed with an OCD label of a person with intrusive thoughts about violence prior to an educational intervention (Warman, Phalen, & Martin, 2015).

[2] In the present study, we choose to investigate taboo content of a sexual nature, due to the existing research suggesting higher levels of stigma and lower recognition for this sub-category (Cathey & Wetterneck, 2013; Glazier et al., 2013).

[3] One-thousand individuals began the survey, however we removed those who did not complete the survey (including demographics), failed attention checks, or had scores on any scale 4 SDs above or below the mean, resulting in our final sample size. Removing these participants did not meaningfully change our results

Table 1
Sample characteristics (N =738).

Measure	%	n	Measure	%	n
Age			Education		
18–24	15.6	115	9th to 12th grade	.7	5
25–34	38.2	282	High school graduate	9.5	70
35–44	21.1	156	Some college	29.1	215
45–54	13.1	97	Associate degree	10.2	75
55–64	8.4	62	College graduate	36.2	267
65+	3.3	24	Postgraduate degree	14.3	106
Gender			Household income		
Female	60.3	445	Less than $9999	7.7	57
Male	39.3	290	$10,000-$19,999	10.3	76
Other	.4	3	$20,000-$34,999	21.8	161
Racial Identification			$35,000-$49,999	17.6	130
Asian	6.2	46	$50,000-$99,999	29.5	218
Black/African American	7.9	58	$100,000-$149,999	9.8	72
Native American/Alaska			$150,000+	3.3	24
Native	.5	4	Region		
Native Hawaiian/Pacific			Northeast	22.6	167
Islander	.1	1	Midwest	23.0	170
White	78.6	580	South	35.0	258
Other	3.7	27	West	19.4	143
Multiracial	2.8	21			
Ethnic ientification					
Hispanic	8.8	65			

Note: Due to missing data on demographic items, some totals fail to reach 100%.

the amount of time spent per day with symptoms and the distress and interference associated with the symptoms were held equal. A group of licensed psychologists specializing in OCD treatment (lead by the last author of this article) rated these vignettes as equally severe cases of OCD. The fifth vignette (n =139) described a person dealing with occasional intrusive thoughts that were not perceived as distressing, and created a non-clinical comparison group—that is, a case of an individual that has obsessive-compulsive symptoms but does not have OCD—that was used as a control in the analyses, similar in design to Glazier et al. (2013). Subsequent analysis revealed no significant differences in demographic variables between participants in each condition.

2.3.2. Social distance scale

Social distance was measured using a five-item Likert style scale (Link et al., 1999). The questions gauged participant' willingness to engage with the subject of the vignette in a variety of social situations (e.g. "How willing would you be to start working closely with Taylor?") using a four-point scale ranging from *definitely willing* (1) to *definitely unwilling* (4). Items were added together and averaged to make a single measure (α=.92). Higher scores indicated more desired social distance.

2.3.3. Fear/Dangerousness

Fear/Dangerousness was assessed using a six-item modified version of a psychometrically validated subscale of the Attribution Questionnaire (Brown, 2008; Corrigan et al., 2003). Items (e.g. "How dangerous would you feel Taylor is?") were rated on a nine-point scale from *not at all* (1) to *very much* (9) and added together and averaged to make a single measure (α=.97). Higher scores indicated higher levels of fear and perceived dangerousness.

2.3.4. Perceived severity

Participants were asked to rate on a seven-point scale on "How severe do you believe Taylor's condition is? " from *not severe* to *very severe*. This question served two purposes; a) to ensure that the four experimental vignettes were equal in severity while the non-clinical control was viewed as less severe, thereby indicating our experimental manipulation was successful, and b) to test perceived differences in severity by label (see below). As such, this item was not included in the analysis for main effects.

2.3.5. Open-ended label

A single, text-entry item that asked "What label would you use to describe what Taylor is currently experiencing? That is, what do you think Taylor would be diagnosed with?" was used as method of gauging recognition. If the participant's response contained the words "OCD", "Obsessive Compulsive", or "Obsessive Compulsive Disorder", then the response was coded as an OCD label. This remained the same even if several other possible diagnoses were given in addition (e.g., "obsessive-compulsive disorder or bipolar"), an approach that has been used in previous research (Angermeyer & Matschinger, 2003). All other responses were coded as an alternate label, creating a binary variable that was then used as an independent variable in our analyses. This item was presented last in order to avoid possible priming effects on the other variables.

2.4. Statistical analyses

To determine if the vignette manipulation was successful (that is, if the experimental vignettes were perceived as more severe than the non-clinical "control"), an analysis of variance (ANOVA) was run for the effect of vignette group on perceived severity. To determine whether there were differences in accurate OCD identification between vignette groups, a logistic regression was used to determine the odds of correctly classifying the diagnosis compared with the non-clinical condition as an anchor point. Significance for odds ratios were calculated using a Wald t-test. To determine the effect of vignette group and OCD labeling on outcome variables, a multivariate analysis of variance (MANOVA) was run using the dependent variables of social distance and fear/dangerousness. Shapiro-Wilks tests revealed that both dependent variables were non-normally distributed, however social scientists have noted that MANOVAs are generally very robust to these deviations from normality, especially with large sample sizes (Finch, 2005). Pillai's trace F approximations were used due to multivariate non-normality. Bonferroni corrections were used to account for multiple comparisons across conditions.

3. Results

3.1. Experimental manipulation check

An ANOVA revealed a significant effect of vignette condition on perceived severity F (4, 734) =50.23, $p < .001$. Pairwise comparisons revealed that the non-clinical control vignette was perceived as significantly less severe than all of the experimental conditions, all p's < .001. There were no significant differences found for perceived severity between any of the experimental conditions. Therefore, we concluded our vignette manipulation was successful.

3.2. OCD recognition rates

Out of the 738 participants across the five conditions, 49.1% (n =362) labeled their vignette as OCD. The percentages of participants who labeled OCD by condition are as follows: 84.5% (n =125) in the symmetry/incompleteness condition, 76.1% (n =108) in the contamination condition, 36.9% (n =59) in the harm condition, and 30.9% (n =46) in the taboo condition, and 17.3% (n =24) in the non-clinical control condition, and are listed in Table 2. A logistic regression was used to evaluate the relative odds of participants correctly labeling OCD in each vignette group. Compared with the null model, adding the vignette predictors significantly improves the model, χ^2 (4) =215.89 $p < .001$. Cox & Snell pseudo-R^2 indicated that the vignettes explained 25.4% of the variance in OCD identification. Participants in every experimental group were more likely than the control group to label

Table 2
Participant labeling responses.

Condition	OCD label N (%)	Odds ratio compared to control[a]	Common labels other than OCD
Symmetry/Incompleteness	84.5%	26.04	Mental illness (3.4%, *n* = 5).
Contamination	76.1%	15.22	Germaphobia (9.2%, *n* = 13)
Responsibility for Harm	36.9%	2.80	Paranoia (18.9% (*n* = 30); anxiety disorder (15.1%, *n*=24); schizophrenia (5%, *n*=8)
Taboo Content	30.9%	2.14	Sexual deviance or hyper-sexuality (28.7%, *n* = 43); anxiety disorder (6.7%, *n*=10), schizophrenia (4.7%, *n*=7)
Non-Clinical Control	17.3%	–	Non-mental illness labels (13.7%, *n* = 19), schizophrenia (11.5%, *n* = 16); anxiety disorders, (10.8%, *n* = 15); bipolar disorder (7.9%, *n* = 11); depression (7.9%, *n* = 11).

[a] Odds ratio refers to the likelihood a participant labeled their vignette as having OCD compared to participants in the non-clinical control condition labeling their vignette as having OCD.

OCD, all *p*'s < .001. Additionally, participants were significantly more likely to accurately identify OCD in the symmetry/incompleteness and contamination conditions compared to the harm and taboo conditions, all *p*'s < .01. The odd ratios of each experimental group labeling OCD compared to the non-clinical control, as well as common labels other than OCD given for the five vignette groups are described in Table 2.

3.3. Main effects of vignette group and OCD recognition on stigma

Table 3 shows a summary of the main effects and interaction. A significant multivariate effect of vignette group was found on the stigma variables, in addition to a significant multivariate effect of recognition on the stigma variables. Both independent variables produced significant univariate effects on both social distance and fear/dangerousness. There was no significant interaction between vignette group and OCD recognition on the dependent variables, thus only the pairwise comparisons for the individual univariate effects will be reported.

3.3.1. Stigma across vignette groups

Table 4 illustrates the stigma scores between vignette groups. Participants in the taboo condition desired significantly more social distance than participants in all other conditions (all *p*'s≤.001). In addition, participants in the harm condition desired more distance than those in the non-clinical control condition (*p*=.013). There were no other differences in social distance between vignette conditions. Reported fear and perceived dangerousness was highest in the taboo condition, which again was significantly higher than all other conditions (all *p*'s < .001) Participants in the harm condition and the non-clinical control condition reported significantly higher fear scores than those in the contamination condition (*p*=.005 and *p*=.016, respectively). There were no other differences in fear/dangerousness between vignette conditions. The effect sizes between the taboo vignette and other vignettes are provided in Table 5, with effects ranging from near moderate to large in size.

3.3.2. Stigma and OCD recognition

Participants who labeled the symptoms as OCD desired lower levels of social distance than those who did not ($p < .001$, $d = .35$). Participants who labeled their vignette as OCD also endorsed lower levels of fear and dangerousness than those who did not ($p < .001$, $d = .41$).[4] A follow-up analysis was conducted to investigate differences in perceived severity, as there is a potential for a confound effect on stigma (Gaebel, Zäske, & Baumann, 2006). A subsequent *t*-test revealed those who recognized OCD rated their vignettes as more severe than those who did not, $t\ (728.41) = 5.67$, $p > .001$. The descriptive statistics for these results can be found in Table 6.

Table 3
MANOVA main effects and interaction.

Effects	Pillai's Trace	*df*	*F*	*p*	$\eta^2_{partial}$
Overall effect of vignette group	.169	8	16.77	.000	.084
Social Distance		4	12.35	.000	.064
Fear & Dangerousness		4	28.44	.000	.135
Overall effect of recognition	.047	2	17.96	.000	.047
Social Distance		1	23.17	.000	.031
Fear & Dangerousness		1	31.48	.000	.041
Overall interaction effect[a]	.018	8	1.69	.095	.009

[a] Interaction effect included both dependent variables.

Table 4
Stigma scores by vignette group.

Vignette Group	*N*	Desired Social Distance *M* (*SD*)	Perceived Fear and Dangerousness *M* (*SD*)
Symmetry/ Incompleteness[a]	148	2.48 (.97)[d]	2.73 (2.55)[d]
Contamination[b]	142	2.45 (.83)[d]	2.07 (2.17)[c,d,e]
Responsibility for Harm[c]	160	2.53 (.73)[d,e]	2.90 (1.92)[b,d]
Taboo Content[d]	149	2.89 (.77)[a,b,c,e]	4.53 (2.00)[a,b,c,e]
Non-Clinical Control[e]	139	2.21 (.98)[c,d]	2.94 (2.45)[b,d]

Superscripts for each *M* (*SD*) indicate which vignette group has a significantly different stigma score at *p* < .02 (e.g. a stigma score with an [a] is a significantly different score than the corresponding symmetry/incompleteness score).

Table 5
Effect sizes of stigma compared to taboo content.

Vignette Group	Cohen's *D* compared to Taboo Content	
	Social Distance	Fear and Dangerousness
Symmetry/Incompleteness	.47	.79
Contamination	.55	1.18
Responsibility for Harm	.48	.83
Non-Clinical Control	.77	.71

4. Discussion

The present study was the first to investigate how symptom content affects recognition rates for OCD in a non-professional sample. More stigmatized symptoms were recognized as OCD significantly less often; about three out of every four participants in the symmetry/incomplete-

[4] It is important to note that labeling the non-clinical control condition as OCD is actually an incorrect recognition. Even so, the non-clinical condition was kept in this analysis because all five vignette groups were tested in the main MANOVA analysis. With that said, removing the non-clinical condition from these analyses does not change the results; OCD labelers still desired less social distance, less perceived fear and dangerousness (both *p*'s > .001), and viewed their vignette as more severe (*p*=.03) than those who did not. Furthermore, removing the non-clinical condition also did not change our main effects.

Table 6
Stigma and severity scores by labeling.

OCD Labeling	N	Desired Social Distance M (SD)	Perceived Fear and Dangerousness M (SD)	Perceived Severity M (SD)
Labeled as OCD	362	2.36 (.84)	2.57 (2.21)	5.13 (1.39)
Did not label as OCD	376	2.66 (.87)	3.50 (2.29)	4.50 (1.62)

The two labeling "groups" were significantly different from one another for social distance, fear & dangerousness, and perceived severity at $p < .001$.
Note. This table includes those in the non-clinical control group.

ness or contamination conditions labeled their vignette as OCD compared to approximately one-third of participants in the taboo content and responsibility for harm conditions. This result is consistent with previous research indicating lower levels of recognition for OCD taboo content compared to contamination content (Glazier et al., 2013); an important replication for scholars attempting to build models of public attitudes toward OCD. As hypothesized, we found under-recognition of harm symptoms, whereas a majority of our participants labeled symmetry/incompleteness symptoms correctly as OCD. A possible explanation for this pattern may lie in the sources of knowledge individuals use to learn about OCD. Symmetry/incompleteness and contamination content appear to be much more widely discussed in popular culture (e.g. by TV celebrity Howie Mandel or the TV show *Monk* [2002] (Breckman and Hoberman (2002))) than harm or taboo content, which may lead the public to associate the label of "OCD" with this narrow set of symptom types. Indeed, research indicates that more television viewing time is correlated with poorer knowledge of OCD (Kimmerle & Cress, 2013), suggesting television and perhaps other forms of media are providing inadequate information for this disorder. Boosting recognition rates for OCD may involve emphasizing to the public that obsessions and compulsions can widely range in their content.

In this investigation, preliminary evidence as to the stigma-reducing effect of recognizing OCD was uncovered. Those who labeled their vignette as OCD endorsed lower levels of stigma than those who did not, regardless of the condition, which was contrary to our last hypothesis. In other words, the strength of the relationship between OCD recognition and stigmatizing attitudes did not depend on symptom presentation. Interestingly, these results contradict previous research that found accurate recognition of a mental illness was not associated with reduced stigma, and in many cases labeling a mental illness resulted in even higher stigma (Angermeyer & Matschinger, 2003; Angermeyer, Holzinger, & Matschinger, 2009). However, those findings were for mental illnesses other than OCD. One possible explanation for our findings is that the OCD "label" is not perceived by the public as especially severe within the category of mental illnesses. However, in our study those who labeled the symptoms as OCD perceived their vignette to be more severe than those who did not. This, along with research suggesting that individuals do not change their perception of OCD follow exposure to trivializing labels on social media (refer to Pavelko & Myrick, 2015), indicates there is little support for the idea that OCD is trivialized.

Another explanation for this finding is that participants who labeled the imaginary character's troubles as OCD were exhibiting an understanding of OCD by means of recognition. This was our original rationale for our second hypothesis; we suspected that those who labeled the four experimental vignettes as OCD would be more likely to understand that OCD is a disorder about intrusive thoughts and accompanying compulsions rather than a disorder that is defined by specific content (though we did not test this hypothesis directly in this study). With that said, it is also possible that many individuals who labeled symmetry/incompleteness and contamination as OCD did so merely because they recognized the familiar symptom content, rather than because they understood the illness's psychopathology. Even if this indeed did occur, the fact remains that labelers endorsed lower levels of stigma than non-labelers in these two groups just as they did in the harm and taboo groups. However, it is also the case that those who inaccurately labeled the non-clinical control vignette as OCD also reported lower levels of stigma. Hence, while labeling OCD was associated with lower levels of stigma, the exact reason as to why this occurred cannot be determined by the current study and thereby warrants further investigation.

Our findings regarding differences in levels of stigma between symptom dimensions conceptually replicated previous studies (Beşiroğlu et al., 2010; Cathey & Wetterneck, 2013; Corcoan & Woody, 2008; Simonds & Thorpe, 2003), with the addition of a profile of stigma for symmetry/incompleteness symptoms, which appears to be perceptually similar among members of the public to that of contamination, as we predicted. Across all experimental groups, participants rated the vignettes as equally severe, and distinguished them from the non-clinical control vignette, yet differences in desired social distance and fear/perceived dangerousness still emerged, most prominently for the taboo dimension. This higher level of stigma may be one of the reasons as to why those with taboo content OCD also report higher levels of shame (Glazier et al., 2015; Weingarden & Renshaw, 2015).

Extrapolating from the results of our experimental design, it appears that content that involves "others" (e.g. bodily contact with others) is much more negatively perceived than content that involves just the individual (e.g. washing one's hands, rearranging one's own things). Fear and dangerousness is an especially salient component of stigma toward the taboo content dimension, which suggests individuals may be afraid that those with taboo OCD will act upon their thoughts (Glazier et al., 2013). In this instance, it is logical that people would desire more distance from those who may be perceived as threatening. Of course, there is no credible evidence that people with OCD *are* more dangerous. It is also the case that people do not realize how common intrusive thoughts really are (Radomsky et al., 2014) which may be related to a lack of awareness and misattribution of these thoughts, especially those that are taboo in nature (Corcoran & Woody, 2008; Levine & Warman, 2016). Both of these points require emphasis to the public in order to reduce stigma for OCD.

Our approach to OCD stigma and recognition measurement confers several strengths. First, the vignettes were crafted to depict a case of relatively severe OCD. Second, the symptom content was the *only* thing that differed between conditions; language regarding severity and duration was held constant with a group of OCD professionals rating the experimental vignettes as equally severe, affording us a high degree of experimental control and providing compelling support for the emerging social perceptions model of this disorder. In fact, our results have indicated how crucial it is that future researchers carefully consider which symptoms they are using in their descriptions of OCD. It is very possible that the varying descriptions used in prior work have resulted in some of the variability previously observed. The use of a non-clinical level control has not been used often in prior research, and it served as a comparison group to compare recognition rates and perceived severity. Additionally, our sample was fairly large and diverse.

It is also important to note this study's limitations. Surveys are prone to biases in responses, such as social desirability, and social distance and perceived fear/dangerousness are only proxy methods to assess stigma. This means our reported levels of stigma may be lower (or higher) than what actually exist. We also do not claim that our vignettes are all-inclusive in their description of the symptom dimensions; other descriptions of the same content may change participants' responses. Further, our operationalization of OCD recognition was solely labeling the illness as OCD, which is a simplified representation. Since our vignettes described a young adult male, it is possible that

responses would differ if our fictional character had different demographics. Lastly, we did not fully investigate the effect that participants' demographics had on our outcome variables.[5]

Future research should build upon these findings and can address our limitations. Future studies should further investigate the effects of labeling OCD symptoms as OCD. Other means to measure knowledge of OCD should be considered to investigate to what degree stigma is impacted. More broadly, the role of illness recognition and education in help-seeking for OCD warrants further investigation. Perceptions of other components of stigma such as pity and perceived responsibility, and other common OCD symptoms such as religious/moral scrupulosity and somatic symptoms should be explored. It is also essential to investigate if and how symptom content results in different levels of self-stigma for sufferers with OCD, and how that self-stigma affects help-seeking and treatment outcomes. We hope that these findings might be applied to education programs to increase OCD recognition and reduce public and self-stigma, thereby boosting treatment-seeking rates.

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Contributors

Mr. McCarty generated the hypotheses for the present study, designed the survey and experimental vignettes, oversaw data collection, and wrote the initial draft of the manuscript. All authors assisted with conceptualizing the study, and analyzing and interpreting the results. All authors reviewed and revised the manuscript and approved the final version.

Conflict of interest

All authors have no conflicts of interest to report.

Appendix A. Experimental vignettes

Symmetry/Incompleteness Condition: Taylor is a 28-year-old man who has frequent intrusive, unwanted thoughts about things being misaligned and unorganized. Taylor spends on average 3 h a day ordering and rearranging items in his house and at his work in order to make things "just right." His ordering rituals provide temporary relief, but Taylor's worries about unevenness soon return, causing him to repeat these rituals. Because of his fears, Taylor generally attempts to avoid places where objects may be out of place. Taylor knows his concerns and behaviors are irrational and excessive, but they still cause him substantial distress and are significantly interfering with his quality of life.

Contamination Condition: Taylor is a 28-year-old man who has frequent intrusive, unwanted thoughts about things he touches being dirty and contaminated. Taylor spends on average 3 h a day washing his hands and bathing in order to ensure he has not become contaminated. His cleaning rituals provide temporary relief, but Taylor's worries about dirtiness soon return, causing him to repeat these rituals. Because of his fears, Taylor generally attempts to avoid potentially contaminated places. Taylor knows his concerns and behaviors are irrational and excessive, but they still cause him substantial distress and are significantly interfering with his quality of life.

Responsibility for Harm Condition: Taylor is a 28-year-old man who has frequent intrusive, unwanted thoughts about others being harmed. Taylor spends on average 3 h a day seeking reassurance and checking to make sure those around him have not been hurt in anyway. His checking rituals provide temporary relief, but Taylor's worries about harm soon return, causing him to repeat these rituals. Because of his fears, Taylor generally attempts to avoid places with potential hazards. Taylor knows his concerns and behaviors are irrational and excessive, but they still cause him substantial distress and are significantly interfering with his quality of life.

Taboo Content (Sexual) Condition: Taylor is a 28-year-old man who has frequent intrusive, unwanted thoughts about inappropriate sexual contact with strangers. Taylor spends on average 3 h a day seeking reassurance and checking that he did not inappropriately touch those around him. His checking rituals provide temporary relief, but Taylor's worries about acting upon his thoughts soon return, causing him to repeat these rituals. Because of his fears, Taylor generally attempts to avoid places where he may be alone with someone he does not know. Taylor knows his concerns and behaviors are irrational and excessive, but they still cause him substantial distress and are significantly interfering with his quality of life.

Non-Clinical Control Condition: Taylor is a 28-year-old man who has occasional intrusive, unwanted thoughts. The content of these intrusive thoughts may include things such as a loved one being harmed, doing something inappropriate or morally wrong, becoming sick from touching something dirty, or being incorrect about something. However, Taylor knows these thoughts are meaningless and fleeting, so he does not worry much when he has them.

[5] Due to random assignment in our design, variance in demographic variables between conditions is relatively equal. However, it is still possible that our recognition rates and levels of stigma were influenced by specific participant demographic variables.

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