Is Hoarding a Symptom of Obsessive-Compulsive Disorder?

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The presence of hoarding symptoms in patients with obsessive-compulsive disorder (OCD) is a commonly reported phenomenon. How these symptoms are to be understood is less clear. The extent to which hoarding fits with other symptoms of OCD by considering its diagnostic utility and underlying cognitive processes is evaluated. In the first study, hoarding symptoms did not differentiate OCD patients from individuals with other anxiety disorders or unscreened students, indicating that hoarding does not inform diagnostic decision making. In the second study, using an independent nonclinical sample, cognitive variables related to OCD were distinct from hoarding-specific cognitions, and not predictive of hoarding symptoms. These results add to a growing body of evidence suggesting that hoarding is not a symptom or manifestation of OCD. The need for careful assessment of the function of hoarding symptoms is discussed.

Hoarding involves the acquisition and retention of a large number of possessions of apparently limited value (Frost & Gross, 1993). Such possessions often accumulate and cause substantial clutter that can interfere with the functionality of an individual's living space, and may represent a public health hazard when extreme. Individuals with significant hoarding problems have difficulty discarding their hoarded possessions, which can lead to significant distress and interpersonal problems (e.g., conflict with family members). As the mental health field researches and develops new diagnostic criteria for *DSM-5*, how to conceptualize hoarding symptoms has become an important issue. Research on hoarding has increased rapidly in recent years (Mataix-Cols et al., 2010), but many fundamental questions remain unresolved. In the present research our aim was to shed additional light on issues that remain unclear regarding the nosological status of hoarding.

Hoarding symptoms are most commonly considered as symptoms of obsessive-compulsive disorder (OCD) despite the fact that hoarding is not actually mentioned among the diagnostic criteria for OCD in the *DSM-IV-TR* (American Psychiatric As-

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sociation [APA], 2000). Nevertheless, hoarding appears to occur frequently in OCD, as studies show up to a third of OCD patients endorse hoarding symptoms (Hanna, 1995; Rasmussen & Eisen, 1992; Samuels et al., 2002). Other research, however, indicates that OCD patients with hoarding symptoms are distinct from nonhoarding OCD patients across a wide range of variables, including age of onset (Samuels et al., 2002), comorbidity with other psychiatric conditions (Wheaton, Timpano, LaSalle-Ricci, & Murphy, 2008), neural correlates (Mataix-Cols et al., 2004; Saxena et al., 2004), genetic susceptibility loci (Samuels et al., 2007), and response to both cognitive-behavioral (i.e., exposure and response prevention) and pharmacological treatment (Abramowitz, Franklin, Schwartz & Furr, 2003; Saxena et al., 2002). Accordingly, some authors have proposed that hoarding is not a symptom of OCD, but instead a separate problem that is often comorbid with OCD (Abramowitz, Wheaton, & Storch, 2008; Mataix-Cols et al., 2010).

The notion that hoarding is distinct from OCD is supported by recent findings that many patients with pathological hoarding *do not* meet diagnostic criteria for OCD (for a review, see Pertusa et al., 2010), and that hoarding symptoms are not more prevalent in patients with OCD compared to patients with other anxiety disorders (Abramowitz et al., 2008) or non-anxiety psychiatric disorders (Wu & Watson, 2005). Hoarding also appears to differ considerably from other symptoms traditionally considered as hallmarks of OCD, and does not fit into empirically established conceptual frameworks for understanding OCD symptoms (Rachman, Elliot, Shafran, & Radomsky, 2009). To illustrate, individuals with OCD experience intrusive, unwanted, and distressing obsessional thoughts and doubts (e.g., about having caused harm), which are neutralized by performing anxiety-reducing compulsive rituals (e.g., checking). Hoarding symptoms, however, typically involve thoughts about acquiring and maintaining possessions that are not particularly intrusive or unwanted; and, in fact, are generally emotionally positive or neutral and thus may not qualify as true obsessions (Rachman et al., 2009). It is also difficult to conceptualize excessive saving as compulsive or ritualistic, and this behavior does not result in an escape from (or neutralization of) obsessional anxiety in the way that checking or washing compulsions do (Rachman et al., 2009). Thus, the status of hoarding as a symptom of OCD is highly in doubt.

On the basis of such research and clinical observations, some authors have proposed that a novel diagnostic entity of Hoarding Disorder be included in *DSM-5* (Mataix-Cols et al., 2010). Still, many dimensional approaches to understanding the structure of OCD symptoms have included hoarding among the diverse presentations of OCD (e.g., Rosario-Campos et al., 2006; Mataix-Cols, Rosario-Campos, & Leckman, 2005; McKay et al., 2004). Thus, the issue of whether hoarding symptoms represent a core symptom of OCD or a distinct but often comorbid syndrome requires further empirical investigation. As reviewed above, a number of studies have addressed this issue using a variety of methods. In the present article, we describe two studies using novel approaches to shed additional light on this issue. Specifically, in the first study, we investigated how well hoarding symptoms can be used as a diagnostic indicator of OCD. That is, if hoarding is a symptom of OCD, then it should meaningfully distinguish patients with OCD from those with other disorders, and from individuals without diagnosed psychopathology. Thus, we evaluated the ability of hoarding symptoms, relative to other OCD symptoms, to aid in diagnostic decisions. In the second study, we investigated the relationships among the cognitive variables presumed to un-

derlie OCD and hoarding symptoms, and examined how well these cognitive variables predicted hoarding symptoms.

STUDY 1

The diagnostic utility of considering hoarding as a symptom of OCD was examined. Items assessing hoarding behavior were included along with items assessing other OCD symptoms (e.g., washing and checking) on many instruments developed to assess OCD symptom severity. One such measure, the Obsessive-Compulsive Inventory-Revised (OCI-R), was designed to also aid in diagnostic decision making, as diagnostically relevant "cut scores" have been derived and published for the scale's total score and particular symptom-based subscales (Foa et al., 2002). Therefore, we evaluated how well the OCI-R's Hoarding subscale, relative to this instrument's other symptom-based subscales, detects individuals diagnosed with OCD and distinguishes them from patients with other anxiety disorders (OADs) and from an unscreened student sample. If hoarding is best considered as a symptom of OCD, the OCI-R Hoarding subscale should perform at least as well as the other subscales.

We employed receiver operating characteristic (ROC) analysis to examine the OCI-R Hoarding subscale as a diagnostic tool. ROC analysis uses the association between sensitivity and specificity to estimate the area under the curve (AUC), which indicates how well scores on a measure distinguish between positive (i.e., a diagnosis of OCD) and negative (i.e., no diagnosis or a different anxiety disorder diagnosis) cases. A value of 1.0 indicates perfect diagnostic prediction, whereas a value of .50 indicates the level of chance. We compared the diagnostic accuracy of the OCI-R Hoarding subscale to the five other OCI-R subscales: Washing, Checking, Ordering, Neutralizing, and Obsessing. On the basis of research distinguishing hoarding from other symptoms of OCD, we hypothesized that the Hoarding subscale would discriminate most poorly between OCD patients and the other groups.

Method

Participants

Study 1 included three groups: patients diagnosed with OCD, patients diagnosed with OADs, and unscreened university students. The OCD group consisted of 280 patients (53.9% female) who had been evaluated and given a primary OCD diagnosis at an outpatient anxiety clinic. Diagnoses were established by either the Anxiety Disorders Interview Schedule (ADIS; Brown, DiNardo, & Barlow, 1994) or the Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998). This group was primarily Caucasian (91.8%) and had a mean age of 28.59 years (SD = 12.1).

The OAD patient group included 168 patients (47.7% female) diagnosed with an anxiety disorder other than OCD (none had secondary comorbid OCD). The frequency of each principal anxiety disorder diagnosis for this group was as follows: panic disorder with or without agoraphobia (n = 58; 34.5 %), social anxiety disorder (n = 41; 24.4%), generalized anxiety disorder (n = 28; 16.7%), specific phobia (n = 13; 7.7%), posttraumatic stress disorder (n = 8; 4.8%), and anxiety disorder not oth-

erwise specified (*n* = 20; 11.9%). The OAD group was primarily Caucasian (93.4%) and had a mean age of 31.84 years (*SD* = 14.29).

The student group consisted of 526 undergraduates (64.4% female) at a large university in the southeastern United States who received course credit for their participation. The student group had a mean age of 18.9 years (*SD* = 1.4). The ethnic composition of the student group was as follows: 73.9% Caucasian, 12.4% African American, 3.5% Hispanic/Latino, 6.9% Asian/Pacific Islander, and 3.3% Other.

Measure

Obsessive Compulsive Inventory-Revised (OCI-R; Foa et al., 2002). The OCI-R is an 18-item questionnaire widely used in OCD research and based on the earlier 84-item OCI (Foa, Kozak, Salkovskis, Coles, & Amir,, 1998). Participants rate the degree to which they are bothered or distressed by OCD symptoms in the past month on a 5-point scale from 0 (*not at all*) to 4 (*extremely*). This instrument assesses OCD symptoms across six symptom-based subscales (each consisting of three items): Washing, Checking, Obsessing, Neutralizing, Ordering, and Hoarding. The OCI-R possesses a stable factor structure and sound reliability and validity, and its factor structure is similar among OCD patients, those with other anxiety disorders, and unscreened college students (e.g., Abramowitz & Deacon, 2006; Hajcak, Huppert, Simmons, & Foa, 2004; Foa et al., 2002).

Results

ROC curves were computed to determine how well the OCI-R Hoarding subscale scores distinguished between positive (a diagnosis of OCD) and negative (no OCD diagnosis) cases. Separate ROC curves were computed for discriminating between OCD and OAD patients (Figure 1) and between OCD patients and students (Figure 2). The area under the curve (AUC) indicates accuracy, with a value of 1.0 indicating perfect classification and .50 indicating chance performance. The AUC estimates for each OCI-R subscale for both comparisons are reported in Table 1. For differentiating between OCD and OAD patients, the AUC estimate for the OCI-R Hoarding subscale was .54 (95% confidence interval [CI] = .48–.59), indicating that the Hoarding subscale did not discriminate between groups any better than chance. In contrast, each of the other five OCI-R subscales performed significantly better than chance at differentiating between OCD patients and those with OADs. A similar pattern emerged when comparing OCD patients with the unscreened student group. The AUC estimate for the Hoarding subscale was again not significant (AUC =.54, 95% CI = .50–.59), indicating that this subscale could not reliably identify OCD cases. However, each of the other OCI-R subscales did have a significant AUC, indicating that the other symptoms discriminated between unscreened students and OCD patients. The Obsessing subscale of the OCI-R had a particularly large AUC (AUC = .88, 95% CI = .86–.91), indicating that it had excellent discriminative power for distinguishing OCD cases from unscreened students.
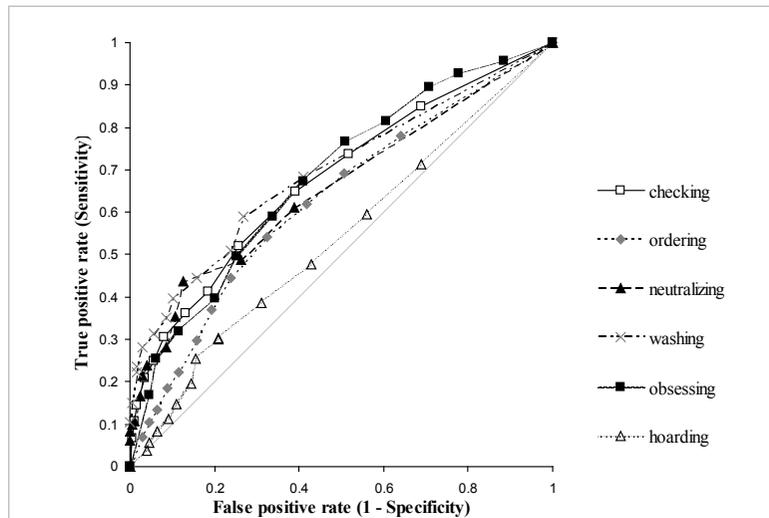
FIGURE 1. ROC curve differentiating OCD patients from OAD patients.

Discussion

The aim of Study 1 was to address the utility of including hoarding as a symptom of OCD by evaluating how well hoarding performs as a diagnostic indicator of OCD. The current approach to classifying psychological disorders is based on the presence of certain constellations of symptoms (APA, 2000). Consistent with our hypothesis, the results of this study suggest that hoarding symptoms, as assessed by the OCI-R—a very widely used measure of OCD symptoms—could not reliably distinguish individuals with a diagnosis of OCD from those with OADs or from an unscreened student sample. That people with and without OCD similarly endorse hoarding symptoms indicates that the presence of hoarding per se is not particularly helpful for identifying cases of OCD (e.g., Abramowitz et al., 2008; Wu & Watson, 2005). In contrast, the Washing, Checking, Ordering, Obsessing, and Neutralizing subscales of the OCI-R differentiated between those with and without OCD, and thus could meaningfully contribute to OCD diagnostic decision making. Whereas these other presentations of OCD appear to be distinguishing features of this condition, hoarding does not appear to be so.

STUDY 2

Although the data from Study 1 are informative, the differences we found between hoarding and other OCD presentations are based merely on the assessment of the presence and severity of topographically distinct OCD symptoms. Yet whereas hoarding might appear topographically different from OCD symptoms such as washing and checking, these superficially distinctive symptoms might share fundamental underly-
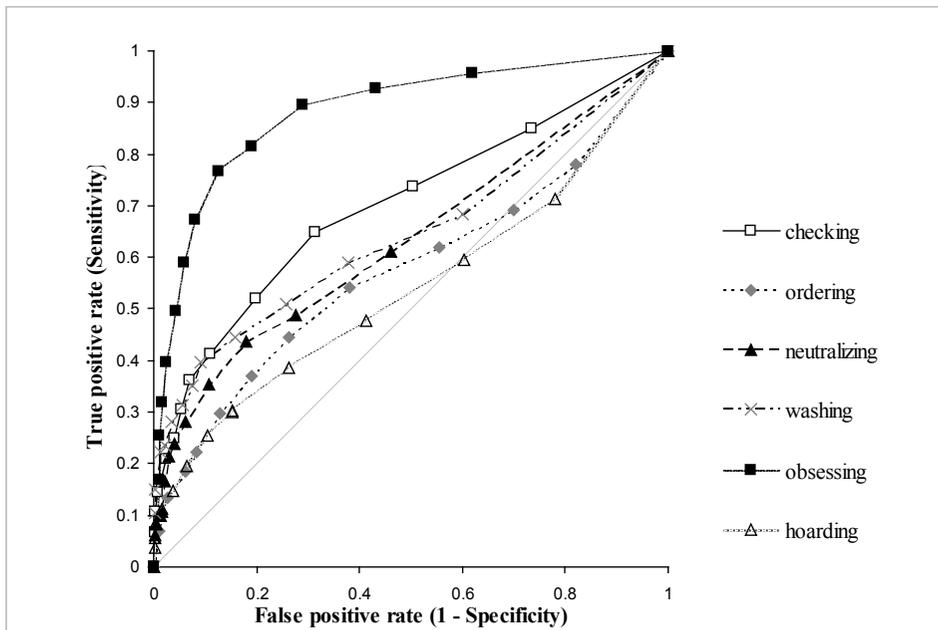
FIGURE 2. ROC curve differentiating OCD patients from unscreened students.

ing psychological processes that represent a more meaningful basis for determining their connectedness (e.g., cognitive comorbidity; Rachman, 1991). For example, although OCD is a symptomatically heterogeneous condition, cognitive models of this disorder (e.g., Rachman, 1997, 1998; Salkovskis, 1996) posit that the wide variety of obsessions and compulsions can be explained by a relatively small number of specific dysfunctional beliefs, including (a) catastrophic misinterpretations of the presence and meaning of negative thoughts, (b) overestimates of threat and responsibility, and (c) the need for perfection and certainty. Research demonstrates that these so-called obsessive beliefs show theoretically consistent associations with the various OCD symptom dimensions (e.g., contamination, order/symmetry, etc.; Tolin, Brady, & Hannan, 2008; Tolin, Woods, & Abramowitz, 2003; Wheaton, Abramowitz, Berman, Riemann, & Hale, 2010). Authors have also proposed that specific maladaptive beliefs underlie hoarding symptoms (e.g., Frost & Hartl, 1996), including dysfunctional beliefs about memory, emotional attachment to or responsibility for possessions, and the need to control possessions (so-called saving cognitions; Steketee, Frost, & Kyrios, 2003). Few empirical investigations, however, have examined the extent to which obsessive beliefs and saving cognitions are related to one another. Rachman (1991) proposed that examining the overlap of underlying cognitions across different symptoms and syndromes, which he termed "cognitive comorbidity," could be helpful in determining the connectedness of different disorders. Therefore, in Study 2, we extended our investigation of the similarities and differences between hoarding and OCD by examining relationships among the cognitions shown to be associated with these symptoms.

We recruited a large, unscreened sample of undergraduate students and administered measures of obsessive beliefs and saving cognitions to determine their associa-

TABLE 1. Area Under the Curve (AUC) for Discriminating between OCD Patients and Other Groups

OCI-R subscale	OCD vs OAD			OCD vs Students		
	AUC	SE	p	AUC	SE	p
Checking	0.68	0.03	<0.001	0.70	0.02	<0.001
Ordering	0.63	0.03	<0.001	0.58	0.02	<0.001
Neutralizing	0.66	0.03	<0.001	0.64	0.02	<0.001
Washing	0.71	0.03	<0.001	0.66	0.02	<0.001
Obsessing	0.69	0.03	<0.001	0.88	0.01	<0.001
Hoarding	0.54	0.03	*n.s.*	0.54	0.02	*n.s.*

Note. OCI-R = Obsessive Compulsive Inventory-Revised; OCD = obsessive-compulsive disorder patient group; OAD = other anxiety disorder group; Students = unscreened student group.

tion. We also examined how well both sets of cognitive variables predicted hoarding symptoms. For the purposes of comparisons, we also assessed participants' general level of distress and anxiety sensitivity (AS)—an independent anxiety-related cognitive construct. AS refers to a set of beliefs about the dangerousness of arousal-related physical sensations (e.g., "When my heart beats rapidly, I worry I am having a heart attack"). We elected to use an unscreened student sample because the cognitions associated with OCD and hoarding symptoms occur along a continuum of intensity, with differences between nonclinical and clinically severe, treatment-seeking individuals being quantitative rather than qualitative (e.g., Obsessive Compulsive Cognitions Working Group [OCCWG], 2005). While care should be taken when extrapolating from student to clinical samples, nonclinical and unscreened student samples have previously been used to investigate cognitive factors involved in hoarding (e.g., Coles, Frost, Heimberg, & Steketee, 2003; Timpano, Buckner, Richey, Murphy, & Schmidt, 2009) and hoarding symptoms may occur along a continuum in the population (Damecour & Charron, 1998). We hypothesized that saving cognitions would not overlap substantially with obsessive beliefs, and that saving cognitions but not obsessive beliefs would predict hoarding symptoms.

Method

Participants

Three hundred eighty-five self-selected undergraduate students completed a computer-administered online questionnaire battery as part of their Introductory Psychology course at a large university in the southeastern United States. Participants were approximately 72.2% female and had a mean age of 19.9 years (*SD* = 1.21, range 18–28). The ethnic composition of the sample was as follows: 74% Caucasian, 11.2% African American, 4.7% Hispanic/Latino, 7.5% Asian/Pacific Islander, and 2.6% Other.

Procedure

Participation in this study was available to all undergraduate students enrolled in Introductory Psychology at the study site. All participants received course credit for their participation, which was reviewed and approved by the university IRB. After signing up for the study via an Internet-based software program, participants provided con-

sent to participate and were directed to a secure project website where they completed the study measures. All data were collected using Qualtrics, an online web survey development tool (https://uncodum.qualtrics.com). In order to standardize the administration of the online survey, all questionnaires were presented in the same order and participants were required to complete the survey in a single session. The design of the Internet version of the study questionnaires was based on empirically derived suggestions for how to develop computer questionnaires (e.g., Hewson, Yule, Laurent, & Vogel, 2003). Results from a number of studies indicate that the administration of anxiety-related assessment measures using Internet-based and paper-and-pencil formats yield highly comparable results (e.g., Coles, Cook, & Blake, 2007).

Measures

The following measures were included in the present study:

Saving Inventory-Revised (SI-R; Frost, Steketee, & Grisham, 2004). The SI-R is a 23-item self-report questionnaire designed to measure the severity of hoarding symptoms, including difficulty discarding, acquisition, and clutter. It is a valid measure of hoarding behaviors in both clinical and nonclinical populations (Coles et al., 2003; Frost et al., 2004) and has good test–retest reliability and strong internal consistency (Frost et al., 2004).

Saving Cognitions Inventory (SCI; Steketee, Frost, & Kyrios, 2003). The SCI is a 24-item self-report measure that assesses beliefs related to possessions. Using a 7-point Likert-scale, respondents are asked to rate the presence of specific cognitions when deciding whether to discard a possession (e.g., "Throwing away this possession is like throwing away a part of me"). Although four subscales exist (Emotional Attachment, Memory, Control, and Responsibility toward Possessions), only the total score was used in the present study as it has greater internal consistency and is commonly used in research studies (e.g., Coles et al., 2003; Frost et al., 2004). The SCI total score is a valid measure of hoarding beliefs with good internal consistency in both clinical (Steketee et al., 2003) and nonclinical samples (Coles et al., 2003).

Obsessive Beliefs Questionnaire (OBQ; OCCWG, 2005). The OBQ, a 44-item self-report instrument, measures dysfunctional beliefs (i.e., obsessive beliefs) thought to contribute to the escalation of normal intrusive thoughts into clinical obsessions. It contains three subscales: (a) Threat Overestimation and Responsibility (OBQ-T/R), (b) Importance and Control of Intrusive Thoughts (OBQ-I/CT), and (c) Perfectionism and Need for Certainty (OBQ-P/C), as well as a total score. The present study employed the OBQ total score as in previous research (Abramowitz, Khandker, Nelson, Deacon, & Rygwall, 2006). The instrument's good validity, internal consistency, and test-retest reliability are described in OCCWG (2005).

Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007). The ASI-3, an 18-item version of the original ASI (Reiss, Peterson, Gursky, & McNally, 1986), measures beliefs about the feared consequences of symptoms associated with anxious arousal (e.g., "It scares me when I become short of breath"). Respondents indicate their agreement with each item from 0 (*very little*) to 4 (*very much*). Total scores range from 0 to 72. The ASI-3 contains three empirically established subscales relating to fears of social concerns (e.g., "It is important for me not to appear nervous"), fears of physical symptoms (e.g., "It scares me when my heart beats rapidly"), and fears of cognitive dyscontrol (e.g., "It scares me when I am unable to keep my mind on a task"). The

TABLE 2. Zero-Order Correlations for Study Measures in Undergraduate Sample (*N* = 385)

	SI-R	SCI	OBQ	ASI-3	CES-D
SCI	.64	–			
OBQ	.39	.42	–		
ASI-3	.44	.43	.53	–	
CES-D	.40	.31	.44	.45	–

Note. SI-R= Saving Inventory-Revised; SCI = Saving Cognitions Inventory; OBQ = Obsessive Beliefs Questionnaire; ASI-3 = Anxiety Sensitivity Index-3; CES-D = Center for Epidemiological Studies- Depression Scale. All correlations significant at *p* < .01

measure possesses excellent psychometric properties, performing well on various indices of reliability and validity (Taylor et al., 2007).

Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977). The CES-D consists of 20 items developed as a global measure to assess psychological distress in general community samples. Participants are asked to rate how often they have felt (or behaved) in certain ways (e.g., "I felt sad"; "My sleep was restless") over the past week, from 0 (*rarely*) to 3 (*most of the time*). Items are summed (4 are reverse scored) to obtain a total score ranging from 0 to 60. The CES-D is a widely used, reliable, and valid measure of depressed mood (e.g., Radloff, 1977).

Results

Zero-Order Correlations

The zero-order correlations among all study variables are presented in Table 2. The SI-R was moderately to strongly (and significantly) correlated with the OBQ, ASI-3, CES-D, and SCI. To examine whether the SI-R was more strongly correlated with the SCI than with the OBQ and other study measures, we used Steiger's equation for comparing the magnitude of correlation coefficients (Cohen & Cohen, 1983). Results revealed that the SI-R was significantly more strongly correlated with the SCI than with the OBQ (p <.05). Moreover, the magnitude of the correlation between the SI-R and the OBQ was not significantly different than that between the SI-R and ASI-3 or CES-D (p >.05). There was a moderate correlation between the OBQ and the SCI, but this correlation was not larger in magnitude than that between the SCI and the other variables (p >.05).

Regression Analysis

To test our hypothesis that saving cognitions, but not obsessive beliefs, would contribute to the prediction of hoarding symptoms, we computed a regression analysis with the SI-R as the dependent variable and the other study variables entered simultaneously as predictors. Summary statistics for each variable are presented in Table 3. The combined predictors accounted for 46% of the variance (p <.001). In this equation, the CES-D, ASI-3, and SCI emerged as significant individual predictors. Consistent with our hypothesis, the OBQ was not a significant predictor in this model.

TABLE 3. Summary Statistics for the Regression Equations Predicting SI-R Scores

Variable	R^2	Beta	t	p
Final model	.46			< .001
SCI		.51	11.91	<.001
OBQ		.05	1.00	n.s.
ASI-3		.12	2.55	.01
CES-D		.16	3.68	< .001

Note. SI-R= Saving Inventory-Revised; SCI = Saving Cognitions Inventory; OBQ = Obsessive Beliefs Questionnaire; ASI-3 = Anxiety Sensitivity Index-3; CES-D = Center for Epidemiological Studies- Depression Scale.

Discussion

Although at a superficial symptom level hoarding and OCD symptoms appear to be distinct, few studies have examined whether these differences also exist at a more fundamental level, such as the beliefs and cognitions shown to underlie these symptoms. In Study 2 we therefore examined the relationship between cognitive variables proposed to underlie OCD (obsessive beliefs) and those related to hoarding (saving cognitions). Obsessive beliefs and saving cognitions were moderately related, yet this relationship was not stronger than that between saving cognitions and AS or general distress. Thus, there does not appear to be a unique relationship between obsessive beliefs and hoarding-specific beliefs. Rather, the cognitions underlying OCD and hoarding appear to be distinct. Thus, these data support the idea that hoarding is not a symptom of OCD; or, in terms of Rachman's (1991) conceptualization, hoarding has little cognitive comorbidity with OCD.

This study also investigated the role of various cognitive domains in predicting hoarding symptoms. From a cognitive theoretical perspective, if hoarding is conceptualized as a manifestation of OCD, then the beliefs that underlie other obsessive-compulsive symptoms should also be associated with hoarding. However, we found no evidence for a particular association between obsessive beliefs and hoarding. In fact, obsessive beliefs were the only study variable that did not emerge as a significant individual predictor of hoarding symptoms. As would be expected, hoarding-specific beliefs (Saving Cognitions) were most robustly associated with hoarding symptoms. These findings further support the conclusion that hoarding is not a manifestation of OCD.

GENERAL DISCUSSION

The two studies reported in this article have implications for the diagnostic status of hoarding symptoms; specifically, whether hoarding should be considered a symptom of OCD or perhaps an independent phenomenon that co-occurs with OCD symptoms in some patients. We examined this issue at two conceptual levels: at the superficial symptom level in Study 1 and at the underlying cognitive level in Study 2. The main findings of these studies can be summarized in the following way: In Study 1, the presence and severity of hoarding symptoms did not reliably distinguish individuals diagnosed with OCD from those from other anxiety disorders, or from unscreened students. These distinctions, however, could be made on the basis of the other OC

symptoms assessed by the OCI-R. In Study 2, OCD-related (obsessive) beliefs and hoarding-related (saving) cognitions were found to be relatively independent constructs, and their relationship with one another was no stronger than that between saving cognitions and AS. Finally, whereas saving cognitions, general distress, and AS were significant predictors of hoarding symptoms, obsessive beliefs were not.

In concert, the results of these two studies add to a growing body of evidence suggesting that hoarding is not a symptom or manifestation of OCD, which has important implications for assessment and treatment. Rachman and colleagues (2009) have considered the advantages of separating hoarding from OCD, including the potential development of new methods for assessing and treating excessive hoarding that do not rely on tools designed for OCD. The results of our study support this conclusion, as the cognitive-behavioral variables associated with OCD appear to be distinct from those related to hoarding and thus merit independent study. Furthermore, our studies suggest that including hoarding as a symptom of OCD is not beneficial in terms diagnostic utility, since including hoarding items on measures of OCD symptoms such as the OCI-R may actually confound ratings of true OCD severity. Indeed, recent instruments developed to assess OCD severity have excluded hoarding symptoms (e.g., Abramowitz et al., 2010).

Our conclusions aside, OCD is a highly heterogeneous condition in which obsessions and compulsive rituals are as idiosyncratic as the people suffering with them. Indeed, we have observed instances in which bona fide OCD symptoms manifest in hoarding-like behavior; for example, the avoidance of discarding objects because of the fear of catastrophic consequences (e.g., "If I throw away something with Mom's name on it, she will die"). Some checking rituals can also appear similar to hoarding (e.g., thoroughly inspecting all papers before discarding them to make sure none have Mom's name on them), especially if such checking is postponed (e.g., because it seems daunting) and leads to the accumulation of clutter. To date, very little research on the function of hoarding behavior in OCD patients has been conducted; however, it appears that hoarding symptoms with similar functions to OCD symptoms account for only a minority of hoarding symptoms (Pertusa et al., 2008). These cases suggest that hoarding itself is heterogeneous: hoarding behavior that is a response to obsessional anxiety might be best regarded as an OCD symptom, while that associated with other psychological antecedents (e.g., emotional attachment to possessions) should be regarded as separate from OCD. This highlights the importance of assessing the *function* of behavioral symptoms in OCD rather than simply focusing on their *form* (e.g., Abramowitz et al., 2010).

Finally, if hoarding behavior generally is not a symptom of OCD, what is it? In the *DSM-IV-TR* (APA, 2000), hoarding appears as a symptom of obsessive-compulsive personality disorder but is also reported in individuals with eating disorders (Frankenburg, 1984), dementia (Hwang, Tsai, Yang, Liu, & Lirng, 1998), and psychotic disorders (Luchins, Goldman, Lieb, & Hanrahan, 1992). Thus, one way to conceptualize hoarding is as a socially unacceptable behavior aimed at regulating mood which cuts across multiple diagnostic categories. Another example of such a phenomenon is non-suicidal self-injury, which may be present in borderline personality disorder, bipolar and unipolar mood disorders, and eating disorders, as well as in individuals without psychological diagnoses (e.g., Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006). Alternatively, as is currently being proposed for inclusion in the next iteration of the *DSM*, hoarding might constitute a clinical syndrome in and of itself (Mataix-Cols et al., 2010). Presently, very little empirical research has focused on the hetero-

geneity of hoarding behavior. We suggest that additional work is needed to determine the best way to conceptualize the nosological status of hoarding.

The present studies have a number of limitations that should be noted. In Study 1, our assessment of hoarding symptoms utilized the hoarding subscale of the OCI-R, which contains only three questions. Although this subscale has good construct validity (e.g., Abramowitz & Deacon, 2006; Huppert et al., 2007), future research should investigate the diagnostic utility of hoarding symptoms using hoarding-specific measurements. Study 2 employed a more robust measure of hoarding symptoms (the SI-R), but was limited to a nonclinical sample. Future research should, therefore, investigate the role of obsessive beliefs in predicting hoarding symptoms in a sample of individuals with clinically significant levels of hoarding. Finally, both studies exclusively utilized self-report measures, and this lack of method variance may have systematically inflated relationships among variables. Future research could utilize either interviewer-based measures (e.g., Tolin, Frost, & Steketee, 2010) or other alternatives such as the Clutter Image Rating Scale (Frost, Steketee, Tolin, & Renaud, 2008) to assess hoarding symptoms.

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