Journal of Affective Disorders 193 (2016) 208–214

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research paper

An investigation of the role of intolerance of uncertainty in hoarding symptoms

Michael G. Wheaton [a,b,c,*], Jonathan S. Abramowitz [c,d], Ryan J. Jacoby [c], Jordana Zwerling [b,e], Carolyn I. Rodriguez [b,e,f]

[a] Ferkauf Graduate School of Psychology, Yeshiva University, Bronx, NY, United States
[b] Anxiety Disorders Clinic, New York State Psychiatric Institute/Columbia University, New York, NY, United States
[c] University of North Carolina at Chapel Hill, Chapel Hill, NC, United States
[d] Mayo Clinic, Rochester, MN, United States
[e] Department of Psychiatry and Behavioral Sciences, Stanford University, Stanford, CA, United States
[f] Veterans Affairs Palo Alto Health Care System, Palo Alto, CA, United States

ARTICLE INFO

Article history:
Received 6 October 2015
Received in revised form
1 December 2015
Accepted 26 December 2015
Available online 29 December 2015

Keywords:
Hoarding disorder
Intolerance of uncertainty
Saving cognitions

ABSTRACT

Background: Hoarding disorder (HD) is a common, debilitating mental illness and public health burden. Understanding the factors that contribute to hoarding is critical for identifying treatment targets. As a relatively new diagnostic entity, this research remains in its initial stages. Intolerance of uncertainty (IU) is thought to be a vulnerability factor for generalized anxiety disorder (GAD) and obsessive–compulsive disorder (OCD), and may also be relevant to HD. We investigated the possible association between IU and hoarding in two sets of analyses.
Method: First, we administered self-report measures of IU and hoarding symptoms to unscreened undergraduate students ($N=456$) and used regressions to probe their association controlling for relevant covariates. Second, in a clinical sample, we compared IU across groups of patients with HD ($N=26$), GAD ($N=26$), OCD ($N=51$), other anxiety disorders ($N=91$) and healthy controls ($N=29$).
Results: In the student sample, IU predicted hoarding symptoms above and beyond relevant covariates, including hoarding-related beliefs. In the clinical sample, HD patients evidenced greater IU relative to healthy individuals and the mixed anxiety group, and comparable levels of IU to the GAD and OCD groups.
Limitations: This study relied exclusively on self-report questionnaires and a cross-sectional design.
Conclusions: IU is associated with hoarding behavior and, as we discuss, conceptual models might benefit from the study of IU as a potentially contributing factor. Directions for future research are discussed.

1. Introduction

Hoarding, the accumulation of and failure to discard large amounts of clutter (Frost and Gross, 1993), is increasingly recognized as an important public health concern. Research on hoarding has increased dramatically in the past few decades, leading to the creation of hoarding disorder (HD) as a new diagnostic entity in the most recent edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; APA, 2013). Early estimates suggest that HD is more common in the general population than previously thought, with prevalence rates as high as 5.8% (Nordsletten et al., 2013b; Timpano et al., 2011). Individuals with hoarding symptoms often experience substantial functional impairment and reduced quality of life (Saxena et al., 2011). In addition, severe hoarding can result in substantial costs to the community in terms of public health problems and social services utilization (Tolin et al., 2008).

The substantial societal burden of HD presents the field with the need to develop conceptual models of hoarding symptoms in order to guide treatment development. The most clearly articulated and empirically supported model of hoarding involves a cognitive-behavioral conceptualization (Frost and Hartl, 1996; Kyrios, 2014; Steketee and Frost, 2003). This model suggests that pathological hoarding results from a constellation of factors, including dysfunctional beliefs about possessions, information processing problems, and maladaptive patterns of behaviors (see Kyrios (2014) for review). Although a growing body of research

* Corresponding author at: Ferkauf Graduate School of Psychology, Yeshiva University, Bronx, NY, United States.
E-mail address: michael.wheaton@einstein.yu.edu (M.G. Wheaton).

http://dx.doi.org/10.1016/j.jad.2015.12.047
0165-0327/

supports these factors in the development and maintenance of hoarding problems, this line of research remains in its early stages, and additional factors may also contribute to hoarding behaviors. For example, avoidance-related psychological processes have also been suggested as factors in hoarding symptoms, including distress intolerance (Timpano et al., 2009, 2014; Williams, 2012), experiential avoidance (Ayers et al., 2014; Wheaton et al., 2011) and anxiety sensitivity (Coles et al., 2003; Timpano et al., 2009).

One additional individual difference variable that may relate to hoarding problems is intolerance of uncertainty (IU). IU has been described as the tendency to exhibit negative responses to uncertain situations on cognitive, emotional and behavioral levels (Freeston et al., 1994). On a cognitive level, individuals high in IU tend to misinterpret ambiguous situations in negative ways (i.e., as indicating that a negative event will occur), engendering negative emotions, such as anxiety and frustration (Dugas et al., 2004). Behaviorally, individuals high in IU attempt to avoid situations that involve uncertainty, or engage in behaviors designed to resolve ambiguity. Research suggests that IU is a transdiagnostic cognitive bias (Carleton et al., 2012) that plays a role in the symptoms of several psychiatric disorders, including both generalized anxiety disorder (GAD; Buhr and Dugas, 2006; Holaway et al., 2006; McEvoy and Mahoney, 2012) and obsessive–compulsive disorder (OCD; Gentes and Ruscio, 2011; Tolin et al., 2003).

IU may also be relevant to hoarding problems, as clinical observations suggest individuals with HD frequently have difficulty making decisions about which items to keep and which to discard. Indeed, one of the most common reasons that HD patients report for why they save possessions is that they are unsure if the items will be needed at some future time (Frost and Hartl, 1996). Thus the uncertainty and ambiguity about these decisions (including the possibility of making a mistake) might make sorting and discarding possessions more difficult for individuals with HD who are high in IU. Importantly, IU may overlap with some of aspects of the CBT model of hoarding, including information processing problems and difficulty with decision making, as individuals high in IU exhibit poorer decision making strategies (Jensen et al., 2014; Luhmann et al., 2011). Elevated IU might thereby contribute to hoarding problems. This possibility, however, requires empirical investigation.

To date, only one study has directly investigated the relationship between hoarding symptoms and IU, albeit in a non-clinical sample. Oglesby et al. (2013) administered self-report measures of IU and hoarding symptoms to 279 undergraduate students and reported a moderate and significant correlation between the two measures (r=.50). Moreover, in a hierarchical regression analysis, IU predicted hoarding behaviors after controlling for depression, worry and obsessive–compulsive symptoms. Although these results provide initial evidence that IU is associated with hoarding behavior in non-clinical samples, they require replication and extension. Specifically, further inquiry with additional control variables relevant to hoarding is needed to determine the incremental utility of considering IU as a factor in hoarding. Additional study of IU is also needed in individuals with clinically significant hoarding problems.

We therefore report on two sets of analyses conducted to further investigate the link between IU and hoarding. First, we sought to replicate and extend Oglesby et al.'s finding that IU predicts hoarding behaviors in a large unscreened student sample. We added to previous work by including an established predictor of hoarding symptoms in addition to symptoms of depression, anxiety and stress. Specifically, we used a measure of dysfunctional beliefs about possessions, the Savings Cognition Inventory (SCI; Steketee et al., 2003), which substantial research has established as a predictor of hoarding symptoms (Frost et al., 2004; Coles et al., 2003; Luchian et al., 2007; Wheaton et al., 2011). On the basis of the theoretical connection between IU and hoarding discussed above, we hypothesized that IU would account for unique variance in hoarding behaviors even when these control variables were also included in the regression model.

For our second set of analyses we investigated IU in a clinical sample of individuals meeting DSM-5 diagnostic criteria for HD. We compared scores on a measure of IU from this group to healthy controls as well as to patients with OCD, GAD and other anxiety disorders (OADs, see below for specific diagnoses). In line with the evidence reviewed above, we hypothesized that the HD group would show elevated IU relative to healthy controls, but not patients with OCD and GAD.

2. Method

2.1. Overview

Data for this study draws from two samples: the first was large group of undergraduate students drawn from a large public university in the Southeastern U.S. The second was a clinical sample drawn from participants in research protocols conducted at three academic outpatient clinics described below. Institutional review boards at each institution approved the study protocols from which data were drawn. All study participants provided written informed consent (Tables 1 and 2).

2.2. Participants

For our regression analyses, the sample consisted of 456 undergraduate students who were enrolled in Introductory Psychology courses at the University of North Carolina at Chapel Hill. The sample was 56.8% female and had a mean age of 19.49 (SD=1.95, range 18–36). The racial/ethnic composition of the sample was as follows: 69.1% Caucasian, 11.8% African American, 5.7% Hispanic/Latino, 10.5% Asian/Pacific Islander, and 2.9% "Other."

The clinical comparison sample included 5 groups of participants: separate groups of patients diagnosed with HD (N=26), OCD (N=51), GAD (N=26), and a group of individuals with other anxiety disorders (OADs; N=91 see below for specific diagnoses), as well as healthy (control) community adults (HC; N=29). HD patients were recruited from separate research studies conducted at two sites (the UNC Stress and Anxiety Disorders Clinic, [hereafter referred to as the NC site] N=17) and the Columbia Psychiatry Hoarding Disorders Research Program in the Anxiety

Table 1
Descriptives and zero-order correlations in undergraduate sample (N=456).

	IUS	SCI	DASS-depression	DASS-anxiety	DASS-stress	Mean	*SD*	Range
SI-R total	.53	.66	.39	.49	.40	21.44	11.09	1–64
Difficulty discarding	.50	.66	.37	.38	.38	7.84	4.35	0–20
Excessive acquisition	.44	.52	.25	.40	.32	7.79	3.69	1–20
Clutter	.41	.51	.36	.45	.32	5.29	4.48	0–24
SCI	.60	–	.43	.48	.47	58.76	24.29	24–155
IUS	–	.60	.53	.53	.57	58.94	17.72	7–109
DASS-depression			–	.69	.67	8.12	8.04	0–42
DASS-anxiety				–	.69	7.10	7.13	0–34
DASS-stress					–	11.54	7.84	0–38

Note. SI-R=Saving Inventory-Revised; SCI=Saving Cognitions Inventory; IUS=intolerance of uncertainty Scale; DASS=Depression, Anxiety, Stress Scales-21. All correlations significant at $p < .001$.