Behavioral and experiential avoidance in patients with hoarding disorder

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Abstract

Background and objectives: This study examined the relationship between experiential and behavioral avoidance and hoarding symptom severity, controlling for anxiety and depression symptoms, in 66 adult individuals (M age = 61.41; SD = 9.03) with HD.

Methods: Hierarchical regression was used to test the associations between hoarding severity, as defined by the Savings Inventory-Revised (SI-R) total and its three subscales, and avoidance, as defined by the Acceptance and Action Questionnaire II (AAQ-II) and two scales from the Brief COPE (Self-Distraction and Behavioral Disengagement) when controlling for anxiety and depression symptoms.

Results: Experiential avoidance (AAQ-II) and behavioral avoidance (Brief COPE subscales Self-Distraction and Behavioral Disengagement) uniquely accounted for aspects of hoarding severity (SI-R) in regression models. Behavioral avoidance contributed significant additional variance to the SI-R Clutter subscale, whereas experiential avoidance was uniquely predictive of additional variance in the SI-R Difficulty Discarding and the SI-R Acquisition subscales.

Limitations: Future research should examine the effect of experiential avoidance on hoarding behaviors experimentally.

Conclusions: Given that the AAQ-II and Self-Distraction and Behavioral Disengagement subscales were not correlated, these findings suggest that experiential and behavioral avoidance are two distinct processes contributing to the severity of specific HD. Results support the utility of avoidance in the cognitive-behavioral model for HD.

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Cognitive-behavioral models of hoarding disorder suggest that symptoms are maintained by distorted beliefs about the meaning and utility of possessions. Due to these strongly held beliefs, individuals experience great distress associated with discarding possessions and this distress influences patterns of behavioral and cognitive avoidance (e.g., Frost & Hartl, 1996; Steketee & Frost, 2003). Preliminary investigations have evidenced an association between these strongly held distorted beliefs and hoarding symptoms (Coles, Frost, Heimberg, & Steketee, 2003; Frost, Steketee, & Grisham, 2004; Luchian, McNally, & Hooley, 2007; Steketee, Frost, & Kyrios, 2003), yet this association does not fully explain the presence of hoarding symptoms. As hoarding disorder is a newly distinct disorder in DSM-5 (American Psychiatric Association, 2013), examination of additional diagnostic elements is necessary for a greater understanding of both the symptoms and the associated causal pathways.

The explanatory elements of the cognitive behavioral model of hoarding disorder closely follow prevailing cognitive-behavioral models of anxiety and obsessive compulsive spectrum disorders, many of which emphasize avoidance behavior as the critical mechanism underlying long term maintenance of symptoms (Barlow, 2002). Within the anxiety disorder literature, conditioning theory posits that fear persists because avoidance of a conditioned stimulus (CS) prevents the extinction that occurs through repeated exposures where the CS is not linked to the unconditioned stimulus (US) (e.g. Mowrer, 1960). Cognitive theories suggest that avoidance inhibits the gathering of evidence against catastrophic misappraisals, further reinforcing the avoidance behavior as a means of keeping safe (e.g., Clark, 1986,1988). Cognitive models also theorize that over-prediction of the distress one would experience when approaching feared stimuli results in avoidance, further preventing the collection of disconfirmatory evidence (e.g., Rachman, 1994, Rachman & Lopatka, 1986). Given the parallels in the anxiety and hoarding models, analysis of the relationship between hoarding symptoms and various forms of avoidance behavior may add to our conceptualization of hoarding disorder.

Several studies have examined the role of experiential avoidance (EA) in predicting hoarding symptoms (Fernández de la Cruz et al., 2013; Wheaton, Abramowitz, Franklin, Berman, & Fabricant, 2011; Wheaton, Fabricant, Berman, & Abramowitz, 2013). EA is defined by direct attempts to avoid unpleasant emotions, thoughts, and sensations, due to an intolerance of negative internal states (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). To date, studies of association between EA and hoarding symptoms have been mixed. Wheaton et al. (2011) first examined EA, as measured by the AAQ-II, and hoarding symptoms, as measured by the SI-R, in an unselected undergraduate sample ($N = 385$). EA was significantly associated with SI-R total scores as well as each of the SI-R subscales: difficulty discarding, acquisition, and clutter. These associations remained after controlling for concurrent depressive symptoms and dysfunctional beliefs about possessions for SI-R total scores and the acquisition and clutter subscales, but not for the difficulty discarding subscale.

Wheaton et al. (2013) followed up this investigation with an examination of EA and hoarding symptoms in a sample of individuals with hoarding disorder (HD) ($N = 33$), individuals with an anxiety disorder without comorbid HD ($N = 32$), and matched healthy controls ($N = 30$). Within the HD group, EA was neither associated with the SI-R total nor any of the SI-R subscales: difficulty discarding, acquisition, and clutter. The HD group did exhibit elevate EA in comparison to healthy controls, but lower EA when compared to the anxious sample. After controlling for concurrent symptoms of depression, anxiety, and stress, EA did not account for any of the difference in hoarding symptoms between the HD and matched healthy controls.

Fernández de la Cruz et al. (2013) examined EA and hoarding symptoms in a sample of individuals with HD without comorbid Obsessive-Compulsive Disorder (OCD) ($N = 24$), individuals with HD with comorbid OCD ($N = 19$), individuals with OCD without comorbid HD ($N = 17$), and healthy controls ($N = 20$). All three HD/OCD groups exhibited elevated EA in comparison to healthy controls. In addition, the HD + OCD group exhibited significantly elevated EA compared to the HD only group. Across the entire sample, EA was not associated with hoarding severity (SI-R total scores). In contrast, EA was associated with OCD symptoms and remained significant even after controlling for hoarding symptoms.

EA has typically been measured using the Acceptance and Action Questionnaire (AAQ-II, Hayes et al., 2004), a brief scale aimed at measuring non-acceptance of distress and the dysfunction or interference associated with non-acceptance. Unwillingness to experience negative affective states, as measured by the AAQ-II, may be predictive of behavioral symptoms of hoarding disorder such as acquiring and difficulty discarding, which are aimed at diminishing internal distress associated with distorted cognitions. However, the AAQ-II specifically measures discomfort with internal distress and perceptions of how negative emotions and thoughts interfere with life goals and values. The scale does not directly measure the presence or level of behavioral avoidance, which may be the link between avoidance of negative internal states and interference in life goals and values.

While the majority of examinations have been focused on EA, it is important to explore how avoidance manifests behaviorally. The Brief COPE scale (Carver, 1997), an abbreviated version of the COPE scale (Carver, Scheier, & Weintraub, 1989), is a measure of specific behavioral strategies often used to cope with stress. Specifically, the scale yields sub-scores that represent the use of Self-Distraction, Denial, and Behavioral Disengagement strategies which may be the behavioral mechanisms linking EA with interference with life goals and values. If hoarding disorder follows a similar model of anxiety disorders, where behavioral avoidance reinforces distorted cognitions, thus maintaining the disorder, direct measurement of behavioral avoidance will be necessary to characterize the disorder.

The following investigation will examine EA and avoidant behaviors in participants with hoarding disorder. We hypothesize that both EA and avoidant behaviors (self-distraction, denial, and behavioral disengagement) will predict hoarding severity, even when controlling for anxiety and depression symptoms. We also predict that behavioral and EA will be significantly related. Avoidance may contribute to the manifestation of HD symptoms and therefore has important clinical implications.

1. Methods

1.1. Participants

Baseline data gathered at the VA San Diego Healthcare System between July 2008 and July 2013 was examined for a total of 66 participants with HD. Participants were recruited for an individual intervention study for late-life HD ($n = 37$) and a group intervention study for mid-life HD ($n = 29$). Both studies were approved by the Institutional Review Board of the University of California, San Diego and the VA San Diego Healthcare System.

All participants were required to have clinically significant hoarding symptoms, as defined by scores over 40 on the Saving Inventory-Revised (SIR; Frost et al., 2004), a well-validated self-report measure of HD symptoms, and over 20 on the UCLA Hoarding Severity Scale (UHSS; Saxena, Brody, Maidment, & Baxter, 2007), a clinician-administered measure of HD symptoms. Final inclusion status in both studies required a consensus diagnosis of HD supervised by a licensed clinical psychologist and based on the criteria proposed for the DSM-5. Participants were also administered the Mini-International Neuropsychiatric Interview (M.I.N.I.; Sheehan et al., 1998) to determine possible co-morbidities. A requirement of both studies was for HD to be the primary diagnosis.

Participants were excluded if they endorsed symptoms of cognitive impairment, as defined by a score of 23 or under on the Montreal Cognitive Assessment (MoCA; Nasreddine et al., 2005). All participants were recruited through flyers, Craigslist ads, and provider referrals in San Diego County. All participants completed written informed consent and received no monetary compensation for their completion of the assessment.

1.2. Measures

Avoidance was measured by both the Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011) and the Brief COPE (Carver, 1997), a shortened version of the COPE (Carver et al., 1989). The Brief COPE is comprised of 28 self-report items that combine into 14 scales. There is no total score for the Brief Cope other than the individual scores on each of the 14 scales. Previous studies have indicated the validity of using certain scales to measure avoidance (Oxman, Hegel, Hull, & Dietrich, 2008). The current study hypothesized that the scales of Self-Distraction (#1: "I've been turning to work or other activities to take my mind off things" and #19: "I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping"), Denial (#3: "I've been saying to myself 'this isn't real'" and #8: "I've been refusing to believe that it has happened"), and Behavioral Disengagement (#6: "I've been giving up trying to deal with it" and #16: "I've been giving up the attempt to cope") were most indicative of avoidant coping. Because of the low number of items on each scale (two), reliability coefficients were not examined for each scale. Instead, correlation coefficients for the items were examined, both within each Brief COPE scale and between the avoidant-hypothesized scales (Table 1).

The AAQ-II is a self-report measure of experiential avoidance and psychological inflexibility and is a revised version of the earlier Acceptance and Action Questionnaire I (Hayes et al., 2004). The AAQ-II has two possible versions: a 7-item version and a 10-item version composed of the original seven items with an additional three items that are reverse

coded. Items are scored on a Likert-type scale of 1–7 with higher scores suggesting greater avoidance. The present study used the 10-item version of the AAQ-II and found adequate internal reliability (Table 2).

The SI-R is a 23-item self-report measure of hoarding symptoms with three subscales (Clutter, Difficulty Discarding, and Acquisition). Items are rated on a 5-point Likert-type scale and then summed, with higher scores indicating higher levels of hoarding symptom severity. The means and standard deviations of the SI-R scores of participants matched the criteria established by Frost et al. (2004) for hoarding individuals (Table 2). Internal reliability for the current study was high for the SI-R total score and all SI-R subscales (see Table 2).

The Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) is a 14-item self-report measure of mental health composed of two seven-item subscales (anxiety and depression). Higher scores indicate increasing severity of anxiety or depression, with scores 8-10 suggesting borderline psychiatric symptoms and scores of 11 and above corresponding with clinically significant symptom severity. The current sample reported mean scores in the borderline range and both subscales demonstrated adequate internal reliability (see Table 2).

1.3. Data analysis

All analyses were performed using Stata version 13.0 (StataCorp, 2013). Demographic information and frequencies of comorbidities were examined for participants. Possible gender differences in the SI-R and all subscales were calculated. Means and standard deviations were computed for all variables (Table 2) and zero-order correlations between all measures were examined (Table 3). Between-group comparisons were made for all variables between mid-life participants and late-life participants. Hierarchical regression was used to test the associations between hoarding severity, as defined by the SI-R total and its three subscales, and avoidance, as defined by the AAQ-II and two scales from the Brief COPE (Self-Distraction and Behavioral Disengagement). In each of the 12 regression models examined, the HADS subscales were entered in the first step to control for any overlapping explanatory variance of avoidance with anxiety and depression.

2. Results

Participants were 63.6% female ($N = 42$) and ranged in age from 32 to 86 ($M = 61.41$; $SD = 9.03$). The majority of participants were Caucasian (87.80%); 4.88% of participants were Hispanic and 7.32% of participants were Biracial. Most participants were high school graduates (mean years of education: 15.6, $SD = 2.25$, range: 10–20). Over half of participants were currently retired (58.54%), although over one quarter reported being employed full time (26.82%). Less than 10% of participants reported being employed part time (9.76%), unemployed (2.44%), or living on disability (2.44%).

The frequencies of comorbidities were examined for all participants. Comorbidities included Major Depressive Disorder (39.13%), Obsessive Compulsive Disorder (26.09%), Generalized Anxiety Disorder (21.74%), Social Anxiety Disorder (6.52%), Post Traumatic Stress Disorder (4.35%), and Panic Disorder with Agoraphobia (2.17%).

Women reported significantly higher hoarding severity as measured by the SI-R Total (t_{39} = 3.45, $p < 0.001$), the SI-R Clutter subscale (t_{39} = 2.76, $p < 0.01$), the SI-R Acquisition subscale (t_{39} = 2.15, $p < 0.05$), and the SI-R Difficulty Discarding subscale (t_{39} = 2.44, $p < 0.01$).

T-tests comparing mid-life hoarders (<60 years old) and late life hoarders (60 years old) yielded no significant differences on any of the examined variables (all ps > 0.1) and a correlation between age and all measures revealed only the SI-R subscale Acquisition to be even slightly correlated with age (for Acquisition: $r = -0.261$, $p = 0.035$; all others: $p > 0.05$) and so no further analyses took age into consideration.

An examination of the correlations between the items on possible avoidance-related scales of the Brief COPE revealed moderate correlations between the items on all three scales (Self Distraction: $r = 0.343$, $p = 0.005$; Denial: $r = 0.386$, $p = 0.001$, Behavioral Disengagement: $r = 0.630$, $p < 0.001$). Item 19 ("I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping") from the Self-Distraction scale correlated well with both items on the Behavioral Disengagement scale, "I've been giving up trying to deal with it" ($r = 0.490$, $p < 0.001$) and #16: "I've been giving up the attempt to cope" ($r = 0.377$, $p = 0.002$). There were no other significant inter-scale correlations in the Brief COPE items examined.

Pearson zero-order correlations were examined among all study variables (Table 3). The AAQ-II was significantly correlated (all ps < 0.05) with all other variables, excluding the Brief COPE Self-Distraction scale ($r = -0.110$, $p = 0.930$). The SI-R total and the Clutter subscale correlated moderately (all ps < 0.01) with all variables, excluding the Brief COPE Denial scale. The SI-R Difficulty Discarding and Acquisition subscales correlated significantly with all variables except for the Brief COPE Denial and Behavioral Disengagement scales. The HADS Anxiety subscale correlated significantly with all variables (all ps < 0.05) and the HADS Depression subscale correlated significantly with all variables (all ps < 0.05), except for the Brief COPE Denial scale ($r = 0.194$, $p = 0.119$). There were no inter-correlations among any of the Brief COPE scales examined (all ps > 0.05). Because the Brief COPE Denial scale did not correlate significantly with the SIR total or any of the SI-R subscales, it was not included in further analyses.

Twelve hierarchical regressions were performed to assess the ability of avoidant behaviors (AAQ-II, Self-Distraction, and Behavioral Disengagement) to predict hoarding symptom severity (SI-R Total, Clutter, Difficulty Discarding, and Acquisition) independently of the variance explained by the severity of other psychiatric symptoms (HADS), see Table 4. The first step of all regression analyses was an examination of the variance explained by the HADS Anxiety and Depression subscales. The HADS subscales accounted for 37.8% of variance in the SI-R total score ($p < 0.001$), 16.7% of variance in the SI-R Clutter subscale ($p < 0.01$), 29.7% of variance in the SI-R Difficulty Discarding subscale ($p < 0.001$), and 38.2% of variance in the SI-R Acquisition subscale ($p < 0.001$).

The AAQ-II accounted for significant additional variance for the SI-R Difficulty Discarding ($R^2 = 0.056$, $p < 0.05$) and Acquisition subscales ($R^2 = 0.046$, $p < 0.05$), marginal

additional variance for the SI-R Total ($R^2 = 0.033$, $p = 0.067$), and no significant additional variance for the SI-R Clutter subscale ($R^2 = 0.003$, $p = 0.634$).

The Brief COPE Self-Distraction scale predicted significant additional variance for the SI-R Total ($R^2 = 0.060$, $p < 0.05$) and the SI-R Clutter subscale ($R^2 = 0.069$, $p < 0.05$) but failed to predict any significant additional variance for the SI-R Difficulty Discarding ($R^2 = 0.023$, $p = 0.156$) and Acquisition ($R^2 = 0.024$, $p = 0.115$) subscales.

The Brief COPE Behavioral Disengagement scale accounted for significant additional variance for the SI-R Clutter subscale ($R^2 = 0.141$, $p = 0.001$), marginal additional variance for the SI-R Total ($R^2 = 0.033$, $p = 0.066$), and no significant additional variance for the SI-R Difficulty Discarding ($R^2 = 0.002$, $p = 0.734$) and Acquisition ($R^2 = 0.000$, $p = 0.822$) subscales.

3. Discussion

The current study investigated the relationship between avoidance and hoarding symptom severity, controlling for anxiety and depression symptoms, in a sample of 66 individuals with HD. Both experiential avoidance (AAQ-II) and behavioral avoidance (Brief COPE scales) were examined. While our hypotheses were largely supported, behavioral avoidance and EA uniquely predicted different aspects of HD.

Experiential avoidance and behavioral avoidance uniquely accounted for different aspects of hoarding severity in the regression models. Behavioral avoidance (both Self-Distraction and Behavioral Disengagement) contributed significant additional variance to the SI-R Clutter subscale, whereas experiential avoidance was uniquely predictive of additional variance in the SI-R Difficulty Discarding and the SI-R Acquisition subscales. Given that the AAQ-II and Self-Distraction and Behavioral disengagement subscales were not correlated, these findings may suggest that experiential and behavioral avoidance are two distinct processes contributing to the severity of specific symptom clusters of HD.

Although three scales of the Brief COPE (Self-Distraction, Denial, and Behavioral Disengagement) were hypothesized to be related to the SI-R, Denial was not related to the SI-R total or any of the SI-R subscales. However, Denial was significantly related to the AAQ-II, suggesting that although the Denial scale may share some explanatory variance with EA, it is separate from the manner in which EA relates to hoarding severity. Further, although there was some overlap between the Brief COPE scales of Self-Distraction and Behavioral Disengagement (item #19 on the Self-Distraction scale was significantly related to both items on the Behavioral Disengagement scale), the items from the Denial scale correlated significantly only with each other. This suggests that although there may be an avoidance subscale on the Brief COPE consisting of items 19, 6, and 16 (factor analysis of the Brief COPE is necessary to say definitively), the Denial items (3 and 8) are most likely not involved.

Symptoms of anxiety and depression were related to hoarding severity, experiential avoidance, and behavioral avoidance. When controlling for anxiety and depression symptoms, avoidance accounted for unique variance in hoarding symptom severity.

Although only Self-Distraction accounted for significant additional variance in the SI-R Total when controlling for anxiety and depression, both the AAQ-II and Behavioral Disengagement were marginally significant, suggesting that with a larger sample size they would contribute significant additional variance.

Although the present study found a significant predictive relationship between experiential avoidance (the AAQ-II) and hoarding severity (the SI-R), previous studies (Fernández de la Cruz et al., 2013; Wheaton et al., 2013) did not. This discrepancy may be explained by the lower sample sizes in previous investigations of hoarding and experiential avoidance. Wheaton et al. (2013) used a sample of only 33 individuals with HD and Fernández de la Cruz et al. (2013) looked at only 43 adults ($n = 24$ HD without OCD; $n = 19$ HD with OCD). In contrast, the current study utilized a larger sample size ($N = 66$), increasing the power to detect significant relationships between experiential avoidance and hoarding severity (SI-R Acquisition and SI-R Difficulty Discarding). Additionally, there were notable differences in the samples used in each study. The current sample consists of Veterans seeking treatment within a VA medical center, while the previous study samples included non-treatment seeking individuals in the general population. Further, the current study sample differed in mean age from the previous study samples, representing an older population of adults who may differ in their experience of hoarding symptoms, as well as the etiological and maintenance factors associated with their symptoms. Also, unlike the two previous studies discussed above, the current study examined behavioral avoidance (through the Brief COPE) in addition to experiential avoidance. Thus, although no significant relationship was detected between experiential avoidance and clutter, the present study was able to detect a relationship between behavioral avoidance and clutter. Since the previous studies did not look at behavioral avoidance, they were unable to detect its relationship with hoarding severity.

Avoidance has long been a key element in the cognitive-behavioral model of HD and these results support the conceptualization that avoidance serves to reduce distress related to distorted cognitions regarding the necessity and utility of possessions (e.g. Frost & Hartl, 1996; Steketee & Frost, 2003). The results also provide a preliminary understanding of the specific forms of avoidance underlying each of the hoarding symptom clusters. The finding that experiential avoidance, and not behavioral avoidance, was a predictor of acquisition and difficulty discarding fits with the cognitive-behavioral model as the symptoms of acquiring and saving are themselves avoidance behaviors that are performed to avoid internal distress related to negative thoughts and emotions (Steketee & Frost, 2003). Thus, the model would predict that individuals high on experiential avoidance would increase acquiring and saving behaviors as a means of coping with distressing hoarding related cognitive distortions. Stated another way, acquiring and saving may be means through which individuals engage in experiential avoidance.

The finding that behavioral avoidance, defined here as self-distraction and behavioral disengagement, uniquely predicted increased clutter also fits with the cognitive-behavioral model. Behavioral avoidance, in the form of acquiring and saving, may be conceptualized as a direct attempt to avoid internal distress, and therefore may be a consequence of experiential avoidance. Similarly, clutter can be conceptualized as the inevitable physical

consequence of high rates of acquiring and saving behaviors. Within this theory, the specific forms of behavioral avoidance measured may not predict acquisition and difficulty discarding severity because acquisition and difficulty discarding are themselves forms of behavioral avoidance. Given the high correlation, acquiring may be a behavioral form of self-distraction. Difficulty discarding may be a form of behavioral disengagement as both constructs aim to reduce distress by disengaging from a stress inducing stimulus. Further, clutter is uniquely predicted by behavioral avoidance as it is a direct consequence of behavioral avoidance.

Future studies should attempt to demonstrate experimentally the effect of experiential avoidance on hoarding behaviors. Prior studies have demonstrated that training in *acceptance* of internal states (*i.e.*, the converse of experiential avoidance) can decrease avoidance of an anxiety-inducing stimulus when compared to training in controlling or suppressing internal states or to receiving no training (Eifert & Heffner, 2003; Levitt, Brown, Orsillo, & Barlow, 2004). A study wherein individuals with hoarding disorder are randomly assigned to receive training in acceptance, suppression, or no training and examining the immediate impact of these various interventions on discarding or acquiring behaviors can help to further clarify the role of experiential avoidance on hoarding behaviors. Additionally, a study examining how the relationship between beliefs about the meaning and utility of possessions and the behaviors of acquiring and difficulty discarding is modified by training in acceptance (versus suppression or no training) can help to clarify whether experiential avoidance mediates the relationship between hoarding cognitions and acquiring and discarding behaviors.

This provides further support for utilizing exposure therapy in patients with HD. Exposure to discarding and not acquiring directly confronts unwillingness to experience distress associated with hoarding symptoms. Through repeated experiences of letting go of possessions and learning to tolerate feeling distress, patients naturally habituate. While exposure therapy is effective in decreasing HD symptomatology (e.g., Ayers et al., 2013; Steketee, Frost, Tolin, Rasmussen, & Brown, 2010), self-distraction and behavioral disengagement may lead to a continuation of clutter problems, particularly when the patient is at home attempting to de-clutter. Techniques to manage self-distraction (e.g., problem solving, planning, schedule setting) and behavioral disengagement (e.g., prioritizing, motivational interviewing, behavioral activation) may need to be applied if the patient presents with these features. In response to CBT for hoarding, urges to save and difficulty discarding decrease at greater rates than does clutter volume (Ayers et al., 2013, Ayers, Wetherell, Golshan, & Saxena, 2011). Remediating behavioral avoidance may improve outcome rates by targeting clutter, which is historically difficult to improve with current methods. Further, cognitive therapy may be useful to use in conjunction with exposure therapy to combat misappraisals such as over-predictions of distress.

While the strengths of this investigation include a relatively large HD sample and utility of both cognitive and behavioral avoidance instruments, there are several limitations. This study relied on self-report measures of symptom severity and the variance associated with EA and behavioral avoidance was generally small. Our sample was largely Caucasian and older than another investigation of HD patients (Wheaton et al., 2013: mean age = 48.81, *SD*

= 15.63). This study did not include a healthy control group, and thus a comparison cannot be made regarding the role of experiential and behavioral avoidance in individuals with hoarding disorder versus those without. Further, these results may only be indicative of treatment seeking HD patients, and not those unmotivated for treatment or with limited insight. It should be noted that the observed relationships between avoidance and scores on the SI-R were significant, even when restricting the study to only individuals with HD. Further research may want to investigate if these relationships are also present in individuals with sub-clinical levels of hoarding cognitions.

While we found positive results in this study, it should be noted that the AAQ-II emphasizes avoidance of anxious and depressive internal experiences that may not fully capture avoidance triggers in HD. A hoarding specific avoidance measure may be warranted. Future work should also examine causal pathways and validated clinician measures of avoidance such as the Behavioral Avoidance Tests.

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Table 1.

Correlations between items on avoidance-related Brief Cope scales.

	Item#	Self-Distraction		Denial		Behavioral Disengagement	
		1	19	3	8	6	16
Self-Distraction	1	–	0.343 *	−0.202	−0.056	−0.043	−0.58
	19		–	0.145	0.102	0.490 **	0.377 *
Denial	3			–	0.386 *	0.145	0.215
	8				–	0.205	0.023
Behavioral Disengagement	6					–	0.630 **
	16						–

*
$p < 0.01$,

**
$p < 0.001$.

Table 2.

Means, standard deviations and reliability coefficients for all variables ($N = 66$).

	Mean	SD	α
AAQ-II	36.67	11.23	0.867
SI-R Total	58.47	14.17	0.927
SI-R Clutter	24.62	7.61	0.929
SI-R Difficulty Discarding	19.29	4.15	0.838
SI-R Acquisition	14.56	5.46	0.852
HADS Anxiety	9.76	3.87	0.747
HADS Depression	8.17	4.69	0.869
Self-Distraction	4.08	1.65	–
Denial	0.82	1.14	–
Behavioral Disengagement	2.11	1.76	–

AAQ-II – Acceptance and Action Questionnaire-II.

SI-R – Savings Inventory-Revised.

HADS – Hospital Anxiety and Depression Scale.

Self-Distraction, Denial, and Behavioral Disengagement are scales in the Brief COPE.

Table 3.

Zero-order correlations among all variables.

	SI-R Total	SI-R Subscales			HADS		Brief COPE Scales		
		Clutter	Difficulty Discarding	Acquisition	Anxiety	Depression	Self-Distraction	Denial	Behavioral Disengagement
AAQ-II	0.464 ***	0.252 *	0.474 ***	0.493 ***	0.412 **	0.486 ***	−0.110	0.305 *	0.331 **
SI-R Total	–	0.831 ***	0.798 ***	0.830 ***	0.505 ***	0.602 ***	0.424 ***	0.114	0.409 **
Clutter		–	0.428 ***	0.438 ***	0.332 **	0.402 **	0.376 **	0.090	0.505 ***
Difficulty Discarding			–	0.715 ***	0.488 ***	0.512 ***	0.309 *	0.112	0.181
Acquisition				–	0.476 ***	0.613 ***	0.341 **	0.086	0.219
Anxiety					–	0.686 ***	0.247 *	0.291 *	0.340 **
Depression						–	0.307 *	0.194	0.377 **
Self-Distraction							–	0.017	0.230
Denial								–	0.194

*
$p < 0.05$,

**
$p < 0.01$,

***
$p < 0.001$.

Table 4.

Hierarchical regression analyses evaluating avoidance as a predictor of hoarding severity.

Measures	R^2	B	SB B	β	t	p
SI-R Total						
Step 1 – Psychiatric symptoms	0.378					<0.001
HADS Anxiety		0.636	0.5	0.173	1.27	0.209
HADS Depression		1.459	0.413	0.483	3.535	0.001
Step 2 – Avoidance						
Model 1: AAQ-II	0.033	0.264	0.142	0.21	1.865	0.067
Model 2: Brief COPE Self-Distraction	0.060	2.217	0.816	0.258	2.576	0.012
Model 3: Brief COPE Behavioral Disengagement	0.033	1.591	0.851	0.198	1.869	0.066
SI-R Clutter						
Step 1 – Psychiatric symptoms	0.167					0.003
HADS Anxiety		0.212	0.311	0.108	0.682	0.498
HADS Depression		0.532	0.256	0.328	2.073	0.042
Step 2 – Avoidance						
Model 1: AAQ-II	0.003	0.43	0.09	0.064	0.478	0.634
Model 2: Brief COPE Self-Distraction	0.069	1.274	0.539	0.276	2.363	0.021
Model 3: Brief COPE Behavioral Disengagement	0.141	1.76	0.496	0.408	3.551	0.001
SI-R Difficulty Discarding						
Step 1 – Psychiatric symptoms	0.297					<0.001
HADS Anxiety		0.276	0.156	0.257	1.772	0.081
HADS Depression		0.297	0.128	0.336	2.312	0.024
Step 2 – Avoidance						
Model 1: AAQ-II	0.056	0.1	0.044	0.272	2.307	0.024
Model 2: Brief COPE Self-Distraction	0.023	0.398	0.277	0.158	1.436	0.156
Model 3: Brief COPE Behavioral Disengagement	0.002	-0.093	0.272	-0.039	-0.341	0.734
SI-R Acquisition						
Step 1 – Psychiatric symptoms	0.382					<0.001
HADS Anxiety		0.148	0.192	0.105	0.768	0.446
HADS Depression		0.63	0.159	0.541	3.975	<0.001
Step 2 – Avoidance						
Model 1: AAQ-II	0.046	0.121	0.054	0.249	2.245	0.028
Model 2: Brief COPE Self-Distraction	0.024	0.545	0.341	0.165	1.599	0.115
Model 3: Brief COPE Behavioral Disengagement	0.000	-0.076	0.336	-0.025	-0.226	0.822

Note: Coefficient data reported are those from the step at which the variable was entered into the equation.