10-1-2018

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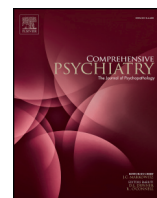*See next page for additional authors*

Recommended Citation

Frost, Randy O.; Gabrielson, Isabella; Deady, Sophia; Dernbach, Kathryn Bonner; Guevara, Greta; Peebles-Dorin, Maggie; Yap, Keong; and Grisham, Jessica R., "Scrupulosity and Hoarding" (2018). Psychology: Faculty Publications, Smith College, Northampton, MA.
https://scholarworks.smith.edu/psy_facpubs/32

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Scrupulosity and hoarding

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A B S T R A C T

Objective: Recent evidence suggests that avoiding waste may be a prominent motive to save in hoarding disorder. Such beliefs are reminiscent of scrupulosity obsessions in OCD. This paper reports on three studies examining scrupulosity-like beliefs in hoarding and the development and validation of a measure of material scrupulosity.
Methods: Study one examined the reliability and validity of a measure of material scrupulosity (MOMS) and its relationship to hoarding in a college student sample, as well as the relationship between hoarding and OCD-base scrupulosity. Study 2 examined the psychometric properties of the MOMS in a replication of study 1 with a sample of people with hoarding problems. Study 3 examined the reliability and validity of the MOMS in a large nonclinical/community sample.
Results: Findings across the studies provided evidence for the reliability and validity of the MOMS. It was highly correlated with hoarding symptoms, especially difficulty discarding, and hoarding related beliefs, especially responsibility beliefs. It accounted for significant variance in hoarding symptoms independent of other correlates, including other hoarding beliefs. OCD-based scrupulosity was correlated with hoarding in sample 1, but not in the hoarding sample in study 2.
Conclusions: Material Scrupulosity refers to an exaggerated sense of duty or moral/ethical responsibility for the care and disposition of possessions to prevent their being harmed or wasted. It appears to be distinct from other hoarding-related beliefs and a significant predictor of hoarding symptoms. The MOMS appears to possess good reliability and validity in both clinical and nonclinical samples.

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1. Introduction

Research over the last 20 years has identified a discrete hoarding syndrome that has resulted in its inclusion as a separate disorder in the Diagnostic and Statistical Manual of Mental Disorders [1]. Efforts to study the etiology of hoarding have included the development of a cognitive behavioral model of hoarding [2,3] that hypothesizes specific vulnerabilities, information processing deficits, and attachments to possessions that underlie hoarding problems. A number of studies have examined vulnerabilities and information processing deficits [4], but relatively little work has been done on the nature of attachments to possessions and motives for saving in hoarding disorder.

Motives for saving possessions in people with hoarding disorder (HD) appear to consist of exaggerations of the attachments most people have to their possessions. For instance, a major motive for saving in HD is the extent to which individual possessions are considered extensions of the self and central to ones' identity [5]. Discarding such possessions feels like losing a piece of oneself. People with HD also save things they believe might be needed some day or that are reminders of important information. Also prominent in HD is saving things because things are aesthetically pleasing [5].

In each of these cases, the motive to save is driven by an intense desire to keep the object. However, a number of people with HD save things they do not want. Rather than being attached to the possession, the apparent motive is an abhorrence of waste. Frost and Steketee [6] describe the case of a woman who suffered tremendous guilt while considering discarding a glove with a hole in it, despite the fact that she knew she would never wear it or use it for any other purpose. She alternated between weeping about being to blame for wasting the wool in the glove and anger toward the store that "tricked" her into buying a poorly constructed item for which she was now responsible. Her "moral" dilemma regarding waste extended to virtually all her possessions. She complained that, "even saying the word 'waste' makes me cringe" (pg. 148). Frost and Steketee [6] suggest that in such cases "ownership seems to carry with it the responsibility for making sure things are used to their full potential and not wasted" (pg. 148) and

for making sure they come to no harm. This desire can manifest in creative re-use and preoccupation with donation or finding a "good home" where the object will be used [7]. The result is an overly laborious and perfectionistic process to get rid of virtually anything.

Beliefs such as these are reminiscent of scrupulosity obsessions in obsessive compulsive disorder (OCD). Abramowitz and Jacoby [8] define scrupulosity as "fearing sin where there is none", and although most examples of scrupulosity in OCD have religious themes, some concern moral transgressions that are not religious in nature. For instance, the Penn Inventory of Scrupulosity – Revised (PIOS-R) contains two subscales, Fear of God and Fear of Sin, with the latter being composed of content focused on morality rather than religion [9]. Items from this subscale include "I fear I will act immorally", "I am afraid of having sexual thoughts", and "I feel guilty about immoral thoughts I have had". Olatunji et al. [9] found the Fear of Sin subscale to be correlated with all subscales from the OCI, including hoarding, in a sample of university students. Hoarding symptoms, however, contributed unique variance to the prediction of Fear of Sin scores over and above the contribution of other OCD symptoms. Hoarding symptoms did not predict Fear of God independent of other OCD symptoms.

Several attempts have been made to examine waste and responsibility in the context of hoarding. In a large sample of HD participants, a single item report of waste avoidance was the most consistent and unique predictor of both excessive acquisition and difficulty discarding [10]. Dozier and Ayers [11] reported similar findings using the same item in a small sample of mid- and late-life patients with HD. The Responsibility subscale of the Saving Cognitions Inventory [5] reflects a sense of responsibility toward possessions and predicts hoarding symptoms independent of a number of covariates of HD (e.g., depression, anxiety, OCD, indecisiveness [5]). Relatedly, Inflated Responsibility, as operationalized in the Obsessive Beliefs Questionnaire, independently predicted hoarding symptoms in a nonclinical undergraduate sample [12]. Unfortunately, none of these measures captures the moral or ethical emphasis seen in anecdotal accounts in HD.

The present studies examine the role of scrupulosity-like beliefs in hoarding and hoarding disorder. The term "*material* scrupulosity" used here refers to a set of rigid beliefs that include an exaggerated sense of duty or moral/ethical responsibility for the care and disposition of possessions to prevent their being harmed or wasted. For people with HD, failure to meet this responsibility is hypothesized to be associated with the experience of guilt and a sense of grave moral, ethical, and personal failure. The physical manifestation of material scrupulosity, clutter, serves as an emotional inventory that confirms that ones' responsibilities have been upheld and truncates the potential guilt inherent in discarding.

Three studies presented here examine the role of scrupulosity in hoarding and describe the development and validation of a measure of material scrupulosity. Study 1 aimed 1) to develop a self-report measure of material scrupulosity, 2) to examine its reliability and validity in a nonclinical sample, and 3) to examine whether OCD-based scrupulosity was related to hoarding symptoms. Study 2 was designed to replicate the reliability and validity of the new measure using a clinical sample of people with self-identified hoarding problems. Study 3 was designed to determine the extent to which material scrupulosity accounted for variance in hoarding symptoms above and beyond that associated with saving beliefs (i.e., the Saving Cognitions Inventory). This study employed a large non-clinical/community sample. The studies reported here were approved by the Smith College, University of New South Wales, and Australian Catholic University Human Research Ethics Committees. All participants provided written voluntary consent.

2. Study 1

2.1. Study 1 methods

2.1.1. Participants/procedure
The participants were 149 students recruited from the student body of Smith College. Participants were solicited from psychology courses as

well as social media. Eighty-eight percent of the participants identified as female, none as male, and 3.3% identified as non-binary. The remainder did not indicate a gender. The participants ranged in age from 17 to 32, with a mean of 19.12 (SD = 1.71), with 11% identifying themselves as Hispanic. A small percentage (7.6%) identified as Black or African American, 27.7% identified as Asian or Asian American. The remainder identified as white or did not indicate an ethnicity. The participants completed a series of questionnaires through online survey software.

2.1.2. Measures

2.1.2.1. Saving inventory revised (SI-R) [13]. The SI-R is a 23-item questionnaire which measures the severity of hoarding and saving behavior. The SI-R consists of three subscales: Excessive Clutter (e.g., "To what extent do you have so many things that your room(s) are cluttered?"); Difficulty Discarding (e.g., "To what extent do you have difficulty throwing things away?"); and Excessive Acquisition (e.g., "How often do you feel compelled to acquire something you see (e.g., when shopping or offered free things)?"). Items on the SI-R are rated on a five point Likert scale. In a clinical sample, the SI-R has shown high internal consistency ($\alpha = 0.92$) and good test-retest reliability [13]. The alpha coefficients in the current study exceeded $\alpha = 0.84$ for all subscales and the total.

2.1.2.2. Depression, anxiety and stress scale- 21 (DASS-21) [14]. The DASS-21 is a 21-item self-report measure which assesses symptoms of depression, anxiety, and stress. The DASS consists of three subscales: Depression, Anxiety, and Stress. In this study only the Depression subscale was administered. The items on the DASS are measured on a 4-point Likert scale. Cronbach alpha for the present study was good ($\alpha = 0.80$).

2.1.2.3. Obsessive-compulsive inventory- revised (OCI-R) [15]. The OCI-R is an 18-item self-report measures that assesses the severity of OCD symptoms. The OCI-R consists of six subscales: Washing, Checking, Ordering, Obsessing, Neutralizing, and Hoarding. The items are rated on a 5-point Likert scale. Only the total score minus the hoarding subscale was used in this study. Internal consistency for the OCI-R subtotal minus hoarding in the current study was acceptable ($\alpha = 0.89$).

2.1.2.4. Penn inventory of scrupulosity- revised (PIOS-R) [9]. The PIOS-R is a 15-item questionnaire which measures religious scrupulosity. The PIOS-R contains two subscales: Fear of Sin (e.g., "I worry that I might have dishonest thoughts") and Fear of God (e.g., "I worry that God is upset with me"). Items on the PIOS-R are rated on a five point Likert scale. The PIOS-R has demonstrated to be reliable and valid [9]. Internal consistencies for the current study were high (Fear of Sin, $\alpha = 0.93$; Fear of God $\alpha = 0.96$).

2.1.2.5. Development of the measure of material scrupulosity (MOMS). An initial item pool of 30 items were generated based on anecdotal accounts in the literature [6], research examining reasons for saving and acquiring in hoarding disorder, such as feelings of responsibility, beliefs about waste, and concern over causing harm to possessions [5], and suggestions volunteered by members of a hoarding and cluttering support group. The items are scored on a five point Likert scale (scored from 0 to 4) and were patterned after previous research on scrupulosity in obsessive-compulsive disorder (OCD). The 30 items include those reflecting guilt and feelings of moral ineptitude related to waste (e.g., "I feel guilty I have wasted in the past" or "I keep broken things because it feels morally wrong to waste them even though I know I won't fix them").

2.2. Data analysis

Participants who completed fewer than 90% of items on any scale were dropped from the analyses for that measure. Final sample sizes

Table 1
Measure of material scrupulosity (MOMS) 9-items.

Item 1	I feel guilty about throwing things away.
Item 2	I feel a sense of duty to my possessions.
Item 3	I feel guilty about things I have wasted in the past.
Item 4	My sense of duty toward my possessions interferes with my ability to enjoy things I would like to.
Item 5	It is my responsibility to make sure objects are not wasted or destroyed.
Item 6	Being unprepared (not having things I need) is a serious mistake.
Item 7	I feel like a morally good person when I rescue objects from being wasted.
Item 8	Even when I know I won't use something, I feel guilty about throwing it away.
Item 9	I keep broken things because it feels morally wrong to waste them even though I know I won't fix them.

varied somewhat due to missing values. The SI-R total score for this sample was positively skewed (skewness = 0.427, SE = 0.201). Cronbach alpha was used to determine the internal consistency of the MOMS. Item-total correlations were used to determine degree of overlap among the MOMS items and to select a smaller set of items for the final scale. Items with item-total correlations larger than 0.9 or smaller than 0.2 were eliminated. Correlations between hoarding symptoms (SI-R) and study variables were used to establish convergent and discriminant validity. Because of the exploratory nature of the study and the replication across studies, the alpha level for all correlations was set at $p < .05$. In addition, regression analyses were employed to determine whether the MOMS was related to hoarding symptoms independent of depression, OCD-based scrupulosity, and OCD symptoms. Differences between correlations were evaluated using a z-test [16].

2.3. Study 1 results

Internal consistency of the 30 material scrupulosity items was very high ($\alpha = 0.959$). Corrected item-total correlations indicated high overlap among the items, suggesting that a reduction in the number of items was warranted. Nine items were retained in the final scale based on the reliability analyses in order to reduce redundancy, and on the investigators' judgment that the remaining items adequately represented the proposed definition of material scrupulosity. The internal consistency (α) of the 9-item MOMS was 0.85. See Table 1 for MOMS items.

The 9-item MOMS was positively correlated with the SI-R total and all three subscales (Table 2), especially Difficulty Discarding. The correlation with SI-R Difficulty Discarding was significantly larger than the correlation between the MOMS and both the SIR-Clutter ($z = 5.80$, $p < .001$) and the SIR-Excessive Acquisition ($z = 4.99$, $p < .01$) subscales. Examination of correlations with the PIOS-R revealed that the MOMS was also positively correlated with the PIOS-R Sin, but not the PIOS-R God subscale. The magnitude of the correlations between PIOS-Sin and SI-R measures were smaller than those between the MOMS and the SI-R. The SI-R Difficulty Discarding correlation with the MOMS

Table 2
Means, standard deviations, and correlations for study 1 variables.

	Mean	s.d.	MOMS	PIOS-R S	PIOS-R G
MOMS	14.41	6.43	–	0.313**	0.041
SI-R tot	20.90	12.28*	0.673**	0.364**	0.076
SI-R acq	7.49	4.44	0.489**	0.335**	0.134
SI-R dd	7.37	5.06	0.753**	0.326**	0.036
SI-R cl	6.06	5.03	0.451**	0.261**	0.035
DASS-D	9.54	3.41	0.288**	0.303**	0.064
OCI-RnoH	11.81	9.52	0.517**	0.378**	0.072

Note: MOMS = Measure of Material Scrupulosity; PIOS-R Sin = Penn Inventory of Scrupulosity- Revised Sin subscale; PIOS-R God = Penn Inventory of Scrupulosity- Revised God subscale; SI-R tot = Saving Inventory Revised total; SI-R acq = Saving Inventory Revised Excessive Acquisition; SI-R dd = Saving Inventory Revised Difficulty Discarding; SI-R cl = Saving Inventory Revised Clutter; DASS-D = Depression Anxiety Stress Scales Depression subscale; OCI-RnoH = Obsessive Compulsive Inventory-Revised minus Hoarding subscale.
 * $p < .05$.
 ** $p < .01$.

was significantly larger than the correlation between SI-R Difficulty Discarding and PIOS-Sin ($z = 6.08$, $p < .001$).

The MOMS correlated with depression and OCI-R minus hoarding, but the correlations were significantly smaller than the correlation between the MOMs and SI-R Difficulty Discarding ($z = 3.61$, $p < .01$; $z = 6.35$, $p < .01$).

To determine the relationship of OCD-based scrupulosity and hoarding symptoms, we examined the correlations between the PIOS-R and the SI-R. The PIOS-sin subscale was significantly and positive correlated with the SI-R total and each of the three subscales while the PIOS-God subscale was not correlated with any SI-R measure. See Table 1.

A series of multiple regressions were performed to determine the extent to which the MOMS accounted for variance in hoarding scores independent of other correlates, specifically depression, PIOS-sin and the OCI-R subtotal (total minus hoarding subscale). Multicollinearity indices were within normal limits. In step 1 of the regression, DASS-Depression, PIOS-sin and the OCI-R subtotal were entered. The resulting equation predicted significant variance for each of the SI-R subscales and the total score. The MOMS score was entered at step 2. See Table 3. In each case, the MOMS accounted for significant variance independent of the other predictors. For the SIR-total, DASS-D and PIOS Sin remained significant at step 2. The pattern differed somewhat for the subscales. For acquisition, the OCI-subtotal, PIOS-sin, and the MOMS contributed significant and independent variance. For difficulty discarding, only the MOMS predicted significant variance at step 2. For clutter, both depression and the MOMS predicted significant amounts of variance after controlling for other covariates.

2.4. Study 1 discussion

The study provided evidence for the reliability, concurrent, and discriminant validity of a measure of material scrupulosity. The MOMS accounted for unique variance in hoarding, separate from depression, OCD symptoms, and OCD-based scrupulosity. It appears to be most closely associated with difficulty discarding. The findings from study 1 also indicated that an OCD-based measure of scrupulosity was associated with hoarding symptoms in a nonclinical sample, but only for the morality-based form of scrupulosity.

Study 2 was conducted to examine the reliability and validity of the MOMS in a sample of people self-identifying with hoarding problems.

3. Study 2

3.1. Methods

3.1.1. Participants and procedures

Participants in study 2 were members of an online hoarding and clutter support group. Participants were included based on self-identification with hoarding problems and the participation in a self-help group for hoarding. Eighty-six percent scored above the criterion for clinical hoarding problems [17]. A total of 28 participants took part in the study. There were 26 female participants, one male participant, and one participant with an unspecified gender. The age of participants was not recorded. Questionnaires were completed on line and consisted

Table 3

Regressions predicting SI-R from OCD-based scrupulosity (PIOS-R), depression (DASS), and obsessive compulsive disorder (OCI- No Hoarding), and material scrupulosity.

SI-R excessive acquisition

Step 1: $F_{(3, 139)} = 14.38$, $p < .001$

Step 2: $F_{(4, 138)} = 15.14$, $p < .001$

Variable	Step 1			Step 2		
	β	t	p	β	t	p
DASS_D	0.068	0.83	0.405	0.045	0.57	0.570
PIOS-R S	0.207	2.53	0.012	0.160	2.03	0.045
OCI-RnoH	0.333	3.96	0.000	0.190	2.13	0.035
MOMS	–	–	–	0.316	3.70	0.001

SI-R difficulty discarding

Step 1: $F_{(3, 140)} = 13.49$ $p < .001$

Step 2: $F_{(4, 139)} = 47.44$, $p < .001$

Variable	Step 1			Step 2		
	β	t	p	β	t	p
DASS_D	0.141	1.72	0.088	0.087	1.42	0.158
PIOS-R S	0.201	2.45	0.015	0.094	1.53	0.128
OCI-RnoH	0.274	3.24	0.001	−0.051	−0.74	0.462
MOMS	–	–	–	0.719	10.77	0.001

SI-R clutter

Step 1: $F_{(3, 140)} = 12.55$, $p < .001$

Step 2: $F_{(4, 139)} = 13.10$, $p < .001$

Variable	Step 1			Step 2		
	β	t	p	β	t	p
DASS_D	0.242	2.91	0.004	0.219	2.73	0.007
PIOS-R S	0.138	1.67	0.096	0.094	1.16	0.247
OCI-RnoH	0.221	2.60	0.010	0.085	0.94	0.350
MOMS	–	–	–	0.301	23.44	0.001

SI-R total

Step 1: $F_{(3, 139)} = 20.63$, $p < .001$

Step 2: $F_{(4, 138)} = 35.04$, $p < .001$

Variable	Step 1			Step 2		
	β	t	p	β	t	p
DASS_D	0.184	2.36	0.020	0.144	2.17	0.032
PIOS-R S	0.215	2.77	0.006	0.136	2.03	0.044
OCI-RnoH	0.324	4.04	0.001	0.81	1.07	0.285
MOMS	–	–	–	0.535	7.38	0.001

Note: SI-R = Saving Inventory Revised; DASS = Depression Anxiety Stress Scale Depression subscale; PIOS-R Sin = Penn Inventory of Scrupulosity- Revised Sin subscale; IOCI-RnoH = Obsessive Compulsive Inventory-Revised minus Hoarding subscale.

of the SI-R, MOMS, and the PIOS-R from study 1. The data analysis plan for study 2 was identical to that of study 1. One participant was missing PIOS-R data. There were no other missing data.

3.2. Results and discussion

The SI-R total score for participants in study 2 was 56.5 ($sd = 17.0$), which is comparable to the severity of other samples of people with HD [10]. See Table 4. Internal consistency of the 9-item MOMS was high ($\alpha = 0.94$).

Scores on the MOMS ranged from 9 to 42 with a mean of 29.54 ($sd = 9.13$) which was substantially higher than study 1. As predicted, the MOMS was significantly correlated with the SI-R total and each of the subscales. See Table 4. Like study 1, the MOMS was most highly correlated with the Difficulty Discarding subscale of the SI-R. In contrast to study 1, the MOMS correlated with both the PIOS-Sin and PIOS-God subscales, but neither of the PIOS subscales correlated with hoarding severity as measured by the SI-R. This may have resulted from the small

Table 4

Means, standard deviations, and correlations for study 2 variables.

	Mean	s.d.	MOMS	PIOS-R S	PIOS-R G
MOMS	29.54	9.13	–	0.471[*]	0.416[*]
SI-R acq	13.82	5.48	0.462[*]	0.229	0.309
SI-R dd	19.14	5.35	0.605[**]	0.130	0.323
SI-R cl	23.54	8.50	0.434[*]	−0.083	0.072
SI-R tot	56.50	16.97	0.557[**]	0.063	0.221
PIOS-R S	21.59	7.56			
PIOS-R G	10.67	4.64			

Note: MOMS = Measure of Material Scrupulosity; SI-R acq = Saving Inventory Revised Excessive Acquisition; SI-R dd = Saving Inventory Revised Difficulty Discarding; SI-R cl = Saving Inventory Revised Clutter; SI-R tot = Saving Inventory Revised total score; PIOS-R Sin = Penn Inventory of Scrupulosity- Revised Sin subscale; PIOS-R God = Penn Inventory of Scrupulosity- Revised God subscale.

* $p < .05$.

** $p < .01$.

sample size or the restriction of range of the hoarding measures. Nevertheless, it suggests that any relationship between hoarding symptoms and OCD-based scrupulosity is weak at best.

4. Study 3

While studies 1 and 2 support the reliability and validity of the MOMS and suggests that material scrupulosity is an important and unidentified part of hoarding symptomatology, there are several unanswered questions. First, studies 1 and 2 relied nearly exclusively on female participants. Although much of the research on hoarding and hoarding disorder does so as well, epidemiological findings suggest that the gender ratio is approximately equal [4]. It is important to determine whether material scrupulosity is related to hoarding symptoms in men as well as women.

Second, there are other measures designed to assess the beliefs about and attachments to possessions that are involved in hoarding symptoms. Most prominent among these is the Saving Cognitions Inventory (SCI) [5]. The SCI has shown substantial association with HD symptoms, and predicts hoarding symptoms independent of a number of covariates. One of the SCI subscales (Responsibility) assesses the sense of responsibility toward possessions for finding them, using them, making them available, not wasting opportunities provided by them, and the ensuring their well-being. However, these items do not capture the moral or ethical emphasis contained in the MOMS. It remains to be seen whether the MOMS accounts for any variance in HD symptoms beyond that accounted for by the SCI subscales, particularly Responsibility. Study 3 was designed to address these issues.

4.1. Study 3 methods

4.1.1. Participants

Community participants were recruited via Amazon's Mechanical Turk (MTurk) and were restricted to North American MTurk workers with at least 95% MTurk approval ratings. A total 658 MTurk workers commenced the online survey. We screened for accurate and valid responses and deleted 126 cases due to failure to complete the survey ($n = 51$), completing the survey in <15 min ($n = 50$), failure to respond correctly to two check items, e.g., "please respond 7, strongly agree on this item" ($n = 17$), self-declaration that their responses were not valid ($n = 7$), and invariance in responses on the first page of the SI-R which had reverse scored items ($n = 1$). The remaining participants were 532 adults (244 males and 288 females) aged 18 to 81 (mean age = 36.2 years, SD = 10.6). Although this was a non-clinical/ community sample, 15.8% scored at or above the SI-R total cutoff for clinical hoarding problems [17].

4.1.2. Measures

Measures for study 3 included the SI-R, DASS, and MOMS (see study 1 for descriptions) as well as the Saving Cognitions Inventory (SCI) [5]. The SCI is a 24-item self-report measure that assesses the cognitions and beliefs underlying HD. In addition to the Responsibility for Possessions, the SCI contains three other subscales: Emotional Attachment to possessions (i.e., feelings of hypersentimentality, belongings seen as extension of self) Control over possessions (i.e., the need to maintain sole control over items), and concerns about Memory (i.e., information being lost). Each item is rated on a seven-point scale ranging from 1 (not at all) to 7 (very much). The SCI has demonstrated good convergent and discriminant validity, and the four SCI subscales have shown good internal consistency [5]. Internal consistencies in the present study were good (αs = 0.77 to 0.95).

4.2. Study 3 results

Men had significantly higher MOMS scores than women, $t(530) = 2.19$, $p < .05$. They did not differ on SI-R total or any SI-R subscales however ($ts < 1.3$, $ps > 0.05$). Similarly, they did not differ on SCI total scores, nor on the Emotional Attachment, Control, or Memory subscales ($ts < 1.8$, $ps > 0.05$). They did differ on Responsibility however, with males having significantly higher scores, $t(530) = 2.51$, $p < .05$.

Separate analyses for men and women revealed identical patterns in the correlations and regressions examined. Therefore, all participants were combined for these analyses.

The MOMS was strongly correlated with each of the SI-R subscales as well as the total score. See Table 5. As with studies 1 and 2, difficulty discarding was the subscale with the largest correlation. Comparisons among these correlations indicated that the correlation between the MOMS and Difficulty Discarding was significantly larger than that between the MOMS and Excessive Acquisition ($z = 4.08$, $p < .001$) and Clutter ($z = 6.53$, $p < .001$). In addition, large correlations were observed between the MOMS and each of the subscales of the SCI as well as the total score. The correlation between the MOMS and DASS-depression was significant, but much smaller than the correlations with hoarding symptoms and beliefs.

A series of multiple regressions were performed to determine the extent to which the MOMS accounted for variance in hoarding scores independent of the SCI-Responsibility subscale and DASS-Depression. In step 1 of the regression, DASS-Depression and the SCI-Responsibility were entered. The resulting equation predicted significant variance for each of the SI-R subscales and the total score

(Table 6). At step 2, the MOMS accounted for significant variance independent of depression and responsibility-based hoarding beliefs as measured by the SCI. For each analysis, all three predictors contributed significant variance at step 2 (Table 6). A similar set of regressions using the SCI total score revealed an identical pattern with the MOMS contributing significant variance on each SIR subscale.

5. General discussion

The purpose of these studies was to examine the extent to which hoarding symptoms were associated with scrupulosity-like beliefs and to evaluate the psychometric properties of the measure of material scrupulosity. Anecdotal accounts indicate that many hoarding individuals save things they are not attached to or do not want to keep [6]. The predominant motive appears to be a fear of waste or a scrupulosity-like belief [10,11]. The current studies suggest that hoarding-related scrupulosity is different from OCD-based scrupulosity. Although hoarding symptoms were correlated with OCD-based scrupulosity (PIOS-Sin) in study 1, the association did not replicate in a clinical sample. Thus, there is limited evidence to support the role of OCD-based scrupulosity in hoarding.

In contrast, a newly developed Measure of Material Scrupulosity (MOMs) demonstrated initial evidence of reliability and validity. It had good internal consistency across all 3 studies. Also across 3 studies drawn from different populations, the MOMS was strongly correlated with hoarding symptoms. It appears to be most closely associated with difficulty getting rid of possessions rather than excessive acquisition of them or clutter once they are in the home. Correlations between the MOMS and SI-R Difficulty Discarding scores were substantially (and mostly significantly) larger than those between the MOMS and either SI-R Excessive Acquisition or Clutter.

Correlations with the SI-R were also substantially larger than those with other constructs such as depression, OCD, and OCD-related scrupulosity, suggesting discriminant validity. Furthermore, the MOMS accounted for variance in HD symptoms above and beyond that accounted for by these constructs.

The MOMS was also strongly correlated with HD beliefs, especially Responsibility and Emotional Attachment from the SCI. Although these correlations were substantial, the MOMS still accounted for unique variance in SIR Total and each SI-R subscale when depression and the SCI Responsibility subscale were controlled for. Although the content of the Responsibility scale of the SCI is close to that of the MOMS, each of these measures accounted for unique variance in the SIR scores. Therefore it appears that material scrupulosity as measured by the MOMS is independent of existing measures of hoarding related beliefs and adds something unique to our understanding of HD.

Gender differences were observed in the absolute value of the MOMS. Males scored higher than females on both the MOMS and the Responsibility scale of the SCI. There were no observed differences between males and females in the magnitude of correlations between the MOMS and other study variables, however. Further research on the importance of these gender differences is warranted. Moreover, these findings are based on two nonclinical samples and one small clinical sample. Replication with a large clinical sample is needed. Furthermore, all of the measures in this study were self-report and completed on-line. Examination of this phenomenon via interview in the home would be useful.

High levels of material scrupulosity may explain the presumed lack of motivation and insight in many people with hoarding disorder. Their beliefs about maximum usage of possessions are not incorrect, and have a pro-social quality in an age of environmental concern. To an observer, however, the excessive saving appears to make little sense. People with hoarding disorder often claim that their problem is not that they can't get rid of things, but that they have too little time to do so, and that they are exhausted by the efforts they are already making. In these cases, the attachment to a possession may not be

Table 5
Means, standard deviations, and correlations for study 3 variables.

	Mean	s.d.	MOMS
MOMS	14.15	7.22*	–
SI-R tot	25.82	16.47	0.688**
SI-R acq	7.95	5.03	0.622**
SI-R dd	9.82	5.75	0.710**
SI-R cl	8.06	7.47	0.552**
SCI_EA	27.03	14.02	0.677**
SCI_C	12.73	5.16	0.504**
SCI_R	17.11	8.32	0.798**
SCI_M	12.79	6.75	0.656**
SCI tot	69.66	30.20	0.767**
DASS-D	10.70	11.75	0.335**

Note: MOMS = Measure of Material Scrupulosity; SI-R tot = Saving Inventory Revised total score; SI-R acq = Saving Inventory Revised Excessive Acquisition; SI-R dd = Saving Inventory Revised Difficulty Discarding; SI-R cl = Saving Inventory Revised Clutter; SCI_EA = Saving Cognitions Inventory Emotional Attachment subscale; SCI_C = Saving Cognitions Inventory Control subscale; SCI_R = Saving Cognitions Inventory Responsibility subscale; SCI_M = Saving Cognitions Inventory Memory subscale; SCI tot = Saving Cognitions Inventory total score; DASS-D = Depression Anxiety Stress Scales Depression subscale.
* $p < .05$.
** $p < .01$.

Table 6
Regressions predicting SI-R from depression, SCI-responsibility and material scrupulosity.

SI-R excessive acquisition

Step 1: $F(2, 529) = 191.5$, $p < .001$

Step 2: $F(3, 528) = 160.0$, $p < .001$

Variable	Step 1			Step 2		
	β	t	p	β	t	p
DASS-D	0.281	8.14	0.001	0.239	7.06	0.001
SCI_R	0.510	14.79	0.001	0.246	4.65	0.001
MOMS	–	–	–	0.346	6.41	0.001

SI-R difficulty discarding

Step 1: $F(2, 529) = 227.6$, $p < .001$

Step 2: $F(3, 528) = 212.8$, $p < .001$

Variable	Step 1			Step 2		
	β	t	p	β	t	p
DASS-D	0.236	7.09	0.001	0.176	5.68	0.001
SCI_R	0.575	17.32	0.001	0.199	4.11	0.001
MOMS	–	–	–	0.492	9.95	0.001

SI-R clutter

Step 1: $F(2, 529) = 155.7$, $p < .001$

Step 2: $F(3, 528) = 119.7$, $p < .001$

Variable	Step 1			Step 2		
	β	t	p	β	t	p
DASS-D	0.354	9.84	0.001	0.316	8.87	0.001
SCI_R	0.406	11.29	0.001	0.167	3.00	0.01
MOMS	–	–	–	0.313	5.51	0.001

SI-R total

Step 1: $F(2, 529) = 264.5$, $p < .001$

Step 2: $F(3, 528) = 225.4$, $p < .001$

Variable	Step 1			Step 2		
	β	t	p	β	t	p
DASS-D	0.328	10.24	0.001	0.278	9.09	0.001
SCI_R	0.541	16.88	0.001	0.220	4.61	0.001
MOMS	–	–	–	0.419	8.86	0.001

Note: SI-R = Saving Inventory Revised; SCI_R = Saving Cognitions Inventory Responsibility subscale score; DASS-D = Depression Anxiety Stress Scales Depression subscale; MOMS = Measure of Material Scrupulosity.

exaggerated, just the beliefs about the "responsible" way to dispose of it. In order to manage and/or discard possessions, they must find a home where they will be fully utilized. To do so requires enormous amounts of time and effort. As a result, the discarding process is not able to keep up with acquisition. The person is working to exhaustion, but no change is apparent in the level of clutter. An outsider looking at the lack of progress is likely to conclude that the individual is not really trying, and is therefore lazy, unmotivated, and/or non-insightful. But in reality, the individual is working tirelessly, but following a set of rules for discarding that make success impossible.

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