

## Cognitive Aspects of Compulsive Hoarding

Gail Steketee,<sup>1,4</sup> Randy O. Frost,<sup>2</sup> and Michael Kyrios<sup>3</sup>

---

*Hoarding of possessions is thought to be influenced by deficits in information processing, emotional attachments, and erroneous beliefs about possessions. This study examined hypothesized beliefs about possessions using an instrument developed for this purpose, the Saving Cognitions Inventory (SCI). Participants were individuals with compulsive hoarding (n = 95), obsessive compulsive disorder without hoarding (n = 21), and community controls (n = 40). An exploratory factor analysis yielded 4 factors similar to those hypothesized, representing emotional attachment, concerns about memory, control over possessions, and responsibility toward possessions. Subscales created based on these factors were internally consistent, and showed known groups, convergent and discriminant validity. Regression analyses indicated that 3 of the 4 subscales (memory, control, and responsibility) significantly predicted hoarding severity after age, moodstate, OCD symptoms and other OCD-related cognitive variables were entered. Interestingly, difficulty with decision-making also proved to be an important predictor of hoarding behavior. Implications for understanding and treating hoarding are discussed and study limitations are noted.*

---

**KEY WORDS:** hoarding; saving; beliefs; possessions; decision-making; obsessive-compulsive disorder.

Hoarding has been defined as the acquisition of and failure to discard possessions that are useless or of limited value, resulting in clutter that renders living spaces unusable for their intended purpose and causes significant distress and impairment (Frost & Hartl, 1996). Hoarding behavior has been associated with obsessive-compulsive personality disorder (OCPD) in DSM-IV (APA, 1994) and also with obsessive compulsive disorder (OCD). In fact, hoarding behaviors represent a primary or secondary symptom in 16–31% of patients with OCD (e.g., Frost, Krause, & Steketee, 1996; Mataix-Cols, Rauch, Manzo, Jenike, & Baer, 1999). However, it is also possible that clinical hoarding behavior that causes distress and impairment may not be linked

<sup>1</sup>Boston University School of Social Work, Boston, Massachusetts.

<sup>2</sup>Smith College, Northampton, Massachusetts.

<sup>3</sup>University of Melbourne, Melbourne, Australia.

<sup>4</sup>Correspondence should be directed to Gail Steketee, PhD, Boston University School of Social Work, 264 Bay State Road, Boston, Massachusetts 02215; e-mail: steketee@bu.edu.

to OCD or OCPD, although this clinical impression has yet to be confirmed using standardized diagnostic assessments. Frost and Hartl's model of hoarding proposed that three types of problems or deficits (information processing, emotional attachments to possessions, and erroneous beliefs about possessions) influence hoarders' saving and discarding behavior (Frost & Hartl, 1996). They suggested that erroneous beliefs about the nature and importance of possessions are wide-ranging and relate to the information processing deficits, emotional attachments, and meanings of possessions.

Anecdotal evidence indicates that specific beliefs about memory, attachment, control, and responsibility may be especially important in the development and maintenance of hoarding behavior. With regard to beliefs about memory, Frost and Hartl (1996) proposed that hoarders overestimate the need to remember or keep a record of information and lack confidence in their ability to remember important information. In an empirical test of this hypothesis, Hartl et al. (2003) reported that hoarders recalled less information than controls on both a visual and verbal learning task and had greater difficulty encoding visual, but not verbal, information. Hoarders also reported significantly less confidence in their memory and made more catastrophic assessments of the consequences of forgetting information, although they did not exaggerate the importance of remembering information. A critical finding in this study was that the lowered confidence in their memory was still associated with hoarding once actual memory functioning was controlled. Problems with confidence in memory have also been associated with OCD independent of hoarding (MacDonald, Antony, Macleod, & Richter, 1997).

With regard to attachment, one assumption about hoarding in OCPD is that hoarded objects are of nonsentimental value (APA, 1994). That is, hoarders do not save for reasons of emotional attachment, but for other reasons, such as the intrinsic or instrumental value of possessions. However, increasing empirical and anecdotal evidence argues that hoarders report greater levels of emotional attachment to their possessions compared to nonhoarders (Frost & Hartl, 1996; Frost, Hartl, Christian, & Williams, 1995; Warren & Ostrom, 1988). Frost and Hartl (1996) labelled this "hyper-sentimentality" to possessions. These attachments are associated with beliefs about the meaning and importance of possessions in the lives of hoarders. For instance, Frost and Hartl (1996) describe participants whose possessions connote signals of safety, as well as form part of their sense of identity.

Furby (1978) suggested that beliefs about control are central to the meaning of possessions. That is, people acquire and keep objects because they believe they must control how they are used, thereby controlling their environment. Closely tied to the idea of sole control is a sense of responsibility for the proper use and well being of the object. Consistent with Furby's hypothesis (Furby, 1978), hoarders appear to have an exaggerated need and desire to maintain control and a greater sense of responsibility about what they save (Frost et al., 1995; Frost & Gross, 1993).

Frost et al. (1998) reported preliminary evidence for the existence of these beliefs. When faced with the decision about whether to discard a newspaper or magazine, hoarding subjects reported more reasons for saving (e.g., to avoid discomfort, to maintain control, and responsibility for being prepared), but did not report fewer reasons for discarding possessions (e.g., "To keep this would require too much room.").

These findings suggest the importance of clarifying and understanding the nature of hoarding-related beliefs.

Frost and Hartl's model of hoarding overlaps somewhat with theoretical thinking about OCD more generally. Cognitive models of OCD have also focused on the important role played by specific beliefs and attitudes, including beliefs about responsibility and about control of thoughts and actions (Obsessive Compulsive Cognitions Working Group, 1997). These constructs are hypothesized to influence how obsessive thoughts are interpreted and whether they provoke anxiety or other negative emotions. Empirical evidence supports the importance of beliefs about responsibility (see Rachman, 1997) and control (Clark & Purdon, 1993) in OCD, including research using a new instrument, the Obsessive Beliefs Questionnaire (Obsessive Compulsive Cognitions Working Group, 2001). Whether responsibility, control, and memory also influence reasons for saving among hoarders is studied further here using a new measure designed to tap these domains.

Possibly linked to cognitive aspects of hoarding described above are problems with decision-making. Findings suggest difficulty in decision-making for OCD (e.g., Reed, 1985), perhaps resulting from fears of making mistakes and the need for certainty (Guidano & Liotti, 1983). Studies of college students and community volunteers have indicated that decision-making was associated with hoarding (Frost & Gross, 1993; Frost & Shows, 1993), and that hoarding was also linked to concern over mistakes. Frost and Gross, as well as Warren and Ostrom (1988), have speculated that saving allows hoarders to avoid difficult decisions about what to keep or discard in order to prevent potentially important mistakes. This, in turn, increases hoarders' perceptions of control. The relationship of decision-making to hoarding beliefs and attitudes is explored in this study.

As evident from the above review, theoretical models and some empirical research support the importance of several beliefs and attitudes in the maintenance and possibly the etiology of hoarding behavior. The main purpose of this study was to examine the role of these beliefs using a newly developed self-report instrument. Items represented the following constructs: emotional comfort from possessions, identification with possessions, value of possessions, control over possessions, responsibility toward possessions, and beliefs about memory. We sought to determine whether these beliefs are specific to hoarders compared to nonhoarders and whether they are linked to mood, OCD symptoms, and decision-making.

## METHOD

### Subjects and Procedure

The sample for this study included 95 individuals with compulsive hoarding, 21 with symptoms of OCD but not hoarding, and 40 with community controls.<sup>5</sup> Hoarding and OCD participants were solicited from area clinics, self-help or support groups,

<sup>5</sup>Data from a subset of these subjects are reported in a study by Frost, Steketee, Williams, and Warren (2000) which examined mood and personality symptoms.

and from the Obsessive Compulsive Foundation newsletter, website, and at the Obsessive Compulsive Foundation annual conference. The hoarding sample included 34 participants in an experimental study who indicated that hoarding was one of their OCD symptoms and who scored one standard deviation above the mean on the Saving Inventory-Revised (SI-R, Frost, Steketee, & Grisham, in press) that assesses prominent symptoms of hoarding behavior. An additional 61 individuals solicited for a study of hoarding beliefs were self-identified hoarders who also scored one standard deviation above the mean on two earlier measures of hoarding used to develop the SI-R. In this latter group, several reported having received additional diagnoses from treating clinicians, including generalized anxiety disorder ( $n = 19$ ), panic disorder (10), social phobia (9), post-traumatic stress disorder (9), and agoraphobia (6); comorbid diagnoses for the first sample are not known. The majority of hoarders in both samples ( $n = 70$ , 74%) also reported receiving a diagnosis of OCD. Because hoarding may occur in the absence of other OCD symptoms and is also a symptom of OCPD, it is not surprising that some hoarding participants were not diagnosed with OCD. In the experimental study sample, we asked about other nonhoarding OCD symptoms (e.g., washing, checking, etc.); 18 of 34 (53%) reported having such symptoms, and these were mainly contamination and multiple obsessions and compulsions. However, in many cases, it was not possible to determine whether the OCD diagnosis was given because of hoarding symptoms alone.

OCD participants without hoarding ( $n = 21$ ) reported being diagnosed with OCD by their local clinician and reported at least one OCD symptom but not hoarding on the YBOCS checklist. OCD symptom and moodstate scores indicated moderate but not severe symptomatology for this sample; comorbid conditions were not assessed. Community controls ( $n = 40$ ) were solicited through newspaper advertisements or nominated by the other participants in the study; they reported on a questionnaire face sheet that they had no anxiety disorder. All participants signed a consent form before participating and received \$20 upon completion and return by mail of a packet of questionnaires.

### Measures

The *Saving Cognition Inventory (SCI)* was devised to measure hypothesized attitudes and beliefs among compulsive hoarders. Thirty-five items were initially generated based on several sources: the theoretical model of Frost and Hartl (1996), clinical information from cases, and empirical evidence regarding types of beliefs among those with hoarding problems (e.g., Frost et al., 1995). Participants rated the extent to which a thought influenced their decision about whether to discard a possession on a 7-point Likert scale. We developed items to represent six hypothesized categories of beliefs: memory, value of possessions, emotional comfort, loss, control over possessions, and responsibility. Memory items included statements about the utility of objects as memory aids (e.g., "Saving this means I do not have to rely on my memory"; "My memory is so bad I must leave this in sight or I will forget about it"). Value items referred to the importance of possessions (e.g., "I will never be able to replace this item"). Statements about emotional comfort derived from objects were represented by such items as "This possession provides me with emotional comfort";

“If I did not know where this was, I would feel anxious.” Loss items referred to participants’ beliefs about negative consequences of losing their possessions (e.g., “If I discard it without extracting all the important information, I will lose something”; “Throwing away this possession is like throwing away a part of me”). Control items expressed the need to control a possession (e.g., “I like to maintain sole control over my things”; “No one has the right to touch my possessions”). Finally, responsibility referred to the participant’s perceived proprietary obligation toward possessions (e.g., “I am responsible for finding a use for this possession”; “If this possession may be of use to someone else, I am responsible for saving it for them”). Before conducting analyses described below, we eliminated two poorly worded items which may have confused respondents and two additional items that could not readily be categorized according to the above-described model of beliefs associated with hoarding. This left 31 items in the SCI.

The *Saving Inventory* (SI) is a revised version of the Hoarding Scale used in previous research (Frost et al., 1995; Frost & Gross, 1993). It contained 7 items from the original 24-item scale and 21 additional items generated to reflect other features of hoarding not tapped by the Hoarding Scale. In previous research, this 28-item SI demonstrated excellent reliability ( $\alpha = .98$ ) and showed adequate validity for a sample of 46 hoarders and controls (Hartl et al., 2003). In this study, alpha was .98. A further revision of this scale, the SI-Revised (Frost et al., in press), was used to select a subset of the hoarding participants; this scale has shown good to excellent internal consistency, test–retest reliability, and concurrent and known groups validity.

The self-report version of the *Yale–Brown Obsessive Compulsive Scale* (YBOCS) contains 10 items that measure the severity of OCD symptoms (Baer, Brown-Beasley, Sorce, & Henriques, 1993). It has demonstrated good reliability and validity and compares favorably to the interview measure standardly used to assess OCD symptoms in treatment outcome research (Steketee, Frost, & Bogart, 1996).

The *Padua Inventory* (PI) devised by Sanavio (1988) contains 60 items that measure a variety of OCD symptoms. The total score was calculated for this study. This measure has shown adequate reliability and validity (Sternberger & Burns, 1990).

The *Obsessional Beliefs Questionnaire* (Obsessive Compulsive Cognitions Working Group, 2001, in press) is an 87-item scale designed to assess the degree of belief in six domains characteristic of clinical samples with OCD. Subscales cover Overimportance of Thoughts, Control of Thoughts, Threat Estimation, Tolerance for Uncertainty, Responsibility, and Perfectionism. Findings for subscales from a large sample of OCD participants indicated good to excellent internal consistency ( $r_s = .8-.9$ ) and adequate test–retest reliability ( $r = .6-.8$ ), as well as good criterion-related validity in distinguishing OCD participants from several control samples. Convergent validity was adequate but scales also correlated highly with measures of mood and worry.

The *Beck Depression Inventory* (BDI) is a 21-item self-report measure that assesses participant’s current mood. Evidence of reliability and validity for the BDI is well-established (Beck, Steer, & Garbin, 1988).

The *Beck Anxiety Inventory* (BAI) measures 21 common physiological and affective symptoms of anxiety experienced by the participant within the past week.

The BAI has shown satisfactory reliability and validity (Beck, Epstein, Brown, & Steer, 1988).

The *Frost Indecisiveness Scale* (FIS) is a 15-item scale designed to measure fears and difficulties associated with making decisions. Nine items are worded negatively (e.g., "I become anxious when making a decision"; "I do not get my work done on time because I cannot decide what to do first") and six positively (e.g., "I find it easy to make decisions"). The full scale demonstrated adequate reliability and validity in a study of undergraduate students (Frost & Shows, 1993) and was associated with compulsive hoarding in student and community samples (Frost & Gross, 1993). The alpha coefficient for compulsive hoarders in this study was .90.

## RESULTS

The findings reported below begin with factor analytic results to determine whether hypothesized belief domains were borne out empirically. Based on these findings, subscales were derived and examined for internal consistency, known groups comparisons, and correlational analyses were conducted to determine the relationship of these hoarding beliefs to hoarding behavior, OCD symptoms, and moodstate. Regression analyses were used to further investigate the usefulness of hoarding beliefs and other cognitive and psychopathology measures in predicting hoarding behavior.

### Demographic Information

Table I presents demographic information for the total sample and for each of the subsamples used in analyses. Participants were predominantly women in middle adulthood, and more than 90% were Caucasian. The mean number of years of education was approximately 15 indicating some college.

**Table I.** Descriptive Statistics for Participants With Hoarding, Obsessive Compulsive Disorder (OCD) Without Hoarding, and Community Controls

		Total sample	Hoarders used only in factor analysis	Hoarders	OCD nonhoarders	Community controls
<i>N</i>		156	34	61	21	40
Gender (%)	Males	29.5	35.3	31.1	19.0	27.5
Ethnicity (%)	Caucasian	93.6	94.1	96.6	90.5	89.7
	African American	3.2	2.9	3.4	0.0	5.1
	Other	3.2	2.9	0.0	9.6	5.2
Age (years)	Mean	46.5	47.8	52.0	36.7	42.0
	<i>SD</i>	11.9	11.8	11.0	10.9	13.8
	Range	18–77	18–71	19–77	18–56	18–74
Education (years)	Mean	15.4	15.6	15.6	14.9	15.0
	<i>SD</i>	2.7	2.0	3.4	2.8	2.2
	Range	10–24	10–20	10–24	10–23	12–19

### Factor Analyses

To examine whether our theoretically postulated categories of beliefs about hoarding corresponded to empirically derived factors from the measure of beliefs, we submitted the 31 items of the SCI for the total sample of participants with compulsive hoarding problems ( $n = 95$ ) to principal components analysis using oblimin rotation with Kaiser normalization. Because the ratio of number of participants to number of items is low, factor analytic findings must be considered merely exploratory for purposes of model testing. This analysis yielded a 4-factor solution with Eigen values greater than 1 that accounted for 54.1% of the variance; the Scree plot also suggested a 4-factor solution; see Table II. Twenty-seven SCI items loaded at least .40 on one or more of these factors. Hypothesized domains of emotional comfort, identification with possessions, and value of possessions all loaded together on the first factor. We have labelled this factor Emotional Attachment since many of the items refer to attitudes toward possessions as extensions of the self and attachment to them as similar to attachment to people. Factors 2, 3, and 4 closely replicated hypothesized belief dimensions of Memory, Control, and Responsibility. Thus, findings partly confirmed our hypotheses, but beliefs about identity and value of possessions did not emerge as independent factors.

Four subscales were developed from the factor analysis of the SCI (see bolded values in Table II): Emotional Attachment (10 items), Memory (5 items), Control (3 items), and Responsibility (6 items). To be included on a subscale, items were required to load above .40 on a factor and not load strongly on another factor. Each SCI subscale was highly correlated (.88–.97,  $ps < .001$ ) with factor scores (weighted scores based on factor loadings for each factor), indicating that the subscales corresponded well with the factor structure. Intercorrelations among the SCI subscales were moderate ( $rs = .25-.45$ ,  $p < .05$ ) with the exception of Emotional Attachment and Memory scales which were not significantly correlated ( $r = .18$ ), indicating that the belief dimensions assessed by the SCI were generally related but not strongly overlapping. Items that did not load on a subscale were dropped from the final measure, yielding a 24-item scale (see Appendix).

### Reliability

Alpha coefficients and inter-item correlations indicated very good to excellent internal consistency for each of the four subscales (.95 for Emotional comfort, .89 for Memory, .86 for Control, and .90 for Responsibility) and for the 24-item total score (.96). Mean inter-item correlations for individual factors were moderate to high (.61–.68) and ranged from .40–.87.

### Groups Comparisons

ANOVAs were used to compare 61 compulsive hoarders, 21 OCD nonhoarders, and 40 community controls who completed the relevant measures. No significant differences were found for gender, education, or ethnicity (see Table I). However, groups did differ significantly in age ( $F = 16.38$ ,  $p < .001$ ); posthoc comparisons

**Table II.** Factor Analysis of Savings Cognitions Inventory ( $n = 95$  "Hoarding" Subjects)

SCI ITEM	Factor 1	Factor 2	Factor 3	Factor 4
	Emotional Attachment to possessions	Memory for possessions	Control over possessions	Responsibility for possessions
Factor Label				
<b>Eigenvalue</b>	10.35	2.79	1.84	1.79
<b>Variance</b>	33.4%	9.0%	5.9%	5.8%
1 must remember something about this		<b>.57</b>		
2 any potential value				
3 belongings as extensions of myself	<b>.48</b>			
4 wasting a valuable opportunity				<b>-.51</b>
5 so unique, nothing else like it	.42	.45		
6 extracting all important information, lose...		<b>.46</b>		
7 never be able to replace this item		.38		
8 responsible for finding a use				<b>-.71</b>
9 use to someone else, responsible for saving				<b>-.63</b>
10 responsible for well-being of possession				<b>-.60</b>
11 if someone touches, lose it or lose track				<b>-.50</b>
12 love belongings the way love some people	<b>.68</b>			
13 vulnerable	.38			<b>-.35</b>
14 not tolerate it if get rid of it	<b>.42</b>			
15 losing part of my life	<b>.68</b>			
16 provides me with emotional comfort	<b>.77</b>			
17 equivalent to feelings associate with it	<b>.82</b>			
18 throwing away part of me	<b>.70</b>			
19 don't have to rely on memory		<b>.66</b>		
20 memory bad, leave in sight or forget it		<b>.57</b>		
21 put into filing system, I'll forget about it		<b>.50</b>		
22 life not complete if not surrounded by...	.37	.31	.32	
23 anxious if didn't know where this was	.34	.33		
24 losing possession like losing a friend	<b>.59</b>			<b>-.39</b>
25 ashamed if don't have when I need it				<b>-.53</b>
26 throwing away like part of me dying	<b>.52</b>			
27 throwing away like abandoning loved one	<b>.63</b>			
28 fear others will take away my things			.43	<b>-.39</b>
29 like to maintain sole control over my things			<b>.94</b>	
30 no right to touch my possessions			<b>.49</b>	
31 upset if throws away without permission			<b>.42</b>	

*Note.* Principal axis factoring. Oblimin rotation with Kaiser normalization, KMO sampling adequacy = .811. Bartlett's test of sphericity approx  $X^2 = 1492.5$ ,  $df = 465$ ,  $p < .000$ . Only factor loadings  $> .30$  are shown; item loadings that were exclusive to one factor are given in bold; these 24 items are used in the final scale.



**Table III.** Means and Standard Deviations for Measures for Participants With Hoarding, Obsessive Compulsive Disorder (OCD) and Normal Controls

	Hoarders (H) ( <i>n</i> = 52–61)		OCDs (O) ( <i>n</i> = 20–21)		Controls (C) ( <i>n</i> = 40)		<i>F</i> -value for ANOVA	<i>p</i>	Significant SNK posthoc comparisons ( <i>p</i> < .05)
	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>			
Saving Inventory	77.82	14.62	26.05	12.79	27.20	15.22	173.26	.000	H > O, C
Y-BOCS	17.00	9.44	17.43	7.65	1.97	3.92	50.35	.000	H, O > C
Padua Inventory	66.08	46.16	70.14	31.01	22.20	28.32	18.19	.000	H, O > C
BDI	17.69	11.16	10.57	7.66	7.05	5.71	17.28	.000	H > O, C
BAI	14.93	11.58	10.38	8.07	4.05	3.18	17.29	.000	H > O > C
OBO Total	523.63	101.48	494.70	89.92	427.94	71.00	10.92	.000	H, O > C
FIS	50.12	12.48	40.62	9.99	35.53	7.65	22.16	.000	H > O, C
SCI Total	103.98	26.64	59.95	23.15	50.58	25.73	58.66	.000	H > O, C
Emotional Attachment	39.97	14.63	22.24	13.19	19.50	10.59	33.72	.000	H > O, C
Memory	23.50	6.16	12.57	6.43	10.53	6.65	56.78	.000	H > O, C
Control	16.27	4.29	14.29	4.47	8.95	5.07	30.79	.000	H > O, C
Responsibility	24.70	7.95	13.00	6.47	11.60	8.01	40.44	.000	H > O, C

*Note.* YBOCS = Yale/Brown Obsessive Compulsive Scale; BDI = Beck Depression Inventory; BAI = Beck Anxiety Inventory; OBO = Obsessive Beliefs Questionnaire; FIS = Frost Indecisiveness Scale; SCI = Saving Cognitions Inventory.

(SNK) indicated that hoarders were significantly older than the OCD and community control groups that did not differ from each other. As evident from Table III, hoarders scored significantly higher than OCD participants and controls on measures of hoarding behavior (SI), depression (BDI), and anxiety (BAI). While OCD participants scored significantly higher than controls on anxiety, surprisingly, there were no differences on depression. On measures of OCD symptoms (YBOCS, Padua), as expected, both hoarders and OCD subjects scored higher than controls and did not differ from each other.

Comparisons via ANOVAs on the SCI dimensions yielded highly significant main effects for all subscales and the total score ( $F_s > 30.79$ ,  $p_s < .0001$ ); see Table III. As expected, hoarders scored higher than OCD participants and controls, and these latter two groups did not differ significantly. ANOVAs also revealed no significant gender differences. Because hoarders were significantly older than the other two groups, we conducted additional analyses of covariance, controlling for age. Main effects for groups remained highly significant for hoarding beliefs and all symptom measures.

We also used ANOVAs to compare groups on other cognitive domains, including decision-making and OCD-related beliefs. Hoarders reported significantly more difficulty making decisions (FIS) than OCD participants whose scores were not different from controls (see Table III). With regard to general OCD beliefs assessed via the OBO, hoarders scored higher than controls but did not differ from OCD participants on the total score and all subscales.

### Correlational Analyses

To examine the concurrent validity of the SCI, we computed correlations of the SCI total and subscale scores with measures of hoarding symptoms (convergent

**Table IV.** Zero Order and Semipartial Correlations (Controlling for OCD Symptoms and for Moodstate) Between Measures of Hoarding Beliefs and Symptoms ( $n = 122$ )<sup>a</sup>

	SCI Total	SCI Emotion	SCI Memory	SCI Control	SCI Responsibility
Zero order correlations					
Savings Inventory	.80*	.69*	.75*	.60*	.74*
YBOCS Total	.52*	.45*	.43*	.57*	.43*
Padua Inventory	.54*	.43*	.42*	.58*	.50*
BDI	.54*	.45*	.52*	.39*	.48*
BAI	.55*	.47*	.47*	.49*	.47*
FIS	.45*	.39*	.46*	.34*	.41*
Partial correlations controlling for YBOCS and Padua					
Savings Inventory	.66*	.56*	.61*	.39*	.61*
BDI	.22	.17	.27	.00	.19
BAI	.15	.14	.16	.03	.08
FIS	.25	.21	.31	.11	.26
Partial correlations controlling for BDI and BAI					
Savings Inventory	.64*	.55*	.59*	.44*	.58*
YBOCS Total	.22	.18	.13	.32*	.16
Padua Inventory	.18	.10	.09	.28	.21
FIS	.17	.14	.21	.13	.18

Note. SCI = Saving Cognitions Inventory; YBOCS = Yale Brown Obsessive Compulsive Scale; BDI = Beck Depression Inventory; BAI = Beck Anxiety Inventory; FIS = Frost Indecisiveness Scale.

<sup>a</sup>the sample size for some cells may vary due to missing data (all  $n$ 's > 103); when age was partialled out, no notable changes in correlations were observed.

\* $p < .0014$  (Bonferroni corrected for each set of correlations).

validity) and with measures of OCD symptoms and depressed and anxious mood-state (discriminant validity). A Bonferroni correction for the number of analyses placed the significance level at  $p < .0014$ . Pearson zero order correlations are given in Table IV for compulsive hoarders, controls, and OCD participants ( $n = 122$ ). Hoarding beliefs correlated very highly with hoarding severity ( $r$ s ranging from .60 to .80) and moderately strongly with OCD symptom severity ( $r$ s = .42–.58) and anxiety and depression ( $r$ s = .39–.55). The pattern of correlations for the Control dimension appeared to be somewhat different from other subscales since this variable seemed quite strongly associated with OCD symptoms, as well as with hoarding behavior.

We also conducted two sets of semipartial correlations of the SCI subscales with hoarding severity, controlling first for OCD symptoms (Padua Inventory and YBOCS) and second for mood (BDI and BAI); see Table IV. For the most part, these semipartial correlations showed very little attenuation of the strong associations of hoarding beliefs with hoarding severity ( $r$ s in the .5–.6 range). The only exception was SCI Control where coefficients were again noticeably lower (.4 range) but still highly significant. In contrast to the stable relationship of hoarding beliefs and hoarding symptoms, the association of hoarding beliefs to mood was much reduced and nonsignificant when OCD symptoms were partialled out (.00–.27). Likewise, when anxiety and depression were removed, correlations of hoarding beliefs to OCD symptoms were also lower and generally nonsignificant (semipartial  $r$ s from .09 to .22), except for the Control domain that remained significantly correlated in the .3 range with OCD symptoms. Thus, hoarding beliefs as assessed by the SCI maintained a

**Table V.** Intercorrelations Between Hoarding Beliefs and OCD-Related Cognitions<sup>a</sup>

	SCI Total	SCI Emotion	SCI Memory	SCI Control	SCI Responsibility
OBO Total	0.56**	0.49**	0.39**	0.54**	0.55**
Tolerance for Uncertainty	0.56**	0.48**	0.43**	0.53**	0.51**
Threat Estimation	0.59**	0.54**	0.44**	0.55**	0.50**
Control of Thoughts	0.46**	0.37**	0.33**	0.49**	0.47**
Importance of Thoughts	0.48**	0.39**	0.39**	0.40**	0.46**
Responsibility	0.48**	0.44**	0.33**	0.43**	0.46**
Perfectionism	0.54**	0.47**	0.41**	0.46**	0.56**

Note. SCI = Saving Cognitions Inventory; OBO = Obsessional Beliefs Questionnaire.

<sup>a</sup>*n* for some cells may vary due to missing data.

\**p* < .0012 (Bonferroni corrected).

strong relationship to hoarding behavior independently of the influence of mood and OCD symptoms, and were no longer associated with OCD symptoms when mood was controlled or with mood when OCD symptoms were controlled.

As a further test of convergent validity, we correlated SCI total and subscale scores with beliefs associated with OCD on the OBO (see Table V). Hoarding belief scores were moderately correlated with all OBO domains (*r*s = .33–.56). Somewhat surprisingly, the correlations between the two scales with similar content (.49 for Control, .46 for Responsibility) were not apparently higher than other correlations. We also conducted semipartial correlations to determine whether mood, OCD symptoms, or hoarding behavior accounted for the association of hoarding beliefs to OCD beliefs. When the effects of OCD symptoms (YBOCS, Padua) and mood (BDI, BAI) were removed, the correlations among SCI and OBO scales reduced very substantially. Using a Bonferroni correction (*p* < .0012) no correlations remained significant when OCD measures were removed (semipartial *r*s = .03–.27) or when moodstate was removed (.01–.30). Semipartial correlations controlling for hoarding behavior (SI) also eliminated all significant relationships (–.01–.30). Thus, any association of OCD-related beliefs and hoarding beliefs was accounted for by the severity of OCD symptoms, negative mood, and saving behavior.

### Analyses of Hoarding and Decision-Making

Because difficulty with decision-making is considered an important component of compulsive hoarding, we conducted several analyses using the FIS. An analysis of variance (Table III) indicated that the three groups differed significantly on decision-making. According to posthoc analyses, hoarding participants reported more difficulty making decisions than OCD and control participants who did not differ from each other. Using the full sample (*n* = 122), the FIS was moderately correlated with all SCI scales (*r*s = .34–.46; see Table IV) and moderately strongly correlated with hoarding behavior on the Saving Inventory (*r* = .58, *p* < .001). We also conducted semipartial correlations to determine whether the relationship of decision-making to hoarding beliefs could be explained by OCD symptoms or mood (Table IV). When OCD symptoms (YBOCS, Padua) were controlled, only the correlation of the FIS to the SCI Memory dimension remained significant (*r* = .31), and when moodstate

(BAI, BDI) was controlled all correlations were nonsignificant. Thus, the association of decision-making to hoarding beliefs was accounted for largely by OCD symptoms and mood.

### Predictors of Hoarding Behavior in Regression Analyses

To further examine whether hoarding beliefs predicted hoarding behavior apart from other variables, we conducted hierarchical regression analyses using the Saving Inventory as the criterion (see Table VI). For this analysis, we included all variables that distinguished those with compulsive hoarding from other groups and that correlated significantly with the SCI. We did not include the OBQ because it did not differentiate those with hoarding from OCD participants and its relationship to the SCI was explained by other variables. The following variables were entered in stepwise order: (1) age, (2) moodstate (BDI, BAI), (3) OCD severity (YBOCS, Padua Inventory), (4) decision-making (FIS), and (5) SCI subscales. All predictors together accounted for 70% of the variance in hoarding severity. All variables explained significant variance in hoarding behavior and the  $R^2$  change for hoarding beliefs when other variables were controlled was .18,  $F(5, 113) = 16.71$ ;  $p < .001$ . Specifically, hoarding beliefs about Memory, Control, and Responsibility exhibited significant standardized beta coefficients (.24, .19, and .20, respectively,  $p$ 's  $< .04$ ). Interestingly, only the beta for decision-making (FIS) exceeded these (.30,  $p < .001$ ).

**Table VI.** Hierarchical Regression Analysis Predicting Severity of Hoarding Behavior on the Saving Inventory

Step	Predictors	Multiple $R$	$R^2$	$R^2$ change	$F$ change	Sig change in $F$
1	Age	0.42	0.18	0.18	26.10	0.000
2	BDI, BAI	0.60	0.36	0.18	16.82	0.000
3	YBOCS, Padua	0.64	0.41	0.05	4.44	0.014
4	FIS Total	0.73	0.53	0.12	29.00	0.000
5	4 SCI subscales	0.84	0.71	0.18	16.71	0.000

#### *Coefficients After Step 5*

Predictor variables (constant)	Standardized coefficient beta	$t$	$p$
		-4.89	0.000
Age	0.23	3.95	0.000
BDI Total	-0.01	-0.12	0.910
BAI Total	-0.04	-0.37	0.709
YBOCS Total	0.13	1.79	0.077
Padua Total	-0.19	-2.24	0.027
FIS Total	0.30	4.31	0.000
SCI Emotion	0.09	1.01	0.317
SCI Memory	0.24	2.88	0.005
SCI Control	0.19	2.41	0.018
SCI Responsibility	0.20	2.13	0.035

*Note.* BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; FIS = Frost Indecisiveness Scale; OBQ = Obsessional Beliefs Questionnaire; SCI = Saving Cognitions Inventory; YBOCS = Yale Brown Obsessive Compulsive Scale.

## DISCUSSION

This study is limited by the lack of a standard diagnostic interview not yet available in psychiatric practice to determine the clinical status of compulsive hoarding participants for group comparisons. To maximize the likelihood that hoarding participants experienced substantial symptoms of hoarding, we included participants only when their scores on standardized measures were at least one standard deviation above the mean. All OCD participants reported receiving a diagnosis of OCD, although their scores on the YBOCS and Padua Inventory indicated only moderate symptoms compared to many clinical treatment samples. This lower severity of OCD symptoms may explain the modest scores on negative mood compared to some clinical samples and the lack of significant difference of OCD and community participants on depression. All groups were generally comparable on demographic variables, except for age where, consistent with other studies, hoarders were somewhat older. Clearly, our findings need to be confirmed using samples that receive reliable diagnoses. We should point out, however, that no formal diagnostic criteria for compulsive hoarding exist, and thus our methods for selecting this group reflect the current limited state of the art for research on compulsive hoarding.

Recent theories suggest that beliefs about possessions play an important role in the development and maintenance of hoarding problems (Frost & Hartl, 1996). This study provides additional support for this assumption beyond the limited data available to date (Frost et al., 1995, 1998). Factor analyses supported three hypothesized types of hoarding beliefs: memory, responsibility, and control. Proposed belief dimensions of emotional comfort, value/uniqueness, and loss combined to form one large factor that appears to represent beliefs about emotional attachment to possessions. This factor accounted for the largest portion of variance in the scale (55%). The beliefs reflected in this subscale are consistent with the notion that possessions are accorded human-like qualities, and attachments to them mirror attachments to people (Frost et al., 1995).

Guidano and Liotti (1983) have proposed that emotional attachment plays an important role in determining obsessive and compulsive behavior, of which hoarding is often considered a subtype. Limited data support OCD family histories of attachment problems (e.g., parental rejection, overprotection, lack of warmth; Hoekstra, Visser, & Emmelkamp, 1989), although the style of parental upbringing for OCD may not differ from that observed in other anxiety disorders (Chambless, Gillis, Tran, & Steketee, 1996). Interestingly, some recent evidence suggests that people who hoard have difficulty forming and/or maintaining relationships with people (Frost, Steketee, Williams, & Warren, 2000). However, attachment during childhood has not been studied in relation to compulsive hoarding. Given our findings regarding the importance of beliefs relating to emotional attachment, further exploration of whether impaired attachment early in life contributes to hoarding seems warranted.

Although the factor analytic findings must be considered very preliminary given the small sample size for this analysis, the four hoarding belief factors that emerged showed high internal consistencies suggesting that they were reliable, even the 3-item Control scale. The low to moderate intercorrelations among subscales indicate that they are also reasonably independent. Further research is needed to determine the

extent to which these dimensions represent a comprehensive assessment of important beliefs associated with compulsive hoarding and whether they are replicated in larger samples with clearly defined hoarding behavior.

The four hoarding belief dimensions and the overall SCI score distinguished among the participant groups. In each case, those with compulsive hoarding scored higher than OCD patients and community controls, even when age differences between groups were controlled. Further evidence that these dimensions are valid was apparent in the moderately high correlations of the SCI subscales with the Saving Inventory. These correlations were generally greater in magnitude than the correlations of SCI subscales to depression, anxiety, and OCD symptoms. Further, when mood and OCD symptoms were partialled out, the strength of the relationship of beliefs about possessions to hoarding behavior was very little attenuated. Thus, the relationship between hoarding belief scales and hoarding behavior was not mediated by anxious or depressed mood or by OCD symptoms. Taken together, these results indicate a close and unique association between types of beliefs and attitudes regarding possessions and hoarding symptoms. These beliefs and behaviors do not appear to be closely related to OCD symptoms, although our screening criteria are not sufficiently strict to establish this finding unequivocally.

This study also permitted us to test whether hoarding beliefs were related to general OCD beliefs. Some relationship is evident in the moderate correlations among these scales and in hoarders' higher scores compared to community controls and scores that are quite similar to OCD subjects. However, correlations were no longer significant when OCD symptoms, mood, or hoarding behavior were partialled out. This suggests that although hoarding symptoms are related to general OCD beliefs, the relationships are largely mediated by mood or OCD symptoms.

Beliefs about control exhibited a somewhat different pattern in relation to hoarding behavior and to OCD symptoms. Control beliefs remain associated with hoarding behavior, even when OCD symptoms are removed, but removal of shared variance with negative mood still leaves a relationship, albeit modest, with OCD symptoms. The need for control has long been thought an important characteristic of OCD (see Clark & Purdon, 1993) and obsessive compulsive personality disorder (OCPD) (Kyrios, 1998), although its role in hoarding has been less well articulated. The need for control may reflect a meta-vulnerability factor for OCD, OCPD, and compulsive hoarding, perhaps derived from problematic attachment that leads to the development of dysfunctional beliefs associated with these disorders. Kyrios (1998) proposed that, due to early ambivalent attachments and a resulting ambivalent sense of identity, individuals with OCD rarely experience a sense of security internally or externally. Hence, fearing disorganization or even uncertainty, these individuals overcompensate by establishing unrealistic, unattainable, and/or unsustainable control strategies for themselves and the external world. The net result is often procrastination, lack of creative freedom, and a poor range of problem-solving options. Perhaps hoarders exhibit an inflated need for control over possessions as a compensatory manifestation of this more general need for control.

With regard to decision-making and hoarding, previous theory and research has emphasized the importance of indecisiveness as a feature of compulsive hoarding

(Frost & Gross, 1993; Frost & Hartl, 1996) and OCD (Reed, 1985). The fact that participants with compulsive hoarding scored higher than those with OCD on the FIS scale may indicate that indecisiveness is a more important factor in hoarding than in OCD. However, it is also possible that the milder symptoms of the OCD sample in this study account for this difference. This is partly evident in the finding that when OCD severity was partialled out, significant correlations (.3–.4 range) of the FIS with all SCI subscales reduced substantially and were no longer significant. Nonetheless, difficulty with decision-making is strongly evident when a client with hoarding problems is asked to decide what to discard and what to keep and, perhaps even more difficult, where to keep it. The substantial beta coefficient for FIS in predicting hoarding behavior indicates that more research examining this important feature and its relationship to hoarding attitudes and behavior is warranted.

Determining what variables account for the severity of hoarding symptoms is likely to assist clinicians in identifying components of hoarding problems that require most attention during treatment. The regression analysis provides a useful method for determining the magnitude of the contribution of the variables studied here. The overall regression clearly indicates that hoarding beliefs explain hoarding behavior independently of age, moodstate, OCD symptoms, and OCD cognitive features. Among these, betas for beliefs about memory, control, and responsibility for possessions were significant, but surprisingly, the largest subscale, Emotional Attachment, was not a significant contributor. This may be because other hoarding belief scales and measures of psychopathology with which it is correlated accounted for the variance.

This study argues for the importance of beliefs about possessions in determining acquiring and saving behavior. We suspect that hoarding problems are multiply determined; that is, in particular individuals, hoarding is more or less strongly associated with certain types of beliefs and with difficulty in information processing (e.g., memory, categorization, organization) that may prompt fears about making decisions. Thus, these findings are suggestive of areas for potential intervention to reduce hoarding, including beliefs about emotional attachment, memory, control, and responsibility toward possessions, as well as decision-making.

However, it is also possible that our construction of the SCI missed important attitudes that determine hoarding behavior. For example, we are aware of some cases of hoarding in which beliefs about responsibility are directed not toward possessions but toward people who might need something the hoarder “should” have available. Thus, our method for assessing responsibility beliefs may have omitted aspects especially pertinent in some cases. Dimensions of attachment often articulated by hoarding clients require more attention to determine whether hoarding of particular objects has a compensatory function associated with identity. Likewise, additional domains might be added to assess attitudes toward the intrinsic value (e.g., beauty versus usefulness) of objects and importance of completeness in collecting, perhaps akin to symmetry and completeness obsessions evident in some clients with OCD. Further research will help determine areas of focus for intervention with this difficult problem.

## APPENDIX: SAVING COGNITIONS INVENTORY-R

Using the following scale please indicate the extent to which you have each thought when you are deciding whether to throw something away:

	1	2	3	4	5	6	7						
	not at all		sometimes			very much							
1.	I could not tolerate it if I were to get rid of this.						1	2	3	4	5	6	7
2.	Throwing this away means wasting a valuable opportunity.						1	2	3	4	5	6	7
3.	Throwing away this possession is like throwing away a part of me.						1	2	3	4	5	6	7
4.	Saving this means I don't have to rely on my memory.						1	2	3	4	5	6	7
5.	It upsets me when someone throws something of mine away without my permission.						1	2	3	4	5	6	7
6.	Losing this possession is like losing a friend.						1	2	3	4	5	6	7
7.	If someone touches or uses this, I will lose it or lose track of it.						1	2	3	4	5	6	7
8.	Throwing some things away would feel like abandoning a loved one.						1	2	3	4	5	6	7
9.	Throwing this away means losing a part of my life.						1	2	3	4	5	6	7
10.	I see my belongings as extensions of myself; they are part of who I am.						1	2	3	4	5	6	7
11.	I am responsible for the well-being of this possession						1	2	3	4	5	6	7
12.	If this possession may be of use to someone else, I am responsible for saving it for them.						1	2	3	4	5	6	7
13.	This possession is equivalent to the feelings I associate with it.						1	2	3	4	5	6	7
14.	My memory is so bad I must leave this in sight or I'll forget about it.						1	2	3	4	5	6	7
15.	I am responsible for finding a use for this possession.						1	2	3	4	5	6	7
16.	Throwing some things away would feel like part of me dying.						1	2	3	4	5	6	7
17.	If I put this into a filing system, I'll forget about it completely.						1	2	3	4	5	6	7
18.	I like to maintain sole control over my things.						1	2	3	4	5	6	7
19.	I'm ashamed when I don't have something like this when I need it.						1	2	3	4	5	6	7
20.	I must remember something about this, and I can't if I throw this away.						1	2	3	4	5	6	7
21.	If I discard this without extracting all the important information from it, I will lose something.						1	2	3	4	5	6	7
22.	This possession provides me with emotional comfort.						1	2	3	4	5	6	7
23.	I love some of my belongings the way I love some people.						1	2	3	4	5	6	7
24.	No one has the right to touch my possessions.						1	2	3	4	5	6	7

### Subscales:

Emotional Attachment (10 items): 1, 3, 6, 8, 9, 10, 13, 16, 22, 23

Memory(5 items): 4, 14, 17, 20, 21

Control (3 items): 5, 18, 24

Responsibility (6 items): 2, 7, 11, 12, 15, 19

## REFERENCES

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Baer, L., Brown-Beasley, M. W., Sorce, J., & Henriques, A. (1993). Computer-assisted telephone administration of a structured interview for obsessive-compulsive disorder. *American Journal of Psychiatry*, *150*, 1737-1738.
- Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology*, *56*, 893-897.



- Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review, 8*, 77–100.
- Chambless, D. L., Gillis, M. M., Tran, G. Q., & Steketee, G. (1996). Parental bonding reports of clients with obsessive-compulsive disorder and agoraphobia. *Clinical Psychology and Psychotherapy, 3*, 77–85.
- Clark, D. A., & Purdon, C. (1993). New perspectives for a cognitive theory of obsessions. *Australian Psychologist, 28*, 161–167.
- Frost, R. O., & Gross, R. C. (1993). The hoarding of possessions. *Behaviour Research and Therapy, 31*, 367–381.
- Frost, R. O., & Hartl, T. (1996). A cognitive-behavioral model of compulsive hoarding. *Behaviour Research and Therapy, 34*, 341–350.
- Frost, R. O., Hartl, T. L., Christian, R., & Williams, N. (1995). The value of possessions in compulsive hoarding. *Behaviour Research and Therapy, 33*, 897–902.
- Frost, R. O., Kim, H.-J., Morris, C., Bloss, C., Murray-Close, M., & Steketee, G. (1998). Hoarding, compulsive buying and reasons for saving. *Behaviour Research and Therapy, 36*, 657–664.
- Frost, R. O., Krause, M., & Steketee, G. (1996). Hoarding and obsessive compulsive symptoms. *Behavior Modification, 20*, 116–132.
- Frost, R. O., & Shows, D. L. (1993). The nature and measurement of compulsive indecisiveness. *Behaviour Research and Therapy, 31*, 683–692.
- Frost, R. O., Steketee, G., & Grisham, J. (in press). Measurement of compulsive hoarding: Saving Inventory-Revised. *Psychological Assessment*.
- Frost, R. O., Steketee, G., Williams, L., & Warren, R. (2000). Mood, disability, and personality disorder symptoms in hoarding, obsessive compulsive disorder, and control subjects. *Behaviour Research and Therapy, 38*, 1071–1082.
- Furby, L. (1978). Possessions: Toward a theory of their meaning and function throughout the life cycle. In P. B. Bates (Ed.), *Life span development and behavior*: Vol. 1. New York: Academic Press.
- Guidano, V., & Liotti, G. (1983). *Cognitive processes and emotional disorders*. New York: Guilford.
- Hartl, T. L., Frost, R. O., Savage, C. R., Allen, G. J., Deckersbach, T., Steketee, G., et al. (2003). *Actual and perceived memory deficits among individuals with hoarding symptoms*. Paper submitted for publication.
- Hoekstra, R. J., Visser, S., & Emmelkamp, P. M. G. (1989). A social learning formulation of the etiology of obsessive-compulsive disorders. In P. M. G. Emmelkamp, W. T. A. M. Everaerd, F. Draimant, & M. J. M. van Son (Eds.), *Fresh perspectives on anxiety disorders* (pp. 115–123). Amsterdam, The Netherlands: Swets and Zeitlinger.
- Kyrios, M. (1998). The cognitive and behavioural treatment of obsessive-compulsive personality and other phenomena. In C. Perris & P. McGorry (Eds.), *Cognitive therapy of psychiatric and personality disorders* (pp. 351–378). Chichester, England: Wiley.
- MacDonald, A. A., Antony, M. M., Macleod, C. M., & Richter, M. A. (1997). Memory and confidence in memory judgments among individuals with obsessive-compulsive disorder and non-clinical controls. *Behaviour Research and Therapy, 35*, 497–505.
- Mataix-Cols, D., Rauch, S. L., Manzo, P. A., Jenike, M. A., & Baer, L. (1999). Use of factor-analyzed symptom dimensions to predict outcome with serotonin reuptake inhibitors and placebo in the treatment of obsessive-compulsive disorder. *American Journal of Psychiatry, 156*, 1409–1416.
- Obsessive Compulsive Cognitions Working Group. (1997). Cognitive assessment of obsessive-compulsive disorder. *Behavior Research and Therapy, 35*, 667–681.
- Obsessive Compulsive Cognitions Working Group. (2001). Development and initial validation of the Obsessive Beliefs Questionnaire (OBQ) and the Interpretation of Intrusions Inventory. *Behaviour Research and Therapy, 39*, 987–1006.
- Obsessive Compulsive Cognitions Working Group. (in press). Psychometric validation of the Obsessive Beliefs Questionnaire and the Interpretation of Intrusions Inventory: Part I. *Behaviour Research and Therapy*.
- Rachman, S. (1997). A cognitive theory of obsessions. *Behavior Research and Therapy, 35*, 793–801.
- Reed, G. F. (1985). *Obsessional experience and compulsive behavior: A cognitive structural approach*. New York: Academic Press.
- Sanavio, E. (1988). Obsessions and compulsions: The Padua Inventory. *Behaviour Research and Therapy, 26*, 169–177.
- Steketee, G., Frost, R. O., & Bogart, K. (1996). Yale Brown Obsessive Compulsive Scale: Interview versus self-report. *Behavioral Assessment, 34*, 675–684.
- Sternberger, L. G., & Burns, G. L. (1990). Obsessions and compulsions: Psychometric properties of the Padua Inventory with an American college population. *Behaviour Research and Therapy, 28*, 341–345.
- Warren, L. W., & Ostrom, J. C. (1988). Pack rats: World class savers. *Psychology Today, 22*, 58–62.

